



**Guide to
Weed Control**

Hort Crops

2020

Publication 75B

Discard old editions of this publication.

Each year a committee comprised of representatives from provincial government, industry, academia and grower organizations review the pesticides listed in the publication.

To the best knowledge of the committee, at the time of printing, the pesticide products listed in this publication were:

- federally registered
- classified by the Ontario Ministry of the Environment, Conservation and Parks (MECP)

The information in this publication is general information only.

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) does not offer any warranty or guarantee, nor does it assume any liability for any crop loss, animal loss, health, safety or environmental hazard caused by the use of a pesticide mentioned in this publication.

This publication lists a number of brand names of pesticides. It is neither an endorsement of the product nor a suggestion that similar products are ineffective.

THE PESTICIDE LABEL

Consult each product label before you use a pesticide. The label provides specific information on how to use the product safely, hazards, restrictions on use, compatibility with other products, the effect of environmental conditions, etc.

The pesticide product label is a legal document. Follow all label directions.

REGISTRATION OF PESTICIDE PRODUCTS

The Pest Management Regulatory Agency (PMRA) of Health Canada registers pesticide products for use in Canada following an evaluation of scientific data to ensure that the product has value, and the human health and environmental risks associated with its proposed use are acceptable.

1. Full Registration

Pesticide registrations are normally granted for a period of 5 years, subject to renewal.

2. Emergency Registration

An emergency registration is a temporary, time-limited registration of no more than 1 year, approved to deal with serious pest outbreaks. An emergency is generally deemed to exist when both of the following criteria are met:

- A. An unexpected and unmanageable pest outbreak or pest situation occurs that can cause significant health, environmental or economic problems; and
- B. Registered pesticides and cultural control methods or practices are insufficient to address the pest outbreak.

MAXIMUM RESIDUE LIMITS

The PMRA has established maximum residue limits (MRLs) for pesticides.

An MRL is the maximum amount of pesticide residue that may remain on food after a pesticide is applied as per label directions and which can safely be consumed. Processors or retailers may demand more restrictive limits. Growers should seek advice of their intended market to determine if more restrictive limitations apply. Keep accurate and up-to-date records on pesticide use in each crop.

SUPPLEMENTAL/ AMENDED LABELS

Supplemental/amended labels provide label directions for new approved uses for a registered pesticide that do not appear on the current label. These label directions MUST be followed when using the pesticide for these purposes.

Examples of when you must use a supplemental/amended label include:

- **Emergency Use Registration**
- **Minor Use Label Expansion**

You can obtain a copy of a supplemental amended label from the pesticide manufacturer or pesticide vendor, the grower association that sponsored the emergency registration or minor use, from OMAFRA or PMRA's Pest Management Information Service.

For more information on the federal registration status, check the PMRA website at www.healthcanada.gc.ca/pmra or call 1-800-267-6315.

REGULATION OF PESTICIDES IN ONTARIO

The MECP is responsible for regulating pesticide sale, use, transportation, storage and disposal in Ontario. Ontario regulates pesticides by placing appropriate education, licensing and/or permit requirements on their use, under the *Pesticides Act* and Regulation 63/09.

All pesticides must be used in accordance with requirements under the *Pesticides Act* and Regulation 63/09, which are available on the e-laws website at ontario.ca/laws or by calling the ServiceOntario Publications Toll-Free number: 1-800-668-9938 or 416-326-5300.

CLASSIFICATION OF PESTICIDES

The Ontario pesticide classification system provides the basis for regulating the distribution, availability and use of pesticide products in Ontario. Classified products are posted on the MECP website: ontario.ca/pesticides.

CERTIFICATION AND LICENSING

Growers and Their Assistants

For information about certification for growers and training for assistants, check the Ontario Pesticide Education Program website: www.opec.ca or call 1-800-652-8573.

Commercial Applicators (Exterminators) and Their Assisting Technicians

For more information about exterminator licensing and technician training, visit:

- the Ontario Pesticide Training and Certification website at www.ontariopesticide.com or call 1-888-620-9999 or 519-674-1575
- the Pesticide Industry Council's Pesticide Technician Program website at www.horttrades.com/pesticide-technician or call 1-800-265-5656 or e-mail pic@hort-trades.com
- the Pesticide Industry Regulatory Council (PIRC) at www.oipma.ca.

**Guide to
Weed Control**

**Hort
Crops**

2020

Publication 75B

HORT CROPS



This publication contains updates to the published version of *Guide to Weed Control: Hort Crops, 2019*.

Text has been highlighted in red to outline new additions or changes in registered uses.

Need technical or business information?

Contact the Agricultural Information Contact Centre at 1-877-424-1300 or ag.info.omafra@ontario.ca

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For field crop information, please see

OMAFRA Publication 75A, *Guide to Weed Control, Field Crops*.

For up-to-date information about using pesticides in Ontario, visit

ontario.ca/usingpesticides

For best practices in the safe, efficient and effective operation of agricultural sprayers, visit

www.sprayers101.com

Resistance Management

Excerpt from www.ManageResistanceNow.ca

Canadian growers face an estimated cost of \$1.1 to \$1.5 billion annually stemming from an increase in herbicide use and a decline in both yield and quality. To manage this resistance effectively, proper management tactics must be applied to reduce the spread of herbicide resistant weeds, reduce weed seed return to the soil, and maximize farm yields.

It is extremely important to use best management practices to reduce resistance and to better future crop quality and production. Combining cultural, mechanical, biological, and chemical control measures, allows for best management practices.

1. ROTATE CROPS

- Weeds will have a harder time developing resistance to a certain mode of action as crops and herbicide groups are rotated.
- Use crops that have different seeding and harvesting dates.
- Plant a wide range of crops, especially include crops that compete well with weeds.

2. MIX AND ROTATE HERBICIDES

- Rotate use of herbicides between groups and throughout growing seasons over the years.
- Use herbicide mixtures and rotate through different mixtures over time.
- Ensure the herbicides you are using within a mixture are from different groups and that they will all be effective on the weed species you are targeting.
- Take herbicide layering into account if some weeds slip through the first treatment.

3. USE RECOMMENDED RATE AND TIMING

- Avoid using below-label rates as they can lead to the development of resistance when the weeds survive application.
- Survey your fields for weeds before applying herbicides and scout them after to determine success rates of treatments.
- Some weeds may escape and survive herbicide application, these weeds should still be dealt with.
- Keep spray techniques in mind:
 - Applying herbicides with low travel and wind speeds leads to a more uniform herbicide application.
 - A stable boom creates uniform droplets.
 - The periphery portion and the area outside of turns may not receive the full dose of herbicide application which can eventually lead to a tolerance.

Other best management practices to keep in mind are:

- Keeping accurate records
- Maximizing crop competitiveness
- Using weed sanitation practices
- Prevent and eliminate weed escapes
- Consider strategic tillage
- Connect with a crop advisor

For more information, visit www.ManageResistanceNow.ca

For a 'Herbicides in Eastern Canada for Horticulture by Mode of Action' poster contact:
Kristen Obeid: kristen.obeid@ontario.ca

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1. Herbicides used in Ontario horticulture crops

Introduction and important resources

The purpose of this chapter is to provide you with a basic explanation of the information provided throughout this publication. Ideally, you'll have read this section before you start reading the crop chapters.

WEED CONTROL RATING TABLES

In each crop chapter, following a concise but critical overview of important weed control concepts, weed control rating tables are provided to aid in herbicide selection. Weed control rating tables are constructed with the following information:

TRADE NAME	Grasses					Annual Broadleaves								Perennials						
	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	buckwheat, wild	lady's-thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed	velvetleaf	bindweed, field	horsetail	milkweed	nutsedge	quackgrass	sow-thistle	thistle, Canada
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																				
DEVIRINOL DF-XT	G	E	G	G	G	P	F	G	P	P	G	F	P	P	P	P	F	P	P	P
EPTAM	E	E	E	E	E	P	F	F	P	F	F	P	P	-	-	-	G	P	-	-
FRONTIER MAX	E	E	G	E	E	P	P	F	P	G	G	P	P	N	N	N	G	N	N	N

Alphabetical ratings for each species:

N = No Control P = Poor Control F = Fair Control G = Good Control E = Excellent Control

- = insufficient information available to make a rating.

UNDERSTANDING THE INFORMATION PRESENTED IN THE "HERBICIDES USED IN ONTARIO HORTICULTURE CROPS" SECTION

Below is an example herbicide treatment entry found in this guide:

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
1	2,4-D	564 g a.e./L	liquid	4
Horticulture crop registrations: asparagus, highbush blueberries, cranberries, raspberries, strawberries, bearing fruit trees including: apple, pear, peach, plum, apricot and cherries, potato (preharvest)				
Storage information: Store at temperatures above 0°C.				
Notes about control: Controls susceptible annual and perennial broadleaf weeds when emerged. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
2,4 - D AMINE 600	5931	4	12 hr	LOVELAND PRODUCTS CANADA INC.
2,4 - D AMINE 600, IPCO	17511	4	12 hr	INTERPROVINCIAL CO-OP LTD.
2,4 - D AMINE 600, NUFARM	14726	4	12 hr	NUFARM AGRICULTURE INC.
2,4 - D AMINE 600, WEEDAWAY	26163	4	12 hr	INTERPROVINCIAL CO-OP LTD.

EXPLANATIONS OF THE CONTENT PROVIDED

A.I. #: A number was assigned to each active ingredient allowing the reader to reference back to which active ingredient is contained within a herbicide.

Formulation: Tells you what form the herbicide comes in: granular, liquid, etc.

WSSA group: An important concept to delay the selection of herbicide resistant weeds is to rotate herbicides and/or tank-mix herbicides with different modes of action but with a similar spectrum of weed control. The Weed Science Society of America (WSSA) has numerically grouped herbicides based on their mechanisms of action. The intent behind this numbering system is to clearly identify herbicides that kill weeds using a similar biological pathway. This ensures that the use of that herbicide group is not repeated year after year but rather rotated or tank mixed with herbicides that use different biological pathways. These herbicide group numbers can be found throughout the book in Table 1-1 Herbicides used in Ontario horticulture crops, Table 2-2 Herbicide treatment rates and precautions for vegetable crops, Table 3-3 Herbicide treatment rates for berry crops, Table 4-2 Herbicide treatment rates for tree fruit, tree nuts and grapes and Table 5-2 Herbicide treatment rates for nursery and ornamental crops.

PCP #: Is the product registration number for this trade name under the Pest Control Products Act.. The PCP number has been placed in the guide for convenience, but the pesticide label in possession should always be used for the most accurate and current PCP number.

Class: Refers to the numeric classification of pesticides under Regulation 63/09 of the Pesticides Act. Refer to: ontario.ca/page/classification-pesticides for a description of each Ontario classification.

REI: Restricted Entry Interval is the period of time after a pesticide has been applied that agricultural workers or anyone else must not do hand labour tasks (e.g., scouting) in treated areas. The REI allows the pesticide residues and vapours to dissipate to safe levels for work to be done. If the REI is not stated on a label, use a 12-hour REI.

UNDERSTANDING THE INFORMATION PRESENTED IN CHAPTERS 2-5

Below is an example herbicide treatment entry found in this guide:

ASPARAGUS		
TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
PRE-PLANT (STALE SEEDBED TECHNIQUE)		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.6-0.7 L/acre Active Ingredient(s): s-metolachlor (1.42-1.60 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 16 days Rainfast: moisture required for activation Max. Applications: 1

ASPARAGUS
PRECAUTIONS - For more information, see the label.
PRE-PLANT (STALE SEEDBED TECHNIQUE)
<ul style="list-style-type: none"> • Apply before direct seeded or established spears emerge. • Application may result in injury to the asparagus crop. • Do NOT apply to soil with less than 1% or more than 10% organic matter.

Product Rate: The amount of herbicide that you apply on a per acre basis. For this version of the guide, the decision has been made to express rates on a per acre basis only. The majority of farmers that we communicate with calculate all crop inputs on a per acre basis and Statistics Canada expresses agricultural census data on a per acre basis. In the past we have published herbicide rates in both a per acre and per hectare basis, but this has often caused confusion. If you want to find the per hectare rate of herbicides you can:

- i) Multiply the per acre product rate by 2.5
 Example: Callisto at 120 mL/acre x 2.5 = 300 mL/ha
 or divide the products active ingredient rate per hectare by the concentration of active ingredient found in a unit of product.

ii)
$$\text{per hectare rate} = \frac{\text{active ingredient rate/ha}}{\text{active ingredient concentration}}$$

b) Example 1: (liquid herbicide): $0.25 \text{ L per ha of Engenia} = \frac{150 \text{ g a.e./ha}}{600 \text{ g/L}}$

c) Example 2: (dry herbicide): $36 \text{ g per ha of Classic} = \frac{9 \text{ g a.i./ha}}{0.25 (25\%)}$

Active ingredient: For every herbicide treatment, this guide lists the active ingredient name, the amount of active ingredient contained in either a litre of a liquid herbicide (i.e. g/L) or percentage of active ingredient contained in the mass of a dry herbicide and the rate of active ingredient per hectare.

Group #: An important concept to delay the selection of herbicide resistant weeds is to rotate herbicides and/or tank-mix herbicides with different modes of action but with a similar spectrum of weed control. The Weed Science Society of America (WSSA) has numerically grouped herbicides based on their mechanisms of action. The intent behind this numbering system is to clearly identify herbicides that kill weeds using a similar biological pathway so that the use of that herbicide group is not repeated year after year but rather rotated or tank mixed with herbicides that use different biological pathways.

REI: Restricted Entry Interval is the period of time after a pesticide has been applied that agricultural workers or anyone else must not do hand labour tasks (e.g., scouting) in treated areas. The REI allows the pesticide residues and vapours to dissipate to safe levels for work to be done. If the REI is not stated on a label, use a 12-hour REI.

PHI: Pre-harvest interval refers to the amount of time that must lapse (in days) after a pesticide application before the crop is harvested. The PHI is a function of a pesticide's use pattern and of the amount of pesticide residues allowed on the crop at harvest. Residue levels on a crop are affected by the crop's growth, by environmental conditions (such as rain or UV radiation) and by the microorganisms on the plants and in the soil. The PHI must therefore be long enough to allow for the pesticide residues in the harvested crop to degrade to a level that is acceptable.

TANK MIXING

When it comes to reliable information on tank mixing, there are many resources available. The label is, of course, your first point of reference. You can also consult a trusted point-of-sale or agrichemical representative, as they know their products best and want to see you succeed. If you are considering a new tank mix, it's best not to exceed three tank partners. The more you put in, the more likely active ingredients and formulated adjuvants will be incompatible. "Compatibility" in this case means that mixing products will not cause a chemical problem (e.g., affect product efficacy) or a physical problem (e.g., products gel or fall out of suspension). In Canada, users of commercial class pest control products for crop protection or vegetation management are permitted to apply unlabeled tank mixes of registered pest control products as long as they meet all of the following:

- Each partner is registered for use on the crop.
- The tank mix only includes an adjuvant when specifically required by one of the mix partners.
- The application timing of each partner is compatible with crop and pest staging.
- Each partner is used according to the product label.
- No partner is specifically excluded on any other partner label.

MIXING ORDER

Even if herbicides are compatible, the order in which you add each product to the tank, or inductor, is critical. A new acronym: W.A.M.L.E.G.S. has been proposed as a way to provide guidance around mixing order when nothing is specified on a product label. Fill the tank half-full of water to allow products to properly hydrate and, with the agitation on, follow this order:

W.A.M.L.E.G.S. – Mixing order for tank mixes

- W** Wettable powders, flowable (DC, DF, DG, DS, F, Gr, SG, SP)
- A** Agitate, Anti-flowing compounds, buffers
- M** Microcapsule suspension (ME)
- L** Liquid and soluble (SN, SC, Li, SU)
- E** Emulsifiable concentrates (EC)
- G** High load Glyphosates
- S** Surfactants

When in doubt, consult the label.

IMPORTANT BACKGROUND INFORMATION AND RESOURCES

To be able to purchase herbicides for agriculture use, there are two things you need to know:

POTENTIAL CHANGES TO THE *PESTICIDES ACT*

Information on the regulatory requirements of using pesticides in Ontario can be found in Chapter 6, Using Pesticides in Ontario. The information in Chapter 6 is up to date as of October 31, 2019. At that point in time, amendments were being proposed on the Environmental Registry of Ontario to the Pesticides Act and O.Reg. 63/09 to reduce the complexity and modernize pesticide management in Ontario while ensuring protection of human health and the environment. Please visit the Environmental Registry for further information related to the proposal, or the Ministry of Environment, Conservation and Parks' Pesticides webpage at ontario.ca/pesticides for the most up to date information on pesticide management in Ontario, including licences, permits, training and certification requirements.

GETTING CERTIFIED TO PURCHASE AND APPLY HERBICIDES

The majority of herbicides shown in this guide are from Classes 2, 3 and 4. Growers must be certified through the Grower Pesticide Safety Course in order to buy and use Class 2 and 3 pesticides on their farms. For information about how to obtain certification, call 1-800-652-8573 or visit www.opep.ca. Certification is not required to buy and use Class 4 pesticides; however, a grower needs to provide his/her Farm Business Registration Number or a signed "Farmer Self Declaration to Enable Purchase of a Class 4 Pesticide" form to the vendor when buying Class 4 pesticides.

OTHER IMPORTANT RESOURCES

If you are unable to access any of the resources below, call the Agriculture Information Contact Center 1-877-424-1300 and ask them to provide you with the information you're looking for.

APPLICATION TECHNOLOGY

Technical information on application technology is continually evolving and requires a more thorough overview than what can reasonably be provided in this guide. The online resource: www.sprayers101.com describes best practices in the safe, efficient and effective operation of agricultural sprayers.

PESTICIDE LABEL SEARCH – HEALTH CANADA

The Guide to Weed Control strives to be an abbreviation of the critical components of the pesticide label along with weed control ratings that assist with herbicide selection. This guide does not replace a product label, which is the definitive source for appropriate product use patterns. Health Canada maintains a database of all pesticide labels. To find this online tool, type the term "PMRA label search" into your search engine browser (e.g., Google).

WEED IDENTIFICATION RESOURCES

- www.weedinfo.ca
- Weed ID Guide for Ontario Crops: To download or order this field guide, type the term “Weed ID Guide for Ontario Crops” into your search engine browser.
- Problem Weed Guide for Ontario Crops: To download or order this field guide, type the term “Problem Weed Guide for Ontario Crops” into your search engine browser.

NON-CHEMICAL CONTROL METHODS

There are several resources that provide guidance on how to use mechanical (e.g., tillage) and cultural (e.g., cover crops, rotation, bio-control) methods of weed control. If you’re concerned that this information doesn’t exist in this guide, let us explain our rationale. The majority of Guide to Weed Control users have shared with us that they almost exclusively use the guide to assist with herbicide selection and making sure they have all the critical information needed to apply a herbicide safely. Non-chemical methods of weed control are extremely beneficial to use on one’s operation, but they can be complex and nuanced. It does them a disservice to abbreviate and place them into this guide, which has been done in the past, as often the information lacks an actionable specificity. Providing a thorough overview of alternative weed control solutions that would allow the reader to weight the benefits and liabilities of each method would result in a massive guide that would be impractical to use.

Growers want access to concise, accurate information related to herbicide use in the heat of the season as a way to “double check” or provide them with confidence in their decision making. That is the focus of this guide. However, to have a successful and resilient weed management plan, other methods must be used and here are some excellent resources for you to investigate:

- Steel in the Field: A Farmer’s Guide to Weed Management Tools – To find this online tool, type the term “Steel in the Field” into your search engine browser.
- Managing Cover Crops Profitably – To find this online tool, type the term “managing cover crops” into your search engine browser.
- Ontario Cover Crop Selection Tool – decision-tool.incovercrops.ca
- Weed Control section of OMAFRA Publication 811 Agronomy Guide for Field Crops. To find this online tool, type the term “Agronomy Guide OMAFRA” into your search engine browser.

TABLE 1-1

Herbicides used in Ontario horticulture crops

Mention of a brand or trade name in this table does not constitute a guarantee or warranty of the product. Always refer to the product label before using.

LEGEND: DC = dispersible concentrate	GI = gel	Sn = solution
DF = dry flowable	Gr = granular	SP = soluble powder
DG = dry granules	Li = liquid	Su = suspension (flowable)
DS = dry soluble	ME = microencapsulated suspension	WDG = water dispersible granular
EC = emulsifiable concentrate	PE = pellets	WG = wettable granules
EM = emulsion	PS = pressurized spray	WP = wettable powder
F = flowable	SC = soluble concentrate	- = not specified on label
	SG = soluble granules	

A. I. #	ACTIVE INGREDIENT (A.I.)	TRADE NAME	FORMULATION	CONCENTRATION ¹	WSSA ² GROUPS	PCP NUMBER ³	CLASS ⁴	TOXICITY RATING
1	2,4-D	2,4-D AMINE 600	Sn	564 g/L	4	5931	4	Warning
1	2,4-D	2,4-D AMINE 600, IPCO	Sn	564 g/L	4	17511	4	Warning
1	2,4-D	2,4-D AMINE 600, NUFARM	Sn	564 g/L	4	14726	4	Warning
1	2,4-D	2,4-D AMINE 600, WEEDAWAY	Sn	564 g/L	4	26163	4	Warning
2	acifluorfen	BLAZER	Sn	240 g/L	14	23315	3	Danger
3	amitrole	AMITROL 240	Li	231 g/L	11	25684	3	Caution
4	atrazine	AATREX LIQUID 480	Li	480 g/L	5	18450	3	Caution
5	bensulide	PREFAR	EM + Li	480 g/L	8	14113	4	Warning
6	bentazon	BASAGRAN	Li	480 g/L	6	12221	4	Caution
6	bentazon	BASAGRAN FORTE	Li	480 g/L	6	22006	4	Caution
6	bentazon	BROADLOOM	Li	480 g/L	6	32661	4	Caution

continued

¹ The amount of active ingredient in the unit of formulated herbicide and expressed as grams active ingredient per litre of product or the percentage of active ingredient per mass of product.

² Indicates the numeric grouping of herbicides by their site of action and by the Weed Science Society of America (WSSA): [wssa.net/wp-content/uploads/WSSA-Mechanism-of-Action.pdf](https://www.wssa.net/wp-content/uploads/WSSA-Mechanism-of-Action.pdf). Herbicide resistant weeds have historically been selected when herbicides with the same site of action are used repeatedly. Refer to Table 1-5. *Counties with Confirmed Resistant Weed Populations*, for a listing of herbicide resistant weeds in Ontario by WSSA group.

³ The product registration number for this trade name under the *Pest Control Products Act*, commonly referred to as a 'PCP number'. The PCP number has been placed in the guide for convenience, but the pesticide label in possession should always be used for the most accurate and current PCP number.

⁴ Refers to the numeric classification of pesticides under Regulation 63/09 of the Pesticides Act. Refer to: ontario.ca/page/classification-pesticides, for a description of each Ontario classification.

TABLE 1-1**Herbicides used in Ontario horticulture crops** *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	TRADE NAME	FORMULATION	CONCENTRATION ¹	WSSA ² GROUPS	PCP NUMBER ³	CLASS ⁴	TOXICITY RATING
7	bicyclopyrone, mesotrione, s-metolachlor, atrazine	ACURON	Su	bicyclopyrone (7.1 g/L) mesotrione (28.5 g/L) s-metolachlor (257 g/L) atrazine (120 g/L)	27 27 15 5	31846	4	Warning
8	bromoxynil	KORIL	EC	235 g/L	6	25341	4	Warning
9	bromoxynil	BROMOTRIL	EC	240 g/L	6	28276	4	Warning
9	bromoxynil	BROTEX 240, IPCO	EC	240 g/L	6	28519	4	Warning
9	bromoxynil	BROTEX 240, WEEDAWAY	EC	240 g/L	6	30010	4	Warning
10	bromoxynil	PARDNER	EC	280 g/L	6	18001	4	Warning
11	bromoxynil	BROMAX	EC	480 g/L	6	31431	4	Warning
11	bromoxynil	BROTEX 480, IPCO	EC	480 g/L	6	31348	4	Warning
11	bromoxynil	BROTEX 480, WEEDAWAY	EC	480 g/L	6	31429	4	Warning
12	bromoxynil/ MCPA	BUCTRIL M	EC	(1:1) 560 g/L	6, 4	18022	4	Warning
13	carfentrazone-ethyl	AIM EC	EC	240 g/L	14	28573	3	Caution
14	chlorthal dimethyl	DACTHAL W-75	WP	75%	3	8963	4	Warning
15	clethodim	ARROW	EC	240 g/L	1	28224	3	Caution
15	clethodim	CENTURION	EC	240 g/L	1	27598	3	Caution
15	clethodim	SELECT	EC	240 g/L	1	22625	3	Caution
16	clomazone	COMMAND 360 ME	ME	360 g/L	13	27827	3	Caution
17	clopyralid	LONTREL 360	Sn	360 g/L	4	23545	3	Caution
17	clopyralid	LONTREL XC	Sn	600 g/L	4	32795	3	Caution
18	dazomet	BASAMID	Gr	97%	27	15032	3	Danger
19	desmedipham/ phenmedipham	BETAMIX B	EC	(1:1) 153 g/L	5	28650	4	Warning
20	dichlobenil	CASORON G-4	Gr	4%	20	12533	4	Low Toxicity
21	dimethenamid-P	FRONTIER MAX	EC	720 g/L	15	29194	3	Warning
22	dimethenamid-P	OUTLOOK	EC	720 g/L	15	30947	3	Warning

continued

TABLE 1-1

Herbicides used in Ontario horticulture crops *continued*

LEGEND: DC = dispersible concentrate	GI = gel	Sn = solution
DF = dry flowable	Gr = granular	SP = soluble powder
DG = dry granules	Li = liquid	Su = suspension (flowable)
DS = dry soluble	ME = microencapsulated suspension	WDG = water dispersible granular
EC = emulsifiable concentrate	PE = pellets	WG = wettable granules
EM = emulsion	PS = pressurized spray	WP = wettable powder
F = flowable	SC = soluble concentrate	- = not specified on label
	SG = soluble granules	

A. I. #	ACTIVE INGREDIENT (A.I.)	TRADE NAME	FORMULATION	CONCENTRATION ¹	WSSA ² GROUPS	PCP NUMBER ³	CLASS ⁴	TOXICITY RATING
23	dimethenamid-P, topramezone	ARMEZON PRO	EC	630 g/L, 12.5 g/L	15, 27	32148	3	Caution
24	diquat	REGLONE DESSICANT	Li	240 g/L	22	26396	4	Warning
25	diuron	DIUREX 80WDG	WG	80%	7	28107	3	Warning
25	diuron	KARMEX	DF	80%	7	28543	3	Warning
26	EPTC	EPTAM	EC	800 g/L	8	11284	5	Caution
27	ethametsulfuron-methyl	MUSTER	DF	75%	2	23569	3	Warning
28	ethofumesate	NORTRON SC	Su	480 g/L	16	17293	3	Low Toxicity
29	flazasulfuron	CHIKARA / WG	WG	25%	2	33130	3	Warning
29	flazasulfuron	KATANA / WG	WG	25%	2	33129	3	Warning
30	fluazifop-p-butyl	VENTURE L	EC	125 g/L	1	21209	2	Caution
31	flumioxazin	CHATEAU	WDG	51.1%	14	29231	4	Caution
32	flumioxazin	SUREGUARD	WDG	51.1%	14	29236	4	Caution
33	fomesafen	REFLEX	Sn	240 g/L	14	24779	3	Low Toxicity
34	glufosinate ammonium	IGNITE	Sn	150 g/L	10	28532	4	Caution
35	glyphosate	GLYFOS	SC	360 g/L	9	24359	4	Caution
35	glyphosate	CREDIT 45	Sn	450 g/L	9	29124	4	Caution
35	glyphosate	MATRIX	Sn	480 g/L	9	29775	4	Caution

continued

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² Indicates the numeric grouping of herbicides by their site of action and by the Weed Science Society of America (WSSA): [wssa.net/wp-content/uploads/WSSA-Mechanism-of-Action.pdf](https://www.wssa.net/wp-content/uploads/WSSA-Mechanism-of-Action.pdf). Herbicide resistant weeds have historically been selected when herbicides with the same site of action are used repeatedly. Refer to Table 1-5. *Counties with Confirmed Resistant Weed Populations*, for a listing of herbicide resistant weeds in Ontario by WSSA group.

³ The product registration number for this trade name under the *Pest Control Products Act*, commonly referred to as a 'PCP number'. The PCP number has been placed in the guide for convenience, but the pesticide label in possession should always be used for the most accurate and current PCP number.

⁴ Refers to the numeric classification of pesticides under Regulation 63/09 of the Pesticides Act. Refer to: [ontario.ca/page/classification-pesticides](https://www.ontario.ca/page/classification-pesticides), for a description of each Ontario classification.

TABLE 1-1
Herbicides used in Ontario horticulture crops *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	TRADE NAME	FORMULATION	CONCENTRATION ¹	WSSA ² GROUPS	PCP NUMBER ³	CLASS ⁴	TOXICITY RATING
35	glyphosate	VP480	Sn	480 g/L	9	28840	4	Caution
35	glyphosate	CREDIT XTREME	Sn	540 g/L	9	29888	4	Caution
35	glyphosate	POLARIS MAX	Sn	540 g/L	9	32504	4	Caution
35	glyphosate	FACTOR 540	Li	540 g/L	9	27988	4	Caution
35	glyphosate	ROUNDUP TRANSORB HC	Li	540 g/L	9	28198	4	Caution
35	glyphosate	ROUNDUP WEATHERMAX	Li	540 g/L	9	27487	4	Caution
36	halosulfuron	SANDEA	WG	72.6%	2	31209	3	Caution
37	imazethapyr	PURSUIT	Sn	240 g/L	2	23844	2	Low Toxicity
37	imazethapyr	PHANTOM	Sn	240 g/L	2	30017	2	Low Toxicity
37	imazethapyr	NU-IMAGE	Sn	240 g/L	2	30420	2	Low Toxicity
38	indaziflam	ALION 200 SC	SC	200 g/L	29	30221	3	Low Toxicity
38	indaziflam	SPECTICLE FLO	Su	75 g/L	29	32803	3	Low Toxicity
38	indaziflam	SPECTICLE G	Gr	0.0024%	29	32804	3	Low Toxicity
39	isoxaben	GALLERY	DF	75%	21	24110	3	Caution
40	linuron	LOROX L	Li Su	480 g/L	7	16279	4	Low Toxicity
41	MCPA	MCPA AMINE 500	Sn	500 g/L	4	9516	4	Caution
41	MCPA	MCPA AMINE 500, IPCO	Sn	500 g/L	4	20308	4	Warning
41	MCPA	MCPA AMINE 500, NUFARM	Sn	500 g/L	4	14730	4	Warning
41	MCPA	MCPA AMINE 500, WEEDAWAY	Sn	500 g/L	4	21934	4	Warning
42	MCPA	MCPA AMINE 600, IPCO	Sn	600 g/L	4	31327	3	Warning
42	MCPA	MCPA AMINE 600, LOVELAND	Sn	600 g/L	4	31427	3	Warning
42	MCPA	MCPA AMINE 600, NUFARM	Sn	600 g/L	4	28384	3	Warning
42	MCPA	MCPA AMINE 600, WEEDAWAY	Sn	600 g/L	4	31430	3	Warning

continued

TABLE 1-1**Herbicides used in Ontario horticulture crops** *continued*

LEGEND: DC = dispersible concentrate	GI = gel	Sn = solution
DF = dry flowable	Gr = granular	SP = soluble powder
DG = dry granules	Li = liquid	Su = suspension (flowable)
DS = dry soluble	ME = microencapsulated suspension	WDG = water dispersable granular
EC = emulsifiable concentrate	PE = pellets	WG = wettable granules
EM = emulsion	PS = pressurized spray	WP = wettable powder
F = flowable	SC = soluble concentrate	- = not specified on label
	SG = soluble granules	

A. I. #	ACTIVE INGREDIENT (A.I.)	TRADE NAME	FORMULATION	CONCENTRATION ¹	WSSA ² GROUPS	PCP NUMBER ³	CLASS ⁴	TOXICITY RATING
43	MCPA	MCPA SODIUM 300	Sn	300 g/L	4	9858	4	Caution
43	MCPA	MCPA SODIUM 300, NUFARM	Sn	300 g/L	4	14718	4	Caution
44	MCPB/MCPA	CLOVITOX PLUS, IPCO	Li	400 g/L	4	24336	4	Danger
44	MCPB/MCPA	CLOVITOX PLUS, WEEDAWAY	Li	400 g/L	4	26488	4	Danger
44	MCPB/MCPA	TOPSIDE	Li	400 g/L	4	22003	4	Warning
44	MCPB/MCPA	TROPOTOX PLUS	Li	400 g/L	4	8211	4	Warning
45	mesotrione	CALLISTO	SC	480 g/L	27	27833	3	Low Toxicity
46	metam sodium	VAPAM HL	Li	380 g/L	27	29128	4	Caution
47	metribuzin	LEXONE DF	DF	75%	5	15959	3	Low Toxicity
47	metribuzin	SENCOR 75 DF	WDG	75%	5	17242	3	Low Toxicity
47	metribuzin	SQUADRON	WDG	75%	5	32081	3	Low Toxicity
47	metribuzin	TRICOR 75	DF	75%	5	30661	3	Low Toxicity
48	metribuzin	SENCOR 480 F	F	480 F	5	26280	3	Low Toxicity
49	napropamide	DEVRIKOL DF-X	DF	50 DF	15	31081	4	Low Toxicity
50	nicosulfuron	ACCENT 75 DF	DF	75%	2	25116	3	Low Toxicity
51	oxadiazon	RONSTAR 2G	Gr	2%	14	23600	3	Caution

continued

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³ The product registration number for this trade name under the *Pest Control Products Act*, commonly referred to as a 'PCP number'. The PCP number has been placed in the guide for convenience, but the pesticide label in possession should always be used for the most accurate and current PCP number.

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TABLE 1-1
Herbicides used in Ontario horticulture crops

A. I. #	ACTIVE INGREDIENT (A.I.)	TRADE NAME	FORMULATION	CONCENTRATION ¹	WSSA ² GROUPS	PCP NUMBER ³	CLASS ⁴	TOXICITY RATING
52	oxyfluorfen	GOAL 2XL	EC	240 g/L	14	24913	2	Danger
53	pendimethalin	PROWL H2O	ME	455 g/L	3	29542	2	Low Toxicity
54	prometryne	GESAGARD 480 SC	SC	480 g/L	5	24771	3	Caution
55	propyzamide	KERB SC	SC	400 g/L	15	30264	3	Caution
56	pyrazon	PYRAMIN FL	Su	430 g/L	5	15857	4	Caution
57	pyroxasulfone	PYROXASULFONE 85 WG	WG	85%	15	30572	2	Low Toxicity
58	quizalofop-p-ethyl	ASSURE II	EC	96 g/L	1	25462	3	Low Toxicity
58	quizalofop-p-ethyl	YUMA GL	EC	96 g/L	1	30100	3	Low Toxicity
59	rimsulfuron	PRISM SG	SG	25%	2	30057	3	Low Toxicity
60	saflufenacil	ERAGON	SG	70%	14	29372	4	Warning
61	saflufenacil	ERAGON LQ	Su	342 g/L	14	31469	3	Warning
62	sethoxydim	POAST ULTRA	EC	450 g/L	1	24835	4	Warning
63	simazine	PRINCEP NINE-T	WG	90%	5	16370	3	Low Toxicity
64	simazine	SIMAZINE 480	Su	480 g/L	5	23181	3	Low Toxicity
65	simazine	SIMADIX	Su	500 g/L	5	15902	3	Low Toxicity
66	s-metolachlor	DUAL II MAGNUM	EC	915 g/L	15	25729	3	Low Toxicity
67	s-metolachlor/ atrazine	PRIMEXTRA II MAGNUM	SC	720 g/L (400/320)	15, 5	29538	3	Low Toxicity
68	s-metolachlor/ atrazine/ mesotrione	LUMAX EZ	Su	298 g/L + 112 g/L + 29.8 g/L	15, 5, 27	30864	3	Low Toxicity
69	sulfentrazone	AUTHORITY 480	Su	480 g/L	14	29012	3	Low Toxicity
70	terbacil	SINBAR WDG	WDG	80%	5	30082	2	Warning
71	thifensulfuron- methyl	PINNACLE SG TOSS-N-GO	SG	50%	2	30741	4	Low Toxicity
72	topramezone	ARMEZON	SC	336 g/L	27	30131	3	Low Toxicity
72	topramezone	IMPACT	SC	336 g/L	27	28141	3	Low Toxicity
73	trifluralin	BONANZA 480	Li	480 g/L	3	28289	4	Warning
73	trifluralin	TREFLAN EC	EC	480 g/L	3	23933	4	Warning
74	trifluralin	RIVAL	EC	500 g/L	3	18612	4	Warning
75	triflurosulfuron- methyl	UPBEET	DF	50%	2	25813	3	Low Toxicity

TABLE 1-2

Notes on herbicides used in Ontario horticulture crops sorted by active ingredient

NOTE: The manufacturer name is valid at the date of publication, please see the product label for updates.

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
1	2,4-D	564 g a.e./L	liquid	4
<p>Horticulture crop registrations: asparagus, highbush blueberries, cranberries, raspberries, strawberries, bearing fruit trees including: apple, pear, peach, plum, apricot and cherries, potato (preharvest)</p> <p>Storage information: Store at temperatures above 0°C.</p> <p>Notes about control: Controls susceptible annual and perennial broadleaf weeds when emerged. This herbicide does not control weed species prior to their emergence.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
2,4 - D AMINE 600	5931	4	12 hr	LOVELAND PRODUCTS CANADA INC.
2,4 - D AMINE 600, IPCO	17511	4	12 hr	INTERPROVINCIAL CO-OP LTD.
2,4 - D AMINE 600, NUFARM	14726	4	12 hr	NUFARM AGRICULTURE INC.
2,4 - D AMINE 600, WEEDAWAY	26163	4	12 hr	INTERPROVINCIAL CO-OP LTD.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
2	acifluorfen	240 g/L	solution	14
<p>Horticulture crop registrations: strawberries, sweet corn</p> <p>Storage information: Store at temperatures above 0°C.</p> <p>Notes about control: Controls susceptible annual broadleaf weeds when emerged and at the very small seedling stage (< 6-leaf). Will provide top growth control of some perennial weeds. This herbicide does not control weed species prior to their emergence.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ULTRA BLAZER	32330	3	12 hr	UNITED PHOSPHORUS INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
3	amitrole	240 g/L	liquid	11
<p>Horticulture crop registrations: spruce bareroot nursery stock</p> <p>Storage information: Store in a cool, dry, well ventilated space away from seed, fertilizer and other pesticides.</p> <p>Notes about control: Controls many annual broadleaf weeds and grasses. Most crops are sensitive if contacted.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
AMITROL 240	25684	3	12 hr	NUFARM AGRICULTURE INC.

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
4	atrazine	480 g/L	liquid	5
Horticulture crop registrations: sweet corn Storage information: Does not need to be stored in a heated building, but it is preferred. Notes about control: Controls susceptible broadleaf weeds and wild oats before or after they emerge.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
AATREX LIQUID 480	18450	3	12 hr	SYNGENTA CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
5	bensulide	480 g/L	emulsifiable concentrate	8
Horticulture crop registrations: cucumbers Storage information: Store above 7°C. DO NOT FREEZE. Notes about control: Controls susceptible grass weeds prior to emergence. This herbicide does not control grass weeds that have emerged.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PREFAR 4.8-E HERBICIDE	14113	4	12 hr	GOWAN COMPANY L.L.C.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
6	bentazon	480 g/L	liquid	6
Horticulture crop registrations: 12221: highbush blueberries, newly planted fruit trees—apple, apricot, cherry, peach, pear, nectarine, peas, snow peas and sweet corn (directed use only); 22006: peas and sweet corn Storage information: Does not need to be stored in a heated building, but it is preferred. Notes about control: Controls susceptible broadleaf weeds when they are emerged, small and actively growing. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
BASAGRAN	12221	4	12 hr	BASF CANADA INC.
BASAGRAN FORTE	22006	4	12 hr	BASF CANADA INC.
BROADLOOM	32661	4	12hr	UNITED PHOSPHORUS INC

continued

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
7	bicyclopyrone	7.1 g/L	suspension	27
	mesotrione	28.5 g/L		27
	s-metolachlor	257 g/L		15
	atrazine	120 g/L		5
Horticulture crop registrations: sweet corn				
Storage information: Avoid storing ACURON Herbicide below -7°C.				
Notes about control: Controls susceptible broadleaf weeds before or after they emerge. Susceptible grassy weeds are best controlled prior to emergence but most species are susceptible up to the 2-leaf stage.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ACURON HERBICIDE	31846	3	12 hr	SYNGENTA CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
8	bromoxynil	235 g/L	emulsifiable concentrate	6
Horticulture crop registrations: dry bulb onions, garlic, sweet corn				
Storage information: Store above 7°C. DO NOT FREEZE.				
Notes about control: Controls susceptible broadleaf weeds when they are emerged, small and actively growing. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
KORIL 235	25341	4	24 hr	NUFARM AGRICULTURE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
9	bromoxynil	240 g/L	emulsifiable concentrate	6
Horticulture crop registrations: dry bulb onions, garlic, sweet corn				
Storage information: Store above 7°C. DO NOT FREEZE.				
Notes about control: Controls susceptible broadleaf weeds when they are emerged, small and actively growing. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
BROMOTRIL 240 EC	28276	4	24 hr	ADAMA AGRICULTURAL SOLUTIONS CANADA LTD.
BROTEX 240, IPCO	28519	4	24 hr	INTERPROVINCIAL CO-OP LTD.
BROTEX 240, WEEDAWAY	30010	4	24 hr	INTERPROVINCIAL CO-OP LTD.

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
10	bromoxynil	280 g/L	emulsifiable concentrate	6
Horticulture crop registrations: dry bulb onions, garlic, sweet corn				
Storage information: Store above 7°C. DO NOT FREEZE.				
Notes about control: Controls susceptible broadleaf weeds when they are emerged, small and actively growing. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PARDNER	18001	4	24 hr	BAYER CROPSCIENCE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
11	bromoxynil	480 g/L	emulsifiable concentrate	6
Horticulture crop registrations: dry bulb onions, garlic, sweet corn				
Storage information: Store above 7°C. DO NOT FREEZE.				
Notes about control: Controls susceptible broadleaf weeds when they are emerged, small and actively growing. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
BROMAX	31431	4	24 hr	LOVELAND PRODUCTS CANADA INC.
BROTEX 480, IPCO	31348	4	24 hr	INTERPROVINCIAL CO-OP LTD.
BROTEX 480, WEEDAWAY	31429	4	24 hr	INTERPROVINCIAL CO-OP LTD.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
12	bromoxynil MCPA	280 g/L 280 g/L	emulsifiable concentrate	6 4
Horticulture crop registrations: sweet corn				
Storage information: Does not need to be stored in a heated building, but it is preferred.				
Notes about control: Controls susceptible broadleaf weeds when they are emerged, small and actively growing. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
BUCTRIL M	18022	3	24 hr	BAYER CROPSCIENCE INC.

continued

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
13	carfentrazone-ethyl	280 g/L	emulsifiable concentrate	14
<p>Horticulture crop registrations: Registered on most horticulture crops as a hooded sprayer application (see label for a complete list). Registered for sucker control in hops, caneberries, tree fruit, tree nuts, grapes and field grown woody ornamentals.</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls susceptible broadleaf weeds when they are emerged, small and actively growing. This herbicide does not control weed species prior to their emergence.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
AIM EC	28573	3	12 hr	FMC CORPORATION
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
14	chlorthal dimethyl	75%	wettable powder	3
<p>Horticulture crop registrations: broccoli, brussels sprouts, cabbage, cauliflower, cucumbers, eggplant, flower gardens, garlic, nursery stock, ornamental plantings, onions, peppers, seeded melons (cantaloupe, watermelon), strawberries, sweet potatoes, squash (summer and winter), tomatoes</p> <p>Storage information: Store at any temperature.</p> <p>Notes about control: Must be applied prior to weed seed germination. Depending on the crop, may be applied preplant incorporated, pre-emergence, post-emergence or post transplant to the crop.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
DACTHAL W-75	8963	3	12 hr	AMVAC CHEMICAL CORPORATION
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
15	clethodim	240 g/L	emulsifiable concentrate	2
<p>Horticulture crop registrations: carrot, certain herbs and spices, cherry, coriander, cranberry, dill, dry bulb onions, fenugreek, garlic, highbush blueberries, hops, parsnips, peas, potatoes, radish, red beets, shallots, snow peas, spinach</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Clethodim will control susceptible grassy weeds when they are emerged. An adjuvant must be mixed with this active ingredient in order to achieve acceptable control.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SELECT	22625	3	12 hr	ARYSTA LIFESCIENCE NORTH AMERICA, LLC
ARROW 240 EC	28224	3	12 hr	ADAMA AGRICULTURAL SOLUTIONS CANADA LTD.
CENTURION	27598	3	12 hr	BASF CANADA INC.

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
16	clomazone	240 g/L	microencapsulated suspension	13
<p>Horticulture crop registrations: asparagus, cilantro, field cucumbers, melons, peppers, processing pumpkins, sweet potatoes, squash</p> <p>Storage information: Store above 5°C to keep product from freezing.</p> <p>Notes about control: Controls susceptible broadleaf and grassy weeds prior to their emergence. Susceptible weeds may emerge from the soil but are devoid of pigmentation and plant death occurs in a short period of time. Any off-target movement will cause bleaching on susceptible plants.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
COMMAND 360 ME	27827	3	12 hr	ARYSTA LIFESCIENCE NORTH AMERICA, LLC
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
17	clopyralid	360 g/L	liquid	4
<p>Horticulture crop registrations: apples, balsam fir Christmas tree plantations, cranberry, cole crops, highbush blueberries, pears, poplar species and their hybrids, rutabaga, shelterbelts, spinach, strawberry, sugar beet, turnip</p> <p>Storage information: Store in a heated building.</p> <p>Notes about control: Clopyralid will control susceptible broadleaf weeds when they are emerged.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
LONTREL 360	23545	3	12 hr	CORTEVA AGRISCIENCE (DOW AGRISCIENCES)
LONTREL XC	32795	3	12 hr	CORTEVA AGRISCIENCE (DOW AGRISCIENCES)
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
18	dazomet	97%	granular	27
<p>Horticulture crop registrations: field seedbeds for conifer and deciduous nurseries, flowers, forest nurseries, ornamentals, vegetables</p> <p>Storage information: Store in cool, dry, well ventilated area without a floor drain.</p> <p>Notes about control: For the control of soil-borne nematodes, soil fungi and germinating weed seeds. It is suitable for the fumigation of open land and all kinds of seedbeds for nurseries and greenhouses.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
BASAMID	15032	3	see label	FMC CORPORATION

continued

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
19	desmedipham/phenmedipham	153/153 g a.e./L	emulsifiable concentrate	5
Horticulture crop registrations: newly planted June bearing strawberries, red beets, sugar beet				
Storage information: Store above 0°C.				
Notes about control: Desmedipham/phenmedipham is a selective post-emergent herbicide.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
BETAMIX B	28650	2	24 hr	BAYER CROPS SCIENCE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
20	dichlobenil	4%	granular	20
Horticulture crop registrations: container nursery stock, established woody ornamentals, nurseries, shelterbelts, hedgerows, windbreaks, poplar plantations, fruit trees and fruit tree nurseries, highbush blueberries, grapes, raspberries, saskatoons				
Storage information: Do not store in direct sunlight. Do not store above 35°C or below 0°C.				
Notes about control: Dichlobenil controls broad leaved and grassy weeds at weed germination and weed growth initiation.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
CASORON G-4	12533	4	12 hr	ARYSTA LIFESCIENCE CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
21	dimethenamid-p	720 g/L	emulsifiable concentrate	15
Horticulture crop registrations: commercial ornamental production, grapes, onions (dry bulb and green), potatoes, sweet corn, transplanted cabbage				
Storage information: Store above 5°C.				
Notes about control: Susceptible grassy weeds are best controlled prior to emergence but most species are susceptible up to the 2-leaf stage.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
FRONTIER MAX	29194	3	24 hr	BASF CANADA INC.

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
22	dimethenamid-p	720 g/L	emulsifiable concentrate	15
Horticulture crop registrations: potato Storage information: Store above 5°C. Notes about control: Susceptible grassy weeds are best controlled prior to emergence but most species are susceptible up to the 2-leaf stage.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
OUTLOOK	30947	3	24 hr	BASF CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
23	dimethenamid-p topramezone	630 g/L 12.5 g/L	emulsifiable concentrate	15 27
Horticulture crop registrations: sweet corn Storage information: Does not need to be stored in a heated building, but it is preferred. Notes about control: Controls emerged susceptible broadleaf weeds. Susceptible grassy weeds are best controlled prior to emergence but most species are susceptible up to the 2-leaf stage.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ARMEZON PRO	32148	3	24 hr	BASF CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
24	diquat	240 g/L	liquid	22
Horticulture crop registrations: apple , potato desiccation and inter-row directed weeding in vegetables Storage information: Store above 0°C. Notes about control: For potato desiccation prior to harvest, inter-row directed weeding in vegetables and perennial grass suppression under apple trees. There is no residual effect. Efficacy varies with weed species and weed size, repeat applications may be necessary.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
REGLONE DESICCANT	26396	4	24 hr	SYNGENTA CANADA INC.

continued

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
25	diuron	80%	dry flowable/ wetable granules	7
Horticulture crop registrations: asparagus, grapes				
Storage information: Store away from other pesticides, fertilizer, food or feed.				
Notes about control: An effective soil applied herbicide for the control of many annual and perennial broad leaved and grassy weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
KARMEK DF	28543	3	12 hr	ADAMA AGRICULTURAL SOLUTIONS CANADA LTD.
DIUREX 80 WDG	28107	3	12 hr	ADAMA AGRICULTURAL SOLUTIONS CANADA LTD.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
26	EPTC	800 g/L	emulsifiable concentrate	8
Horticulture crop registrations: rutabagas, sugar beet				
Storage information: Can be stored at temperatures as low as - 45°C.				
Notes about control: Controls susceptible broadleaf and grassy weeds before they emerge.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
EPTAM LIQUID EC	11284	4	24 hr	GOWAN COMPANY L.L.C.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
27	ethametsulfuron-methyl	75%	dry flowable	2
Horticulture crop registrations: rutabaga				
Storage information: Does not need to be stored in a heated building, but it is preferred.				
Notes about control: Controls susceptible broadleaf weeds after they emerge.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
MUSTER	23569	4	12 hr	FMC CORPORATION

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
28	ethofumesate	480 g/L	suspension	16
Horticulture crop registrations: sugar beet Storage information: Store in a cool place above 0°C. Notes about control: Selective soil applied herbicide that controls certain broad-leaved and grassy weeds with up to 10 weeks of control.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
NORTRON	17293	3	12 hr	BAYER CROPSCIENCE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
29	flazasulfuron	25%	wettable granules	2
Horticulture crop registrations: conifer trees field and container grown (ornamental, Christmas trees), grapes Storage information: Store in a cool, dry, secure and well ventilated area. Notes about control: for pre-emergence and post-emergence control of grassy and broadleaf weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
CHIKARA 25WG	33130	3	12 hr	ISK BIOSCIENCES CORPORATION
KATANA 25WG	33129	3	12 hr	ISK BIOSCIENCES CORPORATION
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
30	fluazifop-p-butyl	125 g/L	emulsifiable concentrate	1
Horticulture crop registrations: asparagus, blackberry, carrots, cole crops, cranberry, cucumber, fruit trees, highbush blueberry, garlic, onion, green onion, pearl onion, shallots, lettuce (leaf and head) ornamentals (plants, shrubs, trees, forest, ornamental nurseries), pea, potato, raspberry, rhubarb, rutabaga, strawberry, sugar beet, tomato Storage information: Does not need to be stored in a heated building, but it is preferred. Notes about control: Controls emerged susceptible broadleaf weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
VENTURE L	21209	2	12 hr	SYNGENTA CANADA INC.

continued

TABLE 1-2

Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
31	flumioxazin	51.1%	water dispersible granules	14
<p>Horticulture crop registrations: asparagus, broccoli, crop subgroup 13-07A: caneberry, dry bulb onion, established mint (peppermint and spearmint), garlic, highbush blueberry, field pepper, grape, nut trees (including almond, beech nut, bur oak, butternut, cashew, chestnut, chinquapin, filbert [hazelnut], ginko, heart nut, hickory nut, Japanese horse-chestnut, monkey puzzle, pecan, pine nuts, walnut [black and English], yellowhorn, cultivars and varieties and/or hybrids of these, pome fruit (apple and pear), strawberry, stone fruit (peach, cherry, nectarine, plum, and apricot), sweet potato</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls susceptible grass and broadleaf weeds before they emerge.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
CHATEAU	29231	4	12 hr	VALENT CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
32	flumioxazin	51.1%	water dispersible granules	14
<p>Horticulture crop registrations: field-grown ornamental deciduous and coniferous trees including Christmas trees and trees produced for reforestation, poplar, willow and aspen produced for short-rotation-intensive-culture, and to maintain bare ground non-crop areas in and around ornamental nurseries</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls susceptible grass and broadleaf weeds before they emerge.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SUREGUARD	29236	4	12 hr	VALENT CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
33	fomesafen	240 g/L	liquid	14
<p>Horticulture crop registrations: cucumber, pea, potato, snap bean, strawberry</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls both emerged and un-emerged susceptible broadleaf weeds. A non-ionic adjuvant (Agral 90) must be added to Reflex in order to achieve control.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
REFLEX	24779	3	12 hr	SYNGENTA CANADA INC.

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP	
34	glufosinate ammonium	150 g/L	liquid	2	
<p>Horticulture crop registrations: directed applications in apple, apricot, highbush blueberry, grape, nectarine, peach, pear, plum, raspberry, sweet and sour cherry and tree nuts. Stale seedbed technique in asparagus, carrot, lettuce and onion. Ground crack application in potato.</p> <p>Storage information: Do not store at temperatures at or below 0°C.</p> <p>Notes about control: Will uniformly dry down crops and weeds, facilitating harvest and preventing bean staining. Speed of action is reduced at cool temperatures (below 10°C), poor moisture and low humidity.</p>					
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER	
IGNITE SN	28532	4	12 hr	BASF CANADA INC.	
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP	
35	glyphosate	360, 450, 480, 540 g/L	liquid, solution	9	
<p>Horticulture crop registrations: Preplant or postharvest with no cropping restrictions. Directed applications in apple, cherry, ginseng, grape, peach, pear, plum, strawberry (as wiper or spot treatment), tree nuts, woody nursery stock, shelterbelts, forest tree plantings and nurseries. Can be applied postemergence to glyphosate tolerant sugar beet cultivars.</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls emerged susceptible broadleaf and grassy weeds.</p>					
HERBICIDE BRAND(S)	PCP #	CONCENTRATION	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
GLYFOS ¹	24359	360 g/L	4	12 hr	FMC CORPORATION
CREDIT 45 ¹	29124	450 g/L	4	12 hr	NUFARM AGRICULTURE INC.
MATRIX ¹	29775	480 g/L	4	12 hr	INTERPROVINCIAL CO-OP LTD.
VP480 ¹	28840	480 g/L	4	12 hr	CORTEVA AGRISCIENCE (DOW AGRISCIENCES)
CREDIT XTREME ¹	29888	540 g/L	4	12 hr	NUFARM AGRICULTURE INC.
POLARIS MAX	32504	540 g/L	4	12 hr	CORTEVA AGRISCIENCE (PRODUCTION AGRISCIENCE\DUPONT CANADA)
FACTOR 540, IPCO	27988	540 g/L	4	12 hr	INTERPROVINCIAL CO-OP LTD.
ROUNDUP TRANSORB HC	28198	540 g/L	4	12 hr	MONSANTO CANADA ULC
ROUNDUP WEATHERMAX	27487	540 g/L	4	12 hr	MONSANTO CANADA ULC
¹ Not labelled for use on Roundup Ready sugar beet.					

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
36	halosulfuron	72.6%	liquid	2
Horticulture crop registrations: apple, asparagus, cucumber, eggplant, ground cherry, melon, okra, pepper, pumpkin, snap bean, squash, tomato, tomatillo, tree nuts				
Storage information: Does not need to be stored in a heated building, but it is preferred.				
Notes about control: Controls susceptible broadleaf and grassy weeds before and after they have emerged. In other words, this herbicide provides both contact and residual weed control.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SANDEA WG	31209	3	12 hr	CANYON GROUP L.L.C.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
37	imazethapyr	240 g/L	solution	2
Horticulture crop registrations: processing peas, snap beans, snow peas				
Storage information: Do not store at temperatures at or below 0°C.				
Notes about control: With early pre-plant and pre-emergent treatments, susceptible weeds emerge, are present as stunted plants and then die. When applied post-emergence, absorption may occur through both the roots and foliage. Susceptible weeds stop growing and eventually die.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PURSUIT	21537	2	12 hr	BASF CANADA INC.
PHANTOM	30017	2	12 hr	ADAMA AGRICULTURAL SOLUTIONS CANADA LTD.
NU-IMAGE	30420	2	12 hr	NUFARM AGRICULTURE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
38	indaziflam	200 g/L	soluble concentrate	29
Horticulture crop registrations: bushberries (highbush blueberries, currants, gooseberries, elderberries, Saskatoon berries, lingonberry, sea buckthorn), caneberries (blackberries, raspberries, loganberries) grapes, hops, pome fruit, stone fruit, tree nuts				
Storage information: Do not store at temperatures at or below 0°C.				
Notes about control: Selective pre-emergence herbicide for control of many annual grasses and broadleaf weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ALION 200 SC	30451	3	12 hr	BAYER CROPS SCIENCE INC.

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
38	Indaziflam	75%	solution	29
Horticulture crop registrations: field grown ornamentals (see the label for a list of species and their cultivars)				
Storage information: do not store at temperatures at or below 0°C.				
Notes about control: selective pre-emergence herbicide for control of many annual grasses and broadleaf weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SPECTICLE FLO	32803	3	12 hr	BAYER CROPSCIENCE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
38	Indaziflam	0.0024%	granular	29
Horticulture crop registrations: container grown ornamentals (see the label for a list of species and their cultivars)				
Storage information: do not store at temperatures at or below 0°C.				
Notes about control: selective pre-emergence herbicide for control of many annual grasses and broadleaf weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SPECTICLE G	32804	3	12 hr	BAYER CROPSCIENCE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
39	isoxaben	75%	dry flowable	21
Horticulture crop registrations: conifer bareroot and container nursery stock for listed trees, shrubs and groundcovers grown for silviculture purposes, and containerized ornamentals grown in nurseries				
Storage information: Do not store in direct sunlight. Do not store at temperatures above 45°C.				
Notes about control: A selective pre-emergent herbicide for certain broadleaved weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
GALLERY	24110	3	12 hr	CORTEVA AGRISCIENCE (DOW AGRISCIENCES)

continued

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP	
40	linuron	480 g/L	liquid suspension	6	
Horticulture crop registrations: PRE: asparagus, carrot, dill, parsnip and sweet corn; POST: carrot, celery, coriander, dill, fruit trees (apple, cherry, peach, pear, plum), parsnip, saskatoon berry, shelterbelts					
Storage information: Do not store at temperatures at or below 0°C.					
Notes about control: When activated by rainfall susceptible grassy and broadleaf weed seedlings that have germinated will be controlled.					
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER	
LOROX L	16279	2	12 hr	TESSENDERLO KERLEY INC.	
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP	
41	MCPA	500 g a.e./L	liquid	4	
Horticulture crop registrations: asparagus, peas, sweet corn					
Storage information: Store at temperatures above 0°C.					
Notes about control: Controls susceptible annual and perennial broadleaf weeds when emerged. This herbicide does not control weed species prior to their emergence.					
HERBICIDE BRAND(S)	PCP #	CONCENTRATION	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
MCPA AMINE 500	9516	360 g/L	4	12 hr	LOVELAND PRODUCTS CANADA INC.
MCPA AMINE 500, IPCO	20308	450 g/L	4	12 hr	INTERPROVINCIAL CO-OP LTD.
MCPA AMINE 500, NUFARM	14730	480 g/L	4	12 hr	NUFARM AGRICULTURE INC.
MCPA AMINE 500, WEEDAWAY	21934	480 g/L	4	12 hr	INTERPROVINCIAL CO-OP LTD.

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
42	MCPA	600 g a.e./L	liquid	4
Horticulture crop registrations: peas, sweet corn Storage information: Store at temperatures above 0°C. Notes about control: Controls susceptible annual and perennial broadleaf weeds when emerged. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
MCPA AMINE 600	31432	3	12 hr	LOVELAND PRODUCTS CANADA INC.
MCPA AMINE 600, IPCO	31327	3	12 hr	INTERPROVINCIAL CO-OP LTD.
MCPA AMINE 600, NUFARM	28384	3	12 hr	NUFARM AGRICULTURE INC.
MCPA AMINE 600, WEEDAWAY	31430	3	12 hr	INTERPROVINCIAL CO-OP LTD.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
43	MCPA	300 g a.e./L	emulsifiable concentrate	4
Horticulture crop registrations: peas, sweet corn Storage information: Do not store at temperatures at or below 0°C. Notes about control: Controls susceptible annual and perennial broadleaf weeds when emerged. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
MCPA SODIUM 300	9858	4	12 hr	LOVELAND PRODUCTS CANADA INC.
MCPA SODIUM 300 NUFARM	14718	4	12 hr	NUFARM AGRICULTURE INC.

continued

TABLE 1-2

Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
44	MCPB MCPA	375 g a.e./L 25 g a.e./L	liquid	4 4
Horticulture crop registrations: peas				
Storage information: Do not store at temperatures at or below 0°C.				
Notes about control: Controls susceptible annual and perennial broadleaf weeds when emerged. This herbicide does not control weed species prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
TROPOTOX PLUS 400	8211	4	12 hr	NUFARM AGRICULTURE INC.
TOPSIDE	22003	4	12 hr	LOVELAND PRODUCTS CANADA INC.
CLOVITOX PLUS, IPCO	24336	4	12 hr	INTERPROVINCIAL CO-OP LTD.
CLOVITOX PLUS, WEEDAWAY	26488	4	12 hr	INTERPROVINCIAL CO-OP LTD.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
45	mesotrione	480 g/L	suspension	27
Horticulture crop registrations: PRE: asparagus, cranberry, highbush blueberry, rhubarb, sweet corn				
Storage information: Does not need to be stored in a heated building, but it is preferred.				
Notes about control: Has residual soil activity that will control germinated susceptible broadleaf weed seedlings during pre-emergent applications. Is absorbed through the leaves and is rapidly translocated to the plant's growing points when applied to emerged sensitive broadleaf weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
CALLISTO 480SC	27833	3	12 hr	SYNGENTA CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
46	metam sodium	42%	liquid	27
Horticulture crop registrations: field and greenhouse seedbeds, potting soil, field-re-plant sites of fruits, vegetables, ornamentals and forest-tree stock				
Storage information: Protect from temperatures below -17°C.				
Notes about control: When applied to properly prepared soil, the liquid is converted into a gaseous fumigant. After sufficient interval of time, the fumigant dissipates leaving the soil ready for planting. It controls germinating weed seeds, soil borne fungus diseases, nematodes, etc.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
VAPAM HL	29128	4	see label	AMVAC CHEMICAL CORPORATION

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
47	metribuzin	75%	dry flowable	5
<p>Horticulture crop registrations: asparagus, carrot, fruit trees, highbush blueberry, potato, transplanted tomato</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Has residual soil activity that will control germinated susceptible broadleaf weed seedlings during pre-emergent applications. Is absorbed through the leaves and is rapidly translocated to the plant's growing points when applied to emerged sensitive broadleaf weeds.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
LEXONE DF	15959	3	12 hr	CORTEVA AGRISCIENCE (PRODUCTION AGRISCIENCE/DUPONT CANADA)
SENCOR 75 DF	17242	3	12 hr	BAYER CROPSCIENCE INC.
TRICOR 75 DF	30661	3	12 hr	UNITED PHOSPHORUS INC.
SQUADRON	32081	3	12 hr	ADAMA AGRICULTURAL SOLUTIONS CANADA LTD.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
48	metribuzin	480 g/L	flowable	5
<p>Horticulture Crop Registrations: asparagus, carrot, fruit trees, highbush blueberry, potato, transplanted and fresh market tomato</p> <p>Storage Information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Has residual soil activity that will control germinated susceptible broadleaf weed seedlings during pre-emergent applications. Is absorbed through the leaves and is rapidly translocated to the plant's growing points when applied to emerged sensitive broadleaf weeds.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SENCOR 480 F	262802	2	12 hr	BAYER CROPSCIENCE INC.

continued

TABLE 1-2

Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
49	napropamide	50%	dry flowable	15
<p>Horticulture crop registrations: Ornamentals: ornamentals, woody nursery stock, forest tree stock, ground covers, container-grown ornamentals (see label). Small fruit: blackberries, boysenberries, cranberries, highbush blueberries, loganberries, raspberries, strawberries. Tree/Vine fruit: apples, grapes, peaches, pears. Vegetables: asparagus, basil, cole crops (cabbage, broccoli, cauliflower), Chinese broccoli, Chinese mustard greens, Chinese nappa cabbage, Chinese radish, garlic, kohlrabi, peppers, pumpkin, squash, fuzzy squash, rutabagas, tomatoes</p> <p>Storage information: May be stored at any temperature.</p> <p>Notes about control: Selective pre-emergence herbicide for control of many annual grasses and broadleaf weeds.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
DEVRIOL DF-XT	31081	4	12 hr	UNITED PHOSPHORUS INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
50	nicosulfuron	75%	dry flowable	2
<p>Horticulture crop registrations: sweet corn</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls emerged susceptible grassy weeds. Weeds that emerge following application will not be controlled. An adjuvant must be added to achieve control of grassy weeds.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ACCENT 75 DF	25116	3	12 hr	CORTEVA AGRISCIENCE (PRODUCTION AGRISCIENCE\DPONT CANADA)
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
51	oxadiazon	2%	granular	14
<p>Horticulture crop registrations: woody ornamental shrubs, vines and trees grown in containers</p> <p>Storage information: May be stored at any temperature.</p> <p>Notes about control: A selective, pre-emergence herbicide for control of certain annual broadleaf and grass weeds.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
RONSTAR 2G	23600	3	not stated	BAYER CROPS SCIENCE INC.

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
52	oxyfluorfen	-	-	14
Horticulture crop registrations: broccoli, cabbage, cauliflower, conifers, highbush blueberries, onions, poplar and aspen species, shallots, strawberries Storage information: Store above 0°C. Notes about control: A selective pre-emergence and post-emergence herbicide for the control of certain broadleaf weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
GOAL 2XL	24913	2	12-48 hr	CORTEVA AGRISCIENCE (DOW AGRISCIENCES)
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
53	pendimethalin	455 g/L	microcapsule suspension	3
Horticulture crop registrations: broccoli, cabbage, carrots, cauliflower, conifers, commercial outdoor ornamental production, leeks, lima beans, onions (dry bulb and green), snap beans, tomatoes Storage information: Do not store at temperatures at or below 0°C. Notes about control: Controls susceptible broadleaf and grassy weeds prior to their emergence. This herbicide will not control emerged weed species.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PROWL H2O	29542	3	24 hr	BASF CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
54	prometryne	480 g/L	soluble concentrate	5
Horticulture crop registrations: carrots, celeriac, celery, leeks, parsley, peas Storage information: May be stored at any temperature. Notes about control: Controls most annual broadleaf and grass weeds by both contact and root action and has a residual effect for 6-8 weeks. Has both pre-emergence and post-emergence activity.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
GESAGARD 480SC	24771	3	12-24 hr	SYNGENTA CANADA INC.

continued

TABLE 1-2

Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
55	propryzamide	400 g/L	soluble concentrate	15
Horticulture crop registrations: apples, lettuce, ornamentals, pears				
Storage information: heated storage				
Notes about control: Controls quackgrass, annual grasses and chickweed. It may be applied pre and post-emergence. It is readily absorbed by plants through the root system, translocated upward and distributed into the entire plant. Post-emergence applications to weeds will not control weeds by foliar uptake, but rather by soil uptake once the product moves into the soil.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
KERB SC	30264	3	24 hr	CORTEVA AGRISCIENCE (DOW AGRISCIENCES)
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
56	pyrazon	430 g/L	flowable suspension	5
Horticulture crop registrations: red beets, sugar beets				
Storage information: Store in cool, dry, locked, well-ventilated area without floor drain.				
Notes about control: May be applied pre-plant incorporated, pre and post-emergence for control of broadleaf weeds. Can be taken up by both roots and leaves, but translocation is upward to leaves where it inhibits photosynthesis.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PYRAMIN FL	15857	4	12 hr	BASF CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
57	pyroxasulfone	85%	wettable granules	15
Horticulture Crop Registrations: potato				
Storage Information: Store in original container in cool, dry, well-ventilated location. To prevent contamination store this product away from food or feed.				
Notes about control: May be applied as a preemergence treatment for the control of many grass and broadleaf weeds to potato after planting or immediately following drag-off or hilling, but before potato and weeds emerge. Crop seeds must be planted a minimum of 2 in. deep.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PYROXASULFONE 85 WG	30572	2	12 hr	K-I CHEMICAL U.S.A. INC.

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
58	quizalofop-p-ethyl	96 g/L	emulsifiable concentrate	1
Horticulture crop registrations: cucurbit vegetables, peas, rutabagas, sugar beets, Saskatoon berries				
Storage information: Store above 5°C to keep product from freezing.				
Notes about control: Controls susceptible grassy weeds after they have emerged. Will not control weeds that emerge after application.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ASSURE II	25462	3	12 hr	AMVAC CANADA ULC
YUMA GL	30100	3	12 hr	NISSAN CHEMICAL CORPORATION
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
59	rimsulfuron	25%	soluble granules	2
Horticulture crop registrations: caneberries, highbush blueberries, potatoes, tomatoes				
Storage information: Store in a dry area.				
Notes about control: Rimsulfuron is a contact herbicide and will not give residual control of grass or broadleaf weed seedlings that may germinate after application. Weed control may be reduced if the crop canopy has closed in over the weeds, intercepting the spray.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PRISM SG	30057	3	12 hr	CORTEVA AGRISCIENCE (PRODUCTION AGRISCIENCE/DUPONT CANADA)
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
60	saflufenacil	70%	soluble granules	14
Horticulture crop registrations: sweet corn				
Storage information: Store in a heated building.				
Notes about control: Controls susceptible broadleaf weeds prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ERAGON	29372	4	12 hr	BASF CANADA INC.

continued

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
61	saflufenacil	342 g/L	suspension	14
Horticulture crop registrations: sweet corn				
Storage information: Store in a heated building.				
Notes about control: Controls susceptible broadleaf weeds prior to their emergence.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ERAGON LQ	31469	3	12 hr	BASF CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
62	sethoxydim	450 g/L	emulsifiable concentrate	1
Horticulture crop registrations: asparagus, broccoli, Brussels sprouts, cabbage, carrot, cauliflower, celery, cranberry, cucumber, ethnic crops (Chinese broccoli, Chinese radish, napa cabbage, kohlrabi, mustard cabbage), garden beets, garlic, grapes, highbush blueberries, hops, mint, onion (dry bulb), peas, peppers, potatoes, pumpkin, raspberry, snow peas, spinach, squash, strawberry, sugar beets, sweet potatoes, tomatoes, turnip, trees and shrubs, Populus species, fruit trees – apple, apricot, sweet and sour cherry, peach, pear, plum				
Storage information: Does not need to be stored in a heated building, but it is preferred.				
Notes about control: Controls susceptible grassy weeds after they have emerged. Will not control weeds that emerge after application.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
POAST ULTRA	24835	4	12 hr	BASF CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
63	simazine	90%	water-dispersible granule	5
Horticulture crop registrations: apple, apricots, asparagus, blackberries, cherry, Christmas trees and woodland plantations, tree nuts, grapes, highbush blueberries, loganberries, peaches, pears, plums, raspberries, shelterbelts, strawberries, woody ornamentals and nursery stock				
Storage information: Does not need to be stored in a heated building, but it is preferred.				
Notes about control: Controls susceptible grassy and broadleaf weeds before they have emerged. Will not control weeds after they have emerged.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PRINCEP NINE-T	16370	3	12 hr	SYNGENTA CANADA INC.

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
64	simazine	480 g/L	suspension	5
<p>Horticulture crop registrations: apple, asparagus, grapes, highbush blueberries, loganberry, pear, raspberries, shelterbelts, woody ornamentals and nursery stock</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls susceptible grassy and broadleaf weeds before they have emerged. Will not control weeds after they have emerged.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SIMAZINE 480	23181	3	12 hr	LOVELAND CANADA PRODUCTS INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
65	simazine	500 g/L	suspension	5
<p>Horticulture crop registrations: apple, asparagus, grapes, highbush blueberries, loganberry, pear, raspberries, shelterbelts, woody ornamentals and nursery stock</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls susceptible grassy and broadleaf weeds before they have emerged. Will not control weeds after they have emerged.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SIMADDEX	15902	3	12 hr	BAYER CROPS SCIENCE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
66	s-metolachlor	915 g/L	emulsifiable concentrate	15
<p>Horticulture crop registrations: Asian radish, asparagus, beets (red), carrots, celery, established conifers for field production, cucurbit vegetables (crop group 9), eggplant (transplants only), fruit trees, highbush blueberries, outdoor ornamentals (woody and herbaceous), parsnip, peas, peppers, potatoes, pumpkin, red beets, rutabagas, second year or older poplar stoolbeds, second year or older transplant or seedling stock of: white spruce, norway spruce, black spruce, white pine, jack pine and red pine, snap common beans (green and yellow), strawberries, sugar beets, sweet corn, sweet potatoes, transplanted broccoli, cabbage, cauliflower and mustard greens, transplanted tomatoes, winter squash</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls susceptible grassy and broadleaf weeds before they have emerged. Susceptible grassy weeds are best controlled prior to emergence but most species are susceptible up to the 2-leaf stage.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
DUAL II MAGNUM	25729	4	12 hr	SYNGENTA CANADA INC.

continued

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient *continued***

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
67	s-metolachlor atrazine	400 g/L 320 g/L	liquid	15 5
Horticulture crop registrations: sweet corn				
Storage information: Does not need to be stored in a heated building, but it is preferred.				
Notes about control: Controls susceptible broadleaf weeds before or after they emerge. Susceptible grassy weeds are best controlled prior to emergence but most species are susceptible up to the 2-leaf stage.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PRIMEXTRA II MAGNUM	25730	3	12 hr	SYNGENTA CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
68	s-metolachlor atrazine mesotrione	298 g/L 112 g/L 29.8 g/L	suspension	15 5 27
Horticulture crop registrations: sweet corn				
Storage information: Avoid storing below -10°C.				
Notes about control: Controls susceptible broadleaf weeds before or after they emerge. Susceptible grassy weeds are best controlled prior to emergence but most species are susceptible up to the 2-leaf stage.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
LUMAX EZ	30864	3	12 hr	SYNGENTA CANADA INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
69	sulfentrazone	480 g/L	suspension concentrate flowable	14
Horticulture crop registrations: apple, asparagus, bushberries, Brassica head and stem (Crop Group 5-13) transplants only, Brassica leafy greens (Crop Sub-Group 4-13b), caneberries, grapes, horseradish, mint, potatoes, strawberry, tomatoes (transplants only), tree nuts (Crop Group 14)				
Storage information: Store above 5°C to keep product from freezing.				
Notes about control: Controls susceptible broadleaf weeds before they have emerged. This herbicide will not control emerged weeds.				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
AUTHORITY 480	29012	2	12 hr	FMC CORPORATION

continued

TABLE 1-2
Notes on herbicides used in Ontario horticulture crops
 sorted by active ingredient *continued*

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
70	terbacil	80%	wettable dry granules	5
<p>Horticulture crop registrations: apple, asparagus, cherry, highbush blueberries, peach, peppermint, plum, raspberry, spearmint, strawberry</p> <p>Storage information: Store in a dry area.</p> <p>Notes about control: Controls susceptible broadleaf and grass weeds before they have emerged and up to the 2-leaf stage. Primarily a soil residual herbicide. Best results are obtained if application is made shortly before or shortly after weed growth begins.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
SINBAR WDG	30082	2	12 hr	TESSENDERLO KERLEY, INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
71	thifensulfuron methyl	50%	soluble granules	2
<p>Horticulture crop registrations: tomato</p> <p>Storage information: Does not need to be stored in a heated building, but it is preferred.</p> <p>Notes about control: Controls susceptible broadleaf weeds after they have emerged. This herbicide will not control weeds that have emerged after application.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
PINNACLE SG TOSS-N-GO	30741	4	12 hr	FMC CORPORATION
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
72	topramezone	336 g/L	suspension	27
<p>Horticulture crop registrations: sweet corn</p> <p>Storage information: Store above 5°C to keep product from freezing.</p> <p>Notes about control: Controls susceptible grass and broadleaf weeds after they have emerged. This herbicide will not control weeds that have emerged after application. Typically, this herbicide should be tank-mixed with atrazine.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
ARMEZON	30131	3	12 hr	BASF CANADA INC.
IMPACT	28141	3	12 hr	AMVAC CHEMICAL CORPORATION

continued

TABLE 1-2**Notes on herbicides used in Ontario horticulture crops
sorted by active ingredient**

A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
73	trifluralin	480 g/L	emulsifiable concentrate	3
<p>Horticulture crop registrations: carrots, peas (field and canning), snap beans, strawberries, turnips; direct seeded: cabbage and cauliflower; transplants of: broccoli, Brussels sprouts, cabbage, cauliflower, peppers and tomatoes; annual flowers, woody ornamental plantings and field grown nursery stock, perennials, established shelterbelts</p> <p>Storage information: Store above 5°C to keep product from freezing.</p> <p>Notes about control: Controls susceptible grass and broadleaf weeds prior to their emergence. Will not control weeds that are emerged.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
BONANZA 480	28289	4	12 hr	LOVELAND PRODUCTS CANADA INC.
TREFLAN EC	23933	4	12 hr	GOWAN COMPANY, L.L.C.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
74	trifluralin	500 g/L	emulsifiable concentrate	3
<p>Horticulture crop registrations: carrots, peas (field and canning), snap beans, strawberries, turnips; direct seeded: cabbage and cauliflower; transplants of: broccoli, Brussels sprouts, cabbage, cauliflower, peppers and tomatoes; annual flowers, woody ornamental plantings and field grown nursery stock, perennials, established shelterbelts</p> <p>Storage information: Store above 5°C to keep product from freezing.</p> <p>Notes about control: Controls susceptible grass and broadleaf weeds prior to their emergence. Will not control weeds that are emerged.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
RIVAL EC	18612	4	12 hr	NUFARM AGRICULTURE INC.
A. I. #	ACTIVE INGREDIENT (A.I.)	CONCENTRATION	FORMULATION	WSSA GROUP
75	triflurosulfuron-methyl	50%	dry flowable	2
<p>Horticulture crop registrations: chicory, red beets, sugar beets</p> <p>Storage information: May be stored at any temperature.</p> <p>Notes about control: Apply post-emergence to control susceptible broadleaf weeds. Must be applied with a 0.2% v/v non-ionic surfactant.</p>				
HERBICIDE BRAND(S)	PCP #	CLASS	RESTRICTED ENTRY INTERVAL (REI)	MANUFACTURER
UPBEET	25813	3	12 hr	FMC CORPORATION

TABLE 1-3
Adjuvants used in Ontario

LEGEND: N/A = not applicable. These types of products are not required to be classified under the *Pest Control Products Act* (PCPA).

TRADE NAMES ¹	REGISTRATION (PCP) NUMBER ²	CHEMICAL COMPOSITION	CONCENTRATION	ONTARIO CLASSIFICATION ³
AGRAL 90	11809	nonylphenoxy polyethoxyethanol	90%	3
AGRAL 90	24725	nonylphenoxy polyethoxyethanol	90%	3
CITOWETT PLUS	12766	ocylphenoxy-polyethoxy ethanol	50%	4
CONTACT	28326	alkylarylpolyoxyethylene glycols, free fatty acids and isopropyl alcohol	900 g/L	4
COMPANION	15882	ocylphenoxy-polyethoxy-(9) ethanol	70%	4
ENHANCE	29270	triglyceride ethoxylate	80%	4
ICON	28342	nonylphenoxy polyethoxyethanol	90%	4
INDEX	28181	alkylarylpolyoxyethylene glycols, free fatty acids and isopropyl alcohol	900 g/L	4
IPCO AG-SURF	15881	nonylphenoxy polyethoxyethanol	92%	3
LI700	23026	phosphatidylcholine, methylacetic acid, alky polyoxyethylene ether	80%	4
LIBERATE	29491	lecithin, methyl esters of fatty acids and alcohol ethoxylate	100 g/L	3
LINK	28291	alkylarylpolyoxyethylene glycols, free fatty acids and isopropyl alcohol	900 g/L	4
PRO-SURF II	28327	alkylarylpolyoxyethylene glycols, free fatty acids and isopropyl alcohol	900 g/L	4
SENTRY	28343	nonylphenoxy polyethoxyethanol	90%	4
SIDEKICK	25835	alkylarylpolyoxyethylene glycols, free fatty acids and isopropyl alcohol	900 g/L	4
SIDEKICK II	28914	alkylarylpolyoxyethylene glycols, free fatty acids and isopropyl alcohol	900 g/L	4

continued

¹ Mention of a trade name in this table does not constitute a guarantee or warranty of the product. Neither does this use signify that these products are approved to the exclusion of comparable products. All trade names are capitalized in this guide.

² The product registration number for this trade name under the *Pest Control Products Act*, commonly referred to as a "PCP number". The PCP number has been placed in the guide for convenience, but the pesticide label should always be used for the most accurate and current PCP number.

³ Designated under the *Pest Control Products Act* (PCPA) as pesticides of the Commercial Class for use in commercial activities that are specified on the label or Restricted Class when the label specifies essential conditions respecting the display, distribution or limitations on the use of, or qualifications of persons who may use the product. The Ontario Classification is current as of time of printing and may change over time. Refer to the Ontario Pesticide Advisory Committee Website, opac.gov.on.ca, for most current classifications.

TABLE 1-3
Adjuvants used in Ontario *continued*

TRADE NAMES ¹	REGISTRATION (PCP) NUMBER ²	CHEMICAL COMPOSITION	CONCENTRATION	ONTARIO CLASSIFICATION ³
SUFFIX	28184	nonylphenoxy polyethoxyethanol	90%	4
SUPER SPREADER	17402	ocylphenoxy-polyethoxy ethanol	50%	4
WEEDAWAY AG SURF	22881	nonylphenoxy polyethoxyethanol	92%	3
Solvents (Oils)/Surfactants				
ADAMA X-ACT	28225	phosphate ester surfactant	30%	2
ADDIT ADJUVANT	29263	surfactant	36.9%	4
AMIGO	22644	phosphate ester surfactant	30%	2
ASSIST OIL CONCENTRATE	16937	paraffin base mineral oil + surfactant blend	83% + 17%	4
HASTEN NT	28277	methyl and ethyl oleate	71.4%	4
MERGE	24702	surfactant blend + solvent (petroleum hydrocarbons)	50% + 50%	4
MERGE 1	21058	surfactant blend + solvent (petroleum hydrocarbons)	50% + 50%	4
MSO CONCENTRATE	28385	methylated seed oil of soybean	70%	4
SURE-MIX	25467	paraffinic petroleum oil + surfactant blend	60% + 35.6%	4
TURBOCHARGE	23135	paraffin base mineral oil + surfactant blend	50% + 39.5%	4
XIAMETER OFX-0309 FLUID	23078	siloxylated polyether + surfactant mixture	80% + 20%	4
XA OIL CONCENTRATE	11769	paraffin base mineral oil + surfactant blend	83% + 17%	4
Combatibility Agents				
ALLIANCE	N/A	aliphatic phosphate ester, isopropanol and glycol ethers	69%	N/A
UNITE	N/A	acid polyglycols and methyl alcohol	83.70%	N/A
Water Buffering Agents				
AQUA-STABLE	N/A	aliphatic polycarboxylate and calcium chloride	28%	N/A
Water Conditioning Agents				
AQUASOFT	N/A	hydroxy carboxylic acid, phosphoric acids and ammonium sulfate polyacrylic acid	63%	N/A
CHOICE	N/A	polyacrylic, hydroxy carboxylic, propionic acids, phosphate ester and ammonium sulfate	50%	N/A
N TANK	N/A	monocarbamide dihydrogen sulphate, amine phosphates and viscosity reducing agents	81%	N/A

continued

TABLE 1-3
Adjuvants used in Ontario

LEGEND: N/A = not applicable. These types of products are not required to be classified under the *Pest Control Products Act* (PCPA).

TRADE NAMES ¹	REGISTRATION (PCP) NUMBER ²	CHEMICAL COMPOSITION	CONCENTRATION	ONTARIO CLASSIFICATION ³
Defoamers (Anti-Foamers)				
FIGHTER F	N/A	dimethylpolysiloxane	10%	N/A
FLAT-OUT	N/A	dimethylpolysiloxane	20%	N/A
HALT	N/A	silicone base, neutral	30%	N/A
VALID	N/A	lecithin, emulsifiers, glycols and dimethylpolysiloxane defoamer	100%	N/A
ZAP	N/A	proprietary blend	100%	N/A
Foam Marker Dye				
IN-SIGHT	N/A	dye, surfactants and coupling agents	100%	N/A
TREKKER TRAX	N/A	alcohols, mixed anionic and nonionic surfactants	54%	N/A
TRAMLIN	N/A	nonionic and anionic surfactants	35% + 65%	N/A

¹ Mention of a trade name in this table does not constitute a guarantee or warranty of the product. Neither does this use signify that these products are approved to the exclusion of comparable products. All trade names are capitalized in this guide.

² The product registration number for this trade name under the *Pest Control Products Act*, commonly referred to as a "PCP number". The PCP number has been placed in the guide for convenience, but the pesticide label should always be used for the most accurate and current PCP number.

³ Designated under the *Pest Control Products Act* (PCPA) as pesticides of the Commercial Class for use in commercial activities that are specified on the label or Restricted Class when the label specifies essential conditions respecting the display, distribution or limitations on the use of, or qualifications of persons who may use the product. The Ontario Classification is current as of time of printing and may change over time. Refer to the Ontario Pesticide Advisory Committee Website, opac.gov.on.ca, for most current classifications.

TABLE 1-4

Recropping restrictions in months for horticulture crops

A.I. #	HERBICIDE	Asparagus	Beans, Lima	Beans, Snap	Beets, Red	Beets, Sugar	Broccoli	Brussels Sprouts	Cabbage	Carrots	Cauliflower	Celery
4	AATREX 480 <1.0 kg a.i./ha	22	10	10	22	22	22	22	22	22	22	22
4	AATREX 480 >1.0-1.5 kg a.i. /ha	22	22	22	22	22	22	22	22	22	22	22
49	ACCENT	f	f	f	f	f	f	f	10	f	f	f
7	ACURON	f	f	f	f	f	f	f	f	f	f	f
23	ARMEZON PRO*	f	f	f	f	f	f	f	f	f	f	f
68	AUTHORITY 480	✓	36**	36**	36**	36**	✓	36**	✓	36**	✓	36**
6	BASAGRAN FORTE	f	f	f	f	f	f	f	f	f	f	f
2	BLAZER	f	f	f	f	f	f	f	f	f	f	f
12	BUCTRIL M	f	f	f	f	f	f	f	f	f	f	f
45	CALLISTO	✓	22	22	f	f	f	f	f	f	f	f
31	CHATEAU	✓	9*	9*	f	f	✓	f	f	f	f	✓
N	CLASSIC (pH <7.0)	f	f	f	f	f	f	f	11	f	f	f
N	CLASSIC (pH >7.8)	f	f	f	f	f	f	f	f	f	f	f
N	CLEANSWEEP	22	22	22	f	f	22	22	22	22	22	22
16	COMMAND 360 ME	✓	16	10	16	16	10	16	16	16	16	16
N	CONQUEST LQ	22	22	22	22	22	22	22	22	22	22	22
N	CONVERGE XT	f	f	f	f	f	f	f	f	f	f	f
N	FIRSTRATE	f	f	9	9	f	f	f	f	f	f	f
21	FRONTIER MAX ¹	11	11	11	11	11	11	11	✓	11	11	11
N	INFINITY	f	f	f	f	f	f	f	f	f	f	f

continued

✓ = Registered for application on this crop

f = Field bioassay; user assumes liability for all crops not indicated on the label.

* = conduct a field bioassay (a test strip grown to maturity) the year before growing any other crop

36** = 36 months plus a field bioassay must be conducted prior to planting listed crop.

N = not listed in this book, see OMAFRA Publication 75A *Guide to Weed Control, Field Crops*.¹ = only applicable to mineral soils, if applied to muck soil a field bioassay must be done.

Field Bioassay Service: A&L Laboratories provides a bioassay service to assist in making re-crop decisions.

For More Information Contact: A&L Laboratories Canada Ltd., 2136 Jet Stream Road, London ON N5V 3P5 www.alcanada.com

TABLE 1-4
Recropping restrictions in months
for horticulture crops *continued*

Corn, Sweet	Cucumber	Garlic	Herbs	Lettuce	Muskmelon	Onions	Parsnips	Peas	Peppers	Potatoes	Pumpkin	Rutabaga	Spinach	Squash	Tomatoes (Transplanted)	Watermelon
✓	22	22	22	22	22	22	22	10	22	10	22	22	22	22	10	22
✓	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
✓	f	f	f	f	f	f	f	f	f	10	f	f	f	f	10	f
✓	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
✓	f	f	f	f	f	f	f	12	f	f	f	f	f	f	f	f
24	36**	36**	36**	36**	36**	36**	36**	36**	36**	✓	36**	36**	36**	36**	✓	36**
✓	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
✓	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
✓	f	f	f	f	f	f	f	22	f	11	f	f	f	f	11	f
f	f	f	✓	f	f	✓	f	f	✓	f	f	f	f	f	f	f
11	f	f	f	f	f	f	f	11	f	f	f	f	f	f	12	f
f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	12	f
22	22	22	22	22	22	22	22	✓	22	22	22	22	22	22	22	22
10	✓	16	16	16	✓	16	16	10	✓	10	✓	16	16	✓	16	✓
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
f	f	f	f	f	f	f	f	10	f	12*	f	f	f	f	12*	f
18	f	f	f	f	f	f	f	9	f	✓	f	f	f	f	f	f
✓	11	11	11	11	11	✓	11	11	11	11	11	11	11	11	11	11
f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f

continued

TABLE 1-4
Recropping restrictions in months
for horticulture crops

A.I. #	HERBICIDE	Asparagus	Beans, Lima	Beans, Snap	Beets, Red	Beets, Sugar	Broccoli	Brussels Sprouts	Cabbage	Carrots	Cauliflower	Celery
N	INTEGRITY	11	11	11	11	11	11	11	11	11	11	11
17	LONTREL 360/XC	22	22	22	22	✓	✓	22	✓	22	✓	22
N	MILESTONE	f	48	48	f	f	f	f	f	f	f	f
27	MUSTER	f	f	f	f	f	f	f	f	f	f	f
N	OPTION	f	f	f	f	10*	f	10	10*	f	f	f
N	PEAK	f	f	f	f	f	f	f	f	f	f	f
58	PRISM	f	f	f	f	f	f	f	f	f	f	f
37	PURSUIT/PHANTOM/NU-IMAGE	22	22	✓	22	22	22	22	22	22	22	22
33	REFLEX	f	f	✓	18	18	18	18	18	f	18	f
36	SANDEA	f	f	✓	36	36	18	f	15	15	18	f
47	SENCOR/TRICOR/SQUADRON/LEXONE	✓	10	10	22	22	22	22	22	✓	22	22
62	SIMAZINE/PRINCEP < 2 kg a.i./ha	✓	22	22	10	22	22	22	22	22	22	22
62	SIMAZINE/PRINCEP > 2 kg a.i./ha	✓	22	22	22	22	22	22	22	22	22	22
N	ULTIM	f	f	f	f	10	f	f	f	f	f	f
N	VALTERA	12	9	9	f	f	f	f	f	f	f	f
N	VIOS G3	f	f	f	f	f	f	f	f	f	f	f

✓ = Registered for application on this crop

f = Field bioassay; user assumes liability for all crops not indicated on the label.

* = conduct a field bioassay (a test strip grown to maturity) the year before growing any other crop

36** = 36 months plus a field bioassay must be conducted prior to planting listed crop.

N = not listed in this book, see OMAFRA Publication 75A *Guide to Weed Control, Field Crops*.

¹ = only applicable to mineral soils, if applied to muck soil a field bioassay must be done.

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TABLE 1-4
Recropping restrictions in months
for horticulture crops

Corn, Sweet	Cucumber	Garlic	Herbs	Lettuce	Muskmelon	Onions	Parsnips	Peas	Peppers	Potatoes	Pumpkin	Rutabaga	Spinach	Squash	Tomatoes (Transplanted)	Watermelon
11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
22	22	22	22	22	22	22	22	22	22	22	22	✓	22	22	22	22
10	f	f	f	f	f	f	f	48	48	f	f	f	f	f	48	f
f	f	f	f	f	f	f	f	f	f	f	f	✓	f	f	f	f
10*	f	f	f	f	f	f	f	10*	f	10*	f	f	f	f	f	f
f	f	f	f	f	f	f	f	10*	f	f	f	f	f	f	f	f
f	f	f	f	f	f	f	f	f	f	✓	f	f	f	f	✓	f
22	22	22	22	22	22	22	22	✓	22	22	22	22	22	22	22	22
18	✓	f	f	f	f	f	f	✓	f	✓	f	18	f	f	f	f
3	✓	f	f	f	✓	18	f	9	✓	9	✓	f	24	✓	✓	✓
10	22	10	10	22	22	22	10	10	22	✓	22	22	22	22	✓	22
10	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
10	f	f	f	f	f	f	f	f	10	f	f	f	f	f	10	f
f	f	f	f	f	f	12	f	f	f	12	f	f	f	f	f	f
f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f

TABLE 1-5
**Counties with confirmed resistant
weed populations¹**

WEED SPECIES	WSSA GROUP ²	COUNTIES WITH CONFIRMED POPULATIONS
barnyard grass	5	Waterloo
Canada fleabane	2	Brant, Chatham-Kent, Elgin, Essex, Frontenac, Haldimand, Halton, Hamilton, Huron, Lambton, Lennox and Addington, Niagara, Norfolk, Northumberland, Oxford, Peel, Perth, Peterborough, Stormont, Dundas and Glengarry, Waterloo, Wellington and York
	9	Brant, Bruce, Dufferin, Durham, Elgin, Essex, Frontenac, Haldimand, Halton, Hamilton, Hastings, Huron, Lambton, Lennox and Addington, Middlesex, Niagara, Norfolk, Northumberland, Ottawa, Oxford, Peel, Perth, Peterborough, Prince Edward, Simcoe, Stormont, Dundas and Glengarry, Waterloo, Wellington and York
	22	Essex
carrot, wild	4	Halton, Wellington
cocklebur	2	Lambton
crabgrass, large	1	Chatham-Kent, Essex, Huron
foxtail, green	2	Huron, Kawartha Lakes, Lambton, Oxford, Perth, Wellington, Victoria
foxtail, giant	2	Elgin, Essex, Lambton, Oxford
foxtail, yellow	5	York
groudsel, common	5	York
lamb's-quarter	2	Chatham-Kent, Elgin, Essex, Lambton, Middlesex, Simcoe, Stormont, Dundas and Glengarry
	5	Widespread throughout Ontario (all counties except for Muskoka and Toronto)
mustard, wild	5	Stormont, Dundas and Glengarry
nightshade, eastern black	2	Bruce, Carleton, Elgin, Huron, Middlesex, Ottawa, Oxford, Perth, Simcoe, Stormont, Dundas and Glengarry, Wellington
	22	Chatham-Kent
peppergrass, field	22	Essex

continued

¹ If you suspect that you have a herbicide resistant weed contact Kristen Obeid: kristen_obeid@ontario.ca for more information on testing services.

² Herbicide groupings for Ontario follow the Weed Science Society of America's nationally accepted grouping. Groups 12, 13, 16, 17, 18, 24, 25 and 26 are not available in Ontario.

TABLE 1-5
Counties with confirmed resistant weed populations¹

WEED SPECIES	WSSA GROUP ²	COUNTIES WITH CONFIRMED POPULATIONS
pigweed, green	2	Bruce, Chatham-Kent, Elgin, Essex, Haldimand, Hamilton-Wentworth, Huron, Lambton, Lennox and Addington, Middlesex, Oxford, Perth, Simcoe, Stormont, Dundas and Glengarry, Wellington
	5	Elgin, Huron, Oxford, Simcoe, Wellington
	7	Lambton, Middlesex, Simcoe
pigweed, redroot	2	Bruce, Chatham-Kent, Elgin, Essex, Haldimand, Hamilton-Wentworth, Huron, Lambton, Lennox and Addington, Middlesex, Oxford, Perth, Simcoe, Stormont, Dundas and Glengarry, Wellington
	5	Chatham-Kent, Simcoe, Stormont, Dundas and Glengarry, Waterloo
	6	Chatham-Kent
	7	Lambton, Chatham-Kent, Middlesex, Simcoe
pigweed, smooth	6	Essex
ragweed, common	2	Bruce, Chatham-Kent, Carleton, Elgin, Essex, Haldimand-Norfolk, Huron, Lambton, Middlesex, Niagara, Ottawa, Oxford, Perth, Prescott-Russell, Simcoe, Stormont, Dundas and Glengarry, Wellington
	5	Brant, Bruce, Essex, Haldimand-Norfolk, Hamilton-Wentworth, Lambton, Lennox and Addington, Niagara, Norfolk, Wellington
	9	Essex
ragweed, giant	2	Chatham-Kent, Essex, Lambton
	9	Chatham-Kent, Essex, Lambton, Lennox and Addington
waterhemp	2	Brant, Bruce, Chatham-Kent, Elgin, Essex, Haldimand, Huron, Lambton, Middlesex, Norfolk, Northumberland, Wentworth
	5	Chatham-Kent, Essex, Haldimand, Huron, Lambton, Middlesex
	9	Brant, Bruce, Chatham Kent, Essex, Haldimand, Huron, Lambton, Middlesex, Norfolk, Northumberland, Wentworth
	14	Chatham-Kent, Essex, Haldimand, Huron, Norfolk
witchgrass	5	Grey, Haldimand-Norfolk, Leeds and Grenville, Prescott-Russell, Wellington

TABLE 1-6

50 common weeds in Ontario horticulture crops and their sensitivity to herbicides according to the product label

HERBICIDE NAME	ACTIVE INGREDIENT #	barnyardgrass	bindweed, field	bluegrass, annual	buckwheat, wild	chickweed	cleavers	cocklebur	crabgrass, large	crabgrass, smooth	dandelion	fall panicum	fleabane, Canada	foxtail, green	foxtail, giant	foxtail, yellow	groundsel, common	hempnettle	henbit	horsetail, field	knotweed
2,4-D AMINE 600	1	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-	C	-	-	-	C
AATREX LIQUID 480	4	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ACCENT 75 DF	50	C	-	-	-	-	-	-	-	-	-	C	-	C	-	C	-	-	-	-	-
ACURON	7	C	-	-	C	-	-	-	C	C	-	C	-	C	C	C	-	-	-	-	-
AIM EC	13	-	-	-	-	-	C	C	-	-	-	-	-	-	-	-	-	-	-	-	-
ALION	38	C	C	-	-	-	-	-	C	-	-	-	-	C	C	C	C	-	-	-	-
ARMEZON PRO + atrazine	23	C	-	-	-	S	-	-	C	-	-	C	C	C	-	C	-	-	-	-	-
ARROW 240 EC	15	C	-	-	-	-	-	-	-	-	-	-	-	C	-	C	-	-	-	-	-
ASSURE II or YUMA	58	C	-	-	-	-	-	-	-	-	-	C	-	C	-	C	-	-	-	-	-
AUTHORITY 480	69	-	-	-	C	-	S	-	C	C	-	-	-	-	-	-	C	-	-	-	-
BASAGRAN FORTE	6	-	S	-	-	C	C	C	-	-	-	-	-	-	-	-	C	-	-	-	-
BETAMIX B	19	-	-	-	C ²	-	-	-	-	-	-	-	-	C ²	-	C ²	-	-	-	-	-
BLAZER	2	-	S	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-
BONANZA 480	73	C	-	-	S	C	-	-	C	C	-	-	-	C	-	C	-	-	-	-	C
BROMAX	11	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	C	-	-	-	-
BROMOTRIL 240	9	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	C	C	-	-	-
BROTEX 240	9	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	C	-	-	-	-
BROTEX 480	11	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	C	-	-	-	-
BUCTRIL M	12	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	C	C	-	-	-
CALLISTO + AATREX 480	45	-	C	-	C	-	-	-	-	-	S	-	-	-	-	-	-	-	-	S	-

continued

¹ = seedling; ² = before 4-leaf stage; ³ = controlled at higher rates; ⁴ = preemergence only; ⁵ = postemergence only

C = control

S = suppression

TABLE 1-6**50 common weeds in Ontario horticulture crops and their sensitivity to herbicides according to the product label** *continued*

HERBICIDE NAME	ACTIVE INGREDIENT #	barnyardgrass	bindweed, field	bluegrass, annual	buckwheat, wild	chickweed	cleavers	cocklebur	crabgrass, large	crabgrass, smooth	dandelion	fall panicum	fleabane, Canada	foxtail, green	foxtail, giant	foxtail, yellow	groundsel, common	hempnettle	henbit	horsetail, field	knotweed
CASORON G-4	20	-	C ³	C	C ³	C	-	-	C	C	C ³	-	-	C	C	C	C	-	-	C	C
CENTURION	15	C	-	-	-	-	-	-	C	C	-	C	-	C	-	C	-	-	-	-	-
CHATEAU	31	-	-	-	-	-	-	-	-	-	C	-	C	C	-	-	-	-	-	-	-
CHIKARA	29	-	-	C	-	C	-	-	S ⁴ / C ⁵	C ⁵	C	-	S ⁴ / C ⁵	C	C	C	C	-	C	-	-
COMMAND 360 ME	16	C	-	-	-	-	-	-	C	C	C	-	-	C	-	-	-	-	-	-	-
CREDIT 45	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	C	C	-	-	C
DACTHAL W-75	14	S	-	S	-	C	-	-	C	C	-	-	-	C	-	C	-	-	-	-	-
DEVRIKOL DF-XT	49	C	-	C	-	C	-	-	C	-	-	-	-	C	C	C	C	-	-	-	C
DIUREX 80WDG or KARMEX	25	-	-	-	-	-	-	-	C	C	-	-	-	C	C	C	-	-	-	-	-
DUAL II MAGNUM	66	C	-	-	-	-	-	-	C	C	-	C	-	C	C	C	-	-	-	-	-
EPTAM	26	C	-	C	-	C	-	-	C	C	-	C	-	C	-	C	-	C	C	-	-
ERAGON or ERAGON LQ	60/ 61	-	-	-	C	-	-	-	-	-	S	-	C	-	-	-	-	-	-	-	-
FACTOR 540	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	-	C	-	-	C
FRONTIER MAX	21	C	-	-	-	-	-	-	C	C	-	C	-	C	C	C	-	-	-	-	-
GALLERY	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GESAGARD 480 SC	54	-	-	-	-	C	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-
GLYFOS	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	C	C	-	-	C
GLYPHOSATE	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	C	C	-	-	C
GOAL 2XL	52	-	-	-	C	-	-	-	-	-	C	-	-	-	-	-	C	-	-	-	-
IGNITE	34	-	-	-	C	C	-	-	-	-	C	-	-	C	-	-	-	-	-	-	-
IMPACT or ARMEZON	72	S	-	-	-	S	-	-	S	-	-	-	-	S	-	S	-	-	-	-	-
KATANA	29	-	-	C	-	C	-	-	S ⁴ / C ⁵	C ⁵	C	-	S ⁴ / C ⁵	C	C	C	C	-	C	-	-
KERB SC	55	C	-	C	-	C	-	-	C	C	-	C	-	C	C	C	-	-	-	-	-

continued

1 = seedling; 2 = before 4-leaf stage; 3 = controlled at higher rates; 4 = preemergence only; 5 = postemergence only

C = control

S = suppression

TABLE 1-6

50 common weeds in Ontario horticulture crops and their sensitivity to herbicides according to the product label *continued*

lady's-thumb	lamb's-quarter	lettuce, prickly	milkweed	mustard, wild	nightsade, eastern black	nightsade, hairy	nutsedge, yellow	oats, wild	pansy, field	pigweed	pineapple weed	proso millet	purslane	quackgrass	ragweed, common	ragweed, giant	sandbur	scentless chamomile	shepherd's-purse	spurge species	stinkweed	sow-thistle, annual	sow-thistle, perennial	thistle, Canada	velvetleaf	vetch, tufted	wirestem muhly	witch grass	wood sorrel
C	C	-	-	C	-	-	C ³	-	-	C	-	-	C	C ³	-	-	-	-	C	C	-	C	C	C ³	-	C ³	-	-	-
-	-	-	-	-	-	C	-	-	-	C	-	C	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-
-	C	-	-	C	-	-	C	-	C ⁵	C	-	-	C	-	C	-	C	-	C	C	-	S ⁴ / C ⁵	S ⁴	C ⁵	-	-	-	S	-
-	C	-	-	C	C	-	-	-	-	C	-	-	-	-	C	-	-	-	-	-	-	C	-	-	C	-	C	C	-
C	C	C	C	C	C	-	-	C	-	C	C	C	C	C	C	-	-	-	C	C	C	C	C	C	C	C	-	C	-
-	C	-	-	-	-	-	-	-	C	S	-	-	C	S	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-
-	C	C	-	-	-	-	-	-	-	C	C	-	C	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	C	-	-	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-
-	C	-	-	-	-	C	C	C	-	C	-	-	C	C	-	-	-	-	-	-	-	-	-	-	-	-	-	C	C
C	C	C	-	C	-	-	-	-	-	C	-	-	-	-	C	C	-	-	C	-	C	-	C	-	C	-	-	-	-
C	C	C	C	C	C	-	-	C	-	C	-	C	C	C	C	-	-	-	-	-	-	C	C	C	C	-	-	-	-
-	-	-	-	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-
-	C	-	-	-	-	-	-	-	-	-	C	-	C	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-
C	C	C	C	C	C	-	-	C	-	C	C	C	C	C	C	-	-	-	-	-	-	C	C	C	C	-	C	-	-
C	C	-	-	-	-	-	-	-	-	C	-	-	C	-	-	-	-	-	C	C	C	-	-	-	-	-	-	-	C
-	C	-	-	C	-	-	-	-	C	C	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-
C	C	-	-	C	C	-	-	-	-	C	-	-	-	-	C	-	-	-	-	-	-	-	-	-	S	-	-	-	-
-	C	-	-	C	-	-	C	-	C ⁵	C	-	-	C	-	C	-	C	-	C	C	-	S ⁴ / C ⁵	S ⁴	C ⁵	-	-	S	-	
-	-	-	-	-	-	-	C	-	-	-	-	C	-	C	-	-	-	-	-	-	-	-	-	-	-	-	C	C	-

continued

TABLE 1-6**50 common weeds in Ontario horticulture crops and their sensitivity to herbicides according to the product label** *continued*

HERBICIDE NAME	ACTIVE INGREDIENT #	barnyardgrass	bindweed, field	bluegrass, annual	buckwheat, wild	chickweed	cleavers	cocklebur	crabgrass, large	crabgrass, smooth	dandelion	fall panicum	fleabane, Canada	foxtail, green	foxtail, giant	foxtail, yellow	groundsel, common	hempsettle	henbit	horsetail, field	knotweed	
KORIL 235	8	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LONTREL 360/XC	17	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	C	C	-	-	-	-
LOROX L	40	S	-	-	C	C	-	-	C	C	-	-	-	C	-	C	C	-	-	-	-	C
LUMAX EZ	68	C	C	-	C	C	C	C	C	C	-	C	-	C	C	C	-	-	-	-	-	-
MATRIX	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	C	-	-	-	-	C
MCPA AMINE 500	41	-	-	-	C	C	C	C	-	-	-	-	-	-	-	-	-	C	-	C	C	C
MCPA AMINE 600	42	-	-	-	C	C	C	C	-	-	-	-	-	-	-	-	-	C	-	C	C	C
MCPA SODIUM 300	43	-	C	-	-	C	-	C	-	-	C	-	-	-	-	-	-	C	-	-	-	-
MCPA/MCPB	44	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MUSTER	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-
NORTRON SC	28	C	-	-	S	-	-	-	C	C	-	-	-	C	C	C	-	-	-	-	-	-
NU-IMAGE	37	C	-	-	-	-	-	C	C	C	C ²	C	-	C	-	C	C	-	-	-	-	-
OUTLOOK	22	C	-	-	-	-	-	-	C	C	-	C	-	C	C	C	-	-	-	-	-	-
PARDNER	10	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	C	C	-	-	-	-
PHANTOM 240	37	C	-	-	-	-	-	C	C	C	C ²	C	-	C	-	C	-	-	-	-	-	-
PINNACLE SG TOSS-N-GO	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POAST ULTRA	62	C	-	-	-	-	-	-	C	-	-	C	-	C	-	C	-	-	-	-	-	-
POLARIS MAX	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	C	C	-	-	-	C
PREFAR	5	C	-	-	-	-	-	-	C	C	-	-	-	C	C	C	-	-	-	-	-	-
PRIMEXTRA II MAGNUM	67	C	-	-	C	-	-	-	C	C	-	C	-	C	C	C	-	-	-	-	-	-
PRINCEP NINE-T	63	C	-	-	C	-	-	-	C	C	-	-	-	-	-	C	-	-	-	-	-	-
PRISM SG	59	C	-	-	-	-	-	-	-	-	-	C	-	C	-	C	-	-	-	-	-	-
PROWL H2O	53	C	-	-	-	-	-	-	C	C	-	C	-	C	-	-	-	-	-	-	-	-
PURSUIT	37	C	-	-	-	-	-	C	C	C	C ²	C	-	C	-	C	C	-	-	-	-	-
PYRAMIN FL	57	-	-	-	C	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C

¹ = seedling; ² = before 4-leaf stage; ³ = controlled at higher rates; ⁴ = preemergence only; ⁵ = postemergence only

C = control

S = suppression

continued

TABLE 1-6

50 common weeds in Ontario horticulture crops and their sensitivity to herbicides according to the product label *continued*

lady's-thumb	lamb's-quarter	lettuce, prickly	milkweed	mustard, wild	nighthade, eastern black	nighthade, hairy	nutsedge, yellow	oats, wild	pansy, field	pigweed	pineapple weed	proso millet	purslane	quackgrass	ragweed, common	ragweed, giant	sandbur	scentless chamomile	shepherd's-purse	spurge species	stinkweed	sow-thistle, annual	sow-thistle, perennial	thistle, Canada	velvetleaf	vetch, tufted	wirestem muhly	witch grass	wood sorrel
C	C	-	-	C	-	-	-	-	-	C	-	-	-	-	C	-	-	-	-	-	C	-	-	-	C	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	C	-	-	-	-	C	-	C	-	-	-	-
-	C	-	-	-	-	-	-	-	-	C	-	-	C	-	C	-	-	-	C	-	C	C	-	-	S	-	-	C	-
C	C	-	C	C	C	-	C	C	-	C	-	C	-	C	C	-	-	-	C	-	C	-	C	C	C	-	-	C	-
C	C	C	C	C	C	-	-	C	-	C	C	C	-	C	C	-	-	-	C	-	C	C	C	C	C	-	C	-	-
C	C	C	-	C	-	-	-	-	-	C	C	-	C	-	C	C	-	-	C	C	C	C	C	-	-	C	C	-	-
-	C	C	-	C	-	-	-	-	-	C	C	-	C	-	C	C	-	-	C	C	C	C	C	C	-	-	-	-	-
-	C	C	-	C	-	-	-	-	-	-	C	-	C	-	C	C	-	-	C	-	-	-	-	-	-	-	-	-	-
-	-	-	-	C	-	-	-	-	-	S	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-
C	C	-	-	-	-	-	-	C	-	C	-	-	C	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-
C	C	-	-	C	C	C	C	C ²	-	C	C	S	-	C ²	-	-	-	-	-	-	-	C ²	C ²	-	C	-	-	C	-
-	-	-	-	-	C ³	-	S	-	-	C ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-
C	C	-	-	C	-	-	-	-	-	C	-	-	-	-	C	-	-	-	-	-	C	-	-	-	C	-	-	-	-
C	C	-	-	C	C	C	C	C ²	-	C	-	S	-	C ²	-	-	-	-	-	-	-	C ²	C ²	-	C	-	-	C	-
C	C	-	-	C	-	C	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-
-	-	-	-	-	-	-	-	C	-	-	-	C	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-
C	C	C	C	C	C	-	-	C	-	C	C	C	C	C	C	-	-	-	-	C	C	C	C	C	C	-	C	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	C	-	-	C	C	-	C	-	-	-	-	C	C	-	C	-	-	-	-	-	-	-	-	-	-	-	-	C	-
C	C	-	-	-	-	-	-	C	-	-	-	-	C	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	S	-	-	-	-	C	-	-	-	C	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-
-	C	-	-	-	-	-	-	-	-	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	C	-	-	C	C	C	C	C ²	-	C	-	S	-	C ²	-	-	-	-	-	-	-	C ²	C ²	-	C	-	-	C	-
C	C	-	-	C	-	-	-	-	-	C	-	-	-	-	-	-	-	-	C	-	C	-	-	-	-	-	-	-	-

continued

TABLE 1-6**50 common weeds in Ontario horticulture crops and their sensitivity to herbicides according to the product label** *continued*

HERBICIDE NAME	ACTIVE INGREDIENT #	barnyardgrass	bindweed, field	bluegrass, annual	buckwheat, wild	chickweed	cleavers	cocklebur	crabgrass, large	crabgrass, smooth	dandelion	fall panicum	fleabane, Canada	foxtail, green	foxtail, giant	foxtail, yellow	groundsel, common	hemnettle	henbit	horsetail, field	knotweed
PYROXASULFONE 85 WG	56	C	-	-	S	-	C	-	C	-	-	-	-	C	C	C	-	-	-	-	-
REFLEX	33	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-
RIVAL	74	C	-	-	S	C	-	-	C	C	-	-	-	C	-	C	-	-	-	-	C
RONSTAR 2G	51	C	-	C	-	-	-	-	C	C	-	-	-	C	-	C	C	-	-	-	-
ROUNDUP TRANSORB	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	C	C	-	-	C
ROUNDUP WEATHERMAX	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	C	C	-	-	C
SANDEA	36	-	-	-	-	-	-	C	-	-	-	-	C ⁴	-	-	-	-	-	-	S ⁵	-
SELECT	15	C	-	-	-	-	-	-	C	C	-	C	-	C	-	C	-	-	-	-	-
SENCOR 75 DF/TRICOR 75 DF/ SQUADRON/LEXONE DF	47	C	-	-	C	C	-	C	C	C	C ¹	C	-	C	C	C	C	C	C	-	C
SIMAZINE 480	64	C	-	-	C	-	-	-	C	C	-	-	-	-	-	C	-	-	-	-	-
SIMADIX	65	C	-	-	C	-	-	-	C	C	-	-	-	-	-	C	-	-	-	-	-
SINBAR WDG	70	C	-	C	-	C	-	-	C	C	-	-	-	C	C	C	-	-	C	-	-
SQUADRON	47	C	-	-	C	C	-	C	C	C	C ¹	C	-	C	C	C	C	C	C	-	C
SUREGUARD	32	-	-	-	-	-	-	-	-	-	C	-	C	C	-	-	-	-	-	-	-
TREFLAN	73	C	-	-	S	C	-	-	C	C	-	-	-	C	-	C	-	-	-	-	C
TRICOR 75 DF	47	C	-	-	C	C	-	C	C	C	C ¹	C	-	C	C	C	-	C	C	-	C
UPBEET	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VENTURE L	30	C	-	-	-	-	-	-	-	-	-	C	-	C	-	C	-	-	-	-	-
VP480	35	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	C	C	-	-	C

¹ = seedling; ² = before 4-leaf stage; ³ = controlled at higher rates; ⁴ = preemergence only; ⁵ = postemergence only

C = control

S = suppression

TABLE 1-6

50 common weeds in Ontario horticulture crops and their sensitivity to herbicides according to the product label *continued*

lady's-thumb	lamb's-quarter	lettuce, prickly	milkweed	mustard, wild	nightsshade, eastern black	nightsshade, hairy	nutsedge, yellow	oats, wild	pansy, field	pigweed	pineapple weed	proso millet	purslane	quackgrass	ragweed, common	ragweed, giant	sandbur	scentless chamomile	shepherd's-purse	spurge species	stinkweed	sow-thistle, annual	sow-thistle, perennial	thistle, Canada	velvetleaf	vetch, tufted	wirestem muhly	witch grass	wood sorrel
-	S	-	-	-	-	C	-	S	-	C	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-
C	C	-	-	C	C	-	-	-	-	C	-	-	-	-	C	-	-	-	-	-	-	-	-	-	C	-	-	-	-
-	C	-	-	-	-	-	-	S	-	C	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	C	-	-	-	-	-	-	-	-	C	-	-	C	-	-	-	-	-	C	-	C	-	-	-	-	-	-	-	-
C	C	C	C	C	C	-	C	C	-	C	C	C	C	C	C	-	-	-	C	C	C	C	C	C	C	-	C	-	-
C	C	C	C	C	C	-	C	C	-	C	C	C	C	C	C	-	-	-	C	C	C	C	C	C	C	C	-	C	-
C	C ⁴	C ⁴	S ⁵	C	-	-	C ⁵	-	-	C	-	-	S ⁴	-	C	C ⁵	-	-	-	-	-	-	-	-	C	-	-	-	-
-	-	-	-	-	-	-	-	C	-	-	-	C	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-
C	C	-	-	C	-	-	-	-	-	-	-	-	C	-	C	-	-	C	C	-	C	-	-	-	C	-	-	-	-
C	C	-	-	-	-	-	-	C	-	-	-	-	C	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	C	-	-	-	-	-	-	C	-	-	-	-	C	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	C	C	-	C	-	-	S	-	-	C	-	-	C	S	C	C	-	-	-	-	C	C	-	-	-	-	-	-	-
C	C	-	-	C	-	-	-	-	-	C	-	-	C	-	C	-	-	C	C	-	C	-	-	-	C	-	-	C	-
-	C	-	-	-	C	C	-	-	-	C	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	C	-	-	-	-	-	-	S	-	C	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	C	-	-	C	-	-	-	-	-	C	-	-	C	-	C	-	-	C	C	-	C	-	-	-	C	-	-	C	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-
-	-	-	-	-	-	-	-	-	-	C	-	-	-	C	-	-	C	-	-	-	-	-	-	-	-	-	C	C	-
C	C	C	C	C	C	-	-	C	-	C	C	C	C	C	C	-	-	-	C	C	C	C	C	C	C	-	C	-	-

2. Vegetable crops

TABLE 2-1

Vegetable herbicide weed control ratings

NOTES: Ratings are subjective values based on best available information and give general comparisons based on use as described in this guide. Under unfavourable conditions (e.g., too dry, too wet, too cold, or poor application) the herbicides may not be as effective as indicated. Ratings may vary with weed and crop stage and with the timing and rates of the product(s) being used. Please refer to product label for more information on registered weed species, product uses and precautions.

LEGEND: N = No Control P = Poor Control F = Fair Control G = Good Control E = Excellent Control
- = insufficient information available to make a rating.

TRADE NAME	Grasses					Annual Broadleaves								Perennials						
	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	buckwheat, wild fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed	velvetleaf	bindweed, field	horsetail	milkweed	nutsedge	quackgrass	sow-thistle	thistle, Canada
SOIL-APPLIED GRASS HERBICIDES																				
PREFAR	E	E	-	E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOIL-APPLIED BROADLEAF HERBICIDES																				
AATREX LIQUID 480	P	P	P	P	P	E	-	E	E ^R	E	E	G ^R	F ^R	P	-	-	-	-	-	-
CALLISTO	G	P	P	P	P	G	-	E	E	E	E	E	F	E	P	N	N	N	N	N
GESAGARD 480SC	-	-	-	E	-	-	-	G	E	G	G	G ^R	F	-	-	-	-	-	-	-
LOROX L	F	P	P	F	F	G	-	E	E	E	G	E ^R	G	F	P	P	P	P	P	P
PYRAMIN	P	P	P	P	P	G	-	G	G	G	G	G	G	F	P	P	-	P	P	P
REFLEX	N	N	N	N	N	F	-	G	F	G	P	E	E	F	P	F	P	-	N	P
SANDEA	N	N	N	N	N	-	E	G	G	G	-	G	G ¹	G	F	N	N	F	-	-
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																				
ACURON	E	G ²	G	E	E	G	E	E	E	E	E	E	E	E	-	-	-	-	-	-
AUTHORITY 480	-	G	-	-	-	G	-	-	G	-	G	G	P	-	-	-	-	-	-	-
CHATEAU	P	P	P	P	P	-	E	F	E	-	E	E	F	F	-	-	-	-	-	-

continued

^R Populations of this weed exist in Ontario that are resistant to this treatment and will not be adequately controlled.

¹ Registered for pre-emergent activity on common ragweed only.

² The addition of Callisto or Callisto + Aatrex will improve control of this species.

³ The highest labeled rate is required to achieve this level of control.

⁴ Large crabgrass only.

⁵ Not all formulations are registered on all crops. See label for specific uses and rates.

⁶ Good control of these perennial weeds may require two applications, 7-10 days apart.

⁷ Yellow foxtail will only be suppressed.

⁸ Registered for control of hairy nightshade.

⁹ Weeds cannot be emerged at time of application to achieve this level of control.

¹⁰ Repeated **IGNITE** applications may be necessary if regrowth occurs.

TABLE 2-1
Vegetable herbicide weed control ratings *continued*

TRADE NAME	Grasses					Annual Broadleaves								Perennials							
	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	buckwheat, wild fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed	velvetleaf	bindweed, field	horsetail	milkweed	nutsedge	quackgrass	sow-thistle	thistle, Canada	
COMMAND 360 ME	E	E	-	E	-	-	-	E	-	E	F	E	E	-	-	-	-	-	-	-	
DACTHAL W-75	F	G	G	G	G	N	-	N	G	N	N	F	N	N	-	-	-	-	N	N	N
DEVRINOL	G	E	G	G	G	P	-	F	G	P	P	G	F	P	P	P	P	F	P	P	P
DUAL II MAGNUM	E	E	G	E	E	P	-	P	F	P	G	G	P	P	N	N	N	G	P	N	N
EPTAM	E	E	E	E	E	P	-	F	F	P	F	F	P	P	-	-	-	G	P	-	-
FRONTIER MAX	E	E	G	E	E	P	-	P	F	P	G	G	P	P	N	N	N	G	N	N	N
KARDEX or DIUREX 80WDG	E	G	F	G	-	G	-	G	E	G	F	G	E	-	-	P	-	P	P	P	P
KERB SC	G	G	G	G	G	-	-	F	F	F	F	N	N	N	N	N	N	N	N	N	N
LUMAX EZ	E	E	G ³	G	E	E	-	E	E	E	E	E	G	E	N	N	N	N	N	N	N
NORTRON FLOWABLE	F	F	F	F	F	G	-	G	G	G	F	G	G	F	P	P	P	F	P	P	P
PURSUIT or PHANTOM or NU-IMAGE	G	F	F	E	E	G	-	E	E	E	E	E	G	E	-	-	-	F	P	-	-
PRINCEP NINE-T or SIMAZINE 480 or SIMADEX	E	G	F	E	E	E	-	E	E ^R	E	E	E ^R	G	P	P	N	N	P	P	P	P
PRIMEXTRA II MAGNUM	E	G ²	G	E	E	E	-	E ^R	E ^R	E ^R	E	E ^R	F ^R	P	N	N	N	G	N	N	N
PROWL H2O	E	E	E	G	-	-	-	F	E	-	G	G	P	F	-	-	-	-	-	-	-
SENCOR or TRICOR or SQUADRON	F	F	F	G	G	F	-	E	E ^R	E	P	E ^R	G	G	P	P	P	P	P	P	P
SINBAR WDG	G	F	G	G	G	-	-	F	G ^R	G	F	F	F	F	-	P	F	F	F	-	F
TREFLAN or RIVAL or BONANZA	E	E	E	E	E	P	-	F	G	P	P	G	P	P	P	P	P	P	P	P	P
POST-EMERGENCE GRASS HERBICIDES																					
ACCENT 75 DF	E	F ⁴	E	E ^R	E	N	N	N	N	N	N	N	N	N	N	N	N	N	G	N	N
ASSURE II or YUMA GL	E	G ^R	E	E	E	N	N	N	N	N	N	N	N	N	N	N	N	N	E	N	N
POAST ULTRA	E	G ^R	E	E	E	N	N	N	N	N	N	N	N	N	N	N	N	N	F	N	N
SELECT or ARROW or CENTURION	E	G ^R	E	G	E	N	N	N	N	N	N	N	N	N	N	N	N	N	F	N	N
VENTURE L	G	G ^R	E	G	E	N	N	N	N	N	N	N	N	N	N	N	N	N	G	N	N

continued

TABLE 2-1**Vegetable herbicide weed control ratings** *continued*

LEGEND: N = No Control P = Poor Control F = Fair Control G = Good Control E = Excellent Control
 - = insufficient information available to make a rating.

TRADE NAME	Grasses					Annual Broadleaves									Perennials						
	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	buckwheat, wild fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed	velvetleaf	bindweed, field	horsetail	milkweed	nursedge	quackgrass	sow-thistle	thistle, Canada	
POST-EMERGENCE BROADLEAF HERBICIDES																					
2,4-D ⁵	N	N	N	N	N	F	-	P	P	E	F	E	G	G	F	N	N	N	N	G	G
AATREX LIQUID 480	P	P	P	P	P	E	-	E	E ^R	E	E	G ^R	F ^R	P	-	-	-	-	-	-	-
BASAGRAN FORTÉ	N	N	N	N	N	F	-	E	G	F	F	G	G	E	F ⁶	P	P	G ⁶	N	F ⁶	F ⁶
CALLISTO	G	P	P	P	P	G	-	E	E	E	E	E	F	E	P	N	N	N	N	N	N
GOAL 2XL	P	P	P	P	P	E	-	G	G	E	E	E	G	F	P	P	P	P	P	P	P
LONTREL 360/XC	P	P	P	P	P	-	-	F	P	-	P	P	G	P	P	-	-	P	P	F	F
MCPA ⁵	N	N	N	N	N	P	-	P	E	E	-	E	G	E	F	F	N	N	N	F	F
PARDNER or BROMOTRIL or BROTEX or KORIL or BROMAX	N	N	N	N	N	E	-	E	E	G	E	G	E	E	F	N	N	N	N	F	F
PINNACLE SG TOSS-N-GO	N	N	N	N	N	-	-	G	E	G	P	E	P	G	P	P	P	P	P	P	P
PYRAMIN	P	P	-	P	-	G	-	G	G	G	G	G	G	-	-	P	-	P	P	P	P
SANDEA or PERMIT	N	N	N	N	N	-	N	G ⁹	G ⁹	G	-	G	G	G	F	F	F	E	-	-	-
TROPOTOX PLUS or CLOVITOX PLUS or TOPSIDE	N	N	N	N	N	G	-	G	F	G	F	E	E	E	G	N	N	N	N	G	G

continued

⁸ Populations of this weed exist in Ontario that are resistant to this treatment and will not be adequately controlled.

¹ Registered for pre-emergent activity on common ragweed only.

² The addition of Callisto or Callisto + Aatrex will improve control of this species.

³ The highest labeled rate is required to achieve this level of control.

⁴ Large crabgrass only.

⁵ Not all formulations are registered on all crops. See label for specific uses and rates.

⁶ Good control of these perennial weeds may require two applications, 7-10 days apart.

⁷ Yellow foxtail will only be suppressed.

⁸ Registered for control of hairy nightshade.

⁹ Weeds cannot be emerged at time of application to achieve this level of control.

¹⁰ Repeated **IGNITE** applications may be necessary if regrowth occurs.

TABLE 2-1
Vegetable herbicide weed control ratings

TRADE NAME	Grasses					Annual Broadleaves									Perennials						
	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	buckwheat, wild	fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed	velvetleaf	bindweed, field	horsetail	milkweed	nutsedge	quackgrass	sow-thistle	thistle, Canada
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES																					
BETAMIX B	P	P	P	F	P	F	-	F	G	F	F	G	G	P	P	-	-	P	P	P	P
LOROX L	E	F	E	G	E	G	-	G	G	G	G	G	G	G	F	G	F	G	F	G	F
PRIMEXTRA II MAGNUM	E	G ²	G	E	E	E	-	E ^R	E ^R	E ^R	E	E ^R	F ^R	P	N	N	N	G	N	N	N
PRISM	E	F	E	G ⁷	E	-	-	F	F	E	P ^B	E	P	F	-	-	-	-	F	-	-
SENCOR 75 DF	G	F	E	G	E	F	-	E	G	E	-	G	G	F	-	-	-	-	F	-	-
TITUS PRO	E	G	E	G	E	F	-	E	G	E	P ^B	E	G	F	-	-	-	-	F	-	-
POST-EMERGENCE TANK-MIX OPTIONS																					
IMPACT or ARMEZON + AATREX LIQUID 480	F	F ⁴	F	F	F	G	E	E	E	E	E	E	E	F	N	N	N	N	N	N	N
PARDNER or BROMOTRIL or BROTEX or KORIL or BROMAX + AATREX LIQUID 480	P	P	P	P	P	E	-	E	E ^R	E	E	G ^R	F ^R	P	-	-	-	-	-	-	-
PRISM + PINNACLE SG TOSS-N-GO	E	G	E	G ⁷	E	-	-	G	E	E	P ^B	E	P	G	P	P	P	P	F	P	P
PRE-PLANT AND POST-HARVEST																					
GLYPHOSATE ⁵	E	E	E	E	E	E	E ^R	E	E	E	E	E	E ^R	E	G	F	G	G	G	G	G
IGNITE	E	E	E	E	E	-	G ¹⁰	E	E	E	-	E	E	E	G ¹⁰	F ¹⁰	F ¹⁰	N	G ¹⁰	-	-

Cultural weed control in vegetable crops

More than 50 vegetable crops are grown commercially in Ontario. Some are seeded, some transplanted, some are annuals, and other crops are perennial, presenting a very diverse group of situations to manage weeds. Weed management involves all aspects of weed control in vegetable crops including scouting, herbicides, cultivation, hoeing, mulches, etc. Perennial weeds are often a more severe problem in perennial horticultural crops, such as asparagus and need to be controlled prior to planting.

Treatments listed for horticultural crops in this publication are based on extensive research trials. Do NOT use herbicides in cold frames or greenhouses unless specifically stated on the pesticide label. Horticultural crops are often high value crops. Weed competition is costly. Improper application of herbicides can also be costly. Do not use sprayers for hormone type herbicides (2,4-D, etc.) to apply insecticides, fungicides or other herbicides on susceptible horticultural crops.

Herbicide application timings

PRE-PLANT (PP) TREATMENTS

Preplant treatments are applied before the crop is sown or planted. Some of these herbicides kill seedlings soon after germination while others also kill weed seeds. Most herbicides used for these treatments must be thoroughly incorporated into the soil by cultivation soon after application.

PRE-PLANT (PP) WEED AND COVER CROP CONTROL

Control cover crops and emerged weeds before seeding or transplanting vegetable crops. Alternatively, a grower may choose to kill the cover crop and/or emerged weeds just before planting the vegetable crop and either till the area or leave the seedbed untilled.

PRE-PLANT INCORPORATED (PPI)

Two incorporations at right angles operating at a depth of 4 in. using a double disk (7-10 km/h) or vibrating shank S-tine cultivator (10-13 km/h) are required unless otherwise stated. Cultivation-type equipment used for herbicide incorporation is known to spread perennial weeds to previously uninfested areas. Pay special attention to machinery cleanliness and/or treating fields with perennial weeds last.

PRE-EMERGENCE (PRE)

Rainfall at 0.6-0.8 in. within 7-10 days after application is necessary to activate preemergence treatments. Shallow cultivation, rotary hoeing or harrowing will control weed escapes and improves herbicide activity in the absence of rainfall. These materials prevent emergence of many weed seedlings without reducing crop stand. Apply immediately after seeding or at least before the emergence of the crop. If these materials are applied after weeds have emerged, kill is usually poor. Best results are obtained with this method when conditions for weed seed germination are good.

POST-EMERGENCE (POST)

These chemicals are applied after the crop plants have sprouted or after the crop has been transplanted. Applied as directed, the weeds can be killed without injury to the crop. Leaf stage of the weeds is critical for good weed control. Smaller weeds are generally easier to kill but there needs to be enough leaf surface to intercept the herbicide. Apply according to leaf stages specified on the label. Crop stage is important to optimize crop safety. Adjuvants will frequently improve the weed control when used as directed. Weather or other conditions may influence the optimum rate of adjuvant, see the label for more details. Always use appropriate drift management technology.

INTER-ROW WEEDING

The herbicide is directed between the crop rows onto the emerged weeds. The herbicide is used as a rescue operation where other methods of weed control have failed. Use special low pressure (7-15 kPa) applicators such as dribble bars or vibra jets equipped with shields to prevent wetting the crop.

STALE SEEDBED TECHNIQUE

The stale seedbed technique is useful when the soil can be worked well before planting and weeds are allowed to emerge for several weeks. Seeding or planting directly into the killed weeds with minimal soil disturbance will allow the crop to establish before the next flush of weeds emergence. Follow up with either cultivation, hoeing or postemergence or directed herbicides to control later germinating weeds. Where registered, some herbicides can be applied after seeding but before crop emergence.

WIPER APPLICATORS FOR SELECTIVE WEED CONTROL

Wiper applicators (rope-wick, roller applicator or similar device) have been extensively used with glyphosate. Check labels for use of this application technique with other herbicides.

WATER VOLUMES

All herbicide treatments should be applied in a minimum of 60-120 L/acre unless otherwise specified on the label.

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

ASPARAGUS		
TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
PRE-PLANT (STALE SEEDBED TECHNIQUE)		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.6-0.7 L/acre Active Ingredient(s): s-metolachlor (1.42-1.60 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 16 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2.00 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.750 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: not stated Rainfast: 4 hours Max. Applications: not stated
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.5-1.0 L/acre, 0.38-0.75 L/acre, 0.36-0.72 L/acre, 0.33-0.67 L/acre Active Ingredient(s): glyphosate (0.45-0.90 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 7 days Rainfast: 1 hour Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CALLISTO (480 g/L) Product Rate/acre: 0.12 L/acre Active Ingredient(s): mesotrione (0.14 kg/ha)	Group #: 27 PCP #: 27833	REI: 12 hours PHI: not stated Rainfast: 3 hours for emerged weeds Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.16 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***ASPARAGUS****PRECAUTIONS - For more information, see the label.****PRE-PLANT (STALE SEEDBED TECHNIQUE)**

- Apply before direct seeded or established spears emerge.
- Application may result in injury to the asparagus crop.
- **Do NOT** apply to soil with less than 1% or more than 10% organic matter.

- Apply before direct seeded or established spears emerge.
- Spray uniformly on emerged weeds prior to emergence of the crop.

- 2nd year and established plantings **ONLY**.
- For control of fall-seeded rye and emerged weeds.
- Apply in the spring before spears emerge.
- Not all formulations registered on all crops. See label for specific uses and rates.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- 1st year crown and established plantings **ONLY**.
- Apply as a broadcast treatment in the spring before the crop and weeds emerge.
- **Do NOT** use on sandy soils with less than 1% organic matter.

- Apply after fern mowing, disking, or other tillage operation but prior to spear emergence (PRE).
- If weeds are emerged at the time of application add AGRAL 90 at a rate of 0.2% v/v. If weeds have not emerged, no adjuvant is needed.

- 1st year crown and established plantings **ONLY**.
- Apply lower rate on sandy (coarse textured) soils with less than 5% organic matter and the higher rate on clay (medium textured) with less than 5% organic matter.
- Injury may result if spears emerge before the application has been activated with water.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: COMMAND 360 ME (360 g/L) Product Rate/acre: 0.62-0.94 L/acre Active Ingredient(s): clomazone (0.56-0.85 kg/ha)	Group #: 13 PCP #: 27827	REI: 12 hours PHI: 14 days Rainfast: not stated Max Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 1.8-3.6 kg/acre Active Ingredient(s): napropamide (2.25-4.50 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: KARMEK (80 DF) or DIUREX 80 WDG Product Rate/acre: 0.44-1.80 kg/acre Active Ingredient(s): diuron (3.6-8.8 kg/ha)	Group #: 7 PCP #: 28543 or 28107	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 2
Trade Name: LOROX L (480 g/L) Product Rate/acre: 1.32-1.72 L/acre Active Ingredient(s): linuron (1.60-2.15 kg/ha)	Group #: 7 PCP #: 16279	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: not stated
Trade Name: PRINCEP NINE-T (90 WG) + DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 1.0-1.5 kg/acre + 3.60-5.36 kg/acre Active Ingredient(s): simazine (2.25-3.38 kg/ha) + napropamide (4.5-6.7 kg/ha)	Group #: 5 + 15 PCP #: 16370 + 30081	REI: 12 hours PHI: 6 days Rainfast: moisture required for activation Max. Applications: not stated
Trade Name: PRINCEP NINE-T (90 WG) or SIMADDEX (500 g/L) or SIMAZINE 480 (480 g/L) Product Rate/acre: 1.0-1.5 kg/acre, 1.80-2.68 L/acre, 1.88-2.80 L/acre Active Ingredient(s): simazine (2.25-3.40 kg/ha)	Group #: 5 PCP #: 16370 or 15902 or 23181	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 2
Trade Name: SENCOR 75 DF (75%) or SQUADRON (75%) or TRICOR 75 (75%) Product Rate/acre: 0.6 kg/acre Active Ingredient(s): metribuzin (1.125 kg/ha)	Group #: 5 PCP #: 25840 or 32081 or 30661	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 2

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

continued

PRECAUTIONS - For more information, see the label.
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • PRE - Apply as a broadcast application to the soil prior to spear emergence. If spears have emerged, make an application after a clean harvest. Cover exposed plants with soil prior to application. • Apply broadcast at 0.62 to 0.94 L/acre. Use 0.62 L/acre on light (coarse) soils, 0.78 L/acre on medium soils and 0.94 L/acre on heavy (fine) soils. • Do NOT incorporate.
<ul style="list-style-type: none"> • Seedlings and new plantings ONLY. • PPI - Incorporation by irrigation or rainfall is essential. • Treat at planting time, or soon after planting before weed seedlings appear. • Use lower rate on sandy soils and the higher rate on clay soils.
<ul style="list-style-type: none"> • 2nd year and established plantings ONLY. • PRE - Disk before any shoots appear in the spring on established plantings. • A second application may be made after the post-harvest disking. • Use lower rates for lighter soils. • If two applications are being made, do NOT exceed 3.25 kg/ha on each application. • If using irrigation, only apply 1 application of 4.5 kg/ha.
<ul style="list-style-type: none"> • 2nd year and established plantings ONLY. • PRE - Disk before any shoots appear in the spring. • A second application may be made after the post-harvest disking. • Use lower rates for lighter soils.
<ul style="list-style-type: none"> • 2nd year and established plantings ONLY. • PRE - Disk before any shoots and weeds appear in the spring. • Use lower rates for lighter soils. • Apply second application after post-harvest disking. • Do NOT apply during the cutting season. • Do NOT apply if heavy rain is expected.
<ul style="list-style-type: none"> • 2nd year and established plantings ONLY. • PRE - Disk before any shoots appear in the spring. • A second application may be made after post-harvest disking. • Use lower rates for lighter soils.
<ul style="list-style-type: none"> • 2nd year and established plantings ONLY. • PRE - Disk before any shoots appear in the spring. • A second application may be made after post-harvest disking. • Use lower rates for lighter soils.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.15 kg/acre Active Ingredient(s): terbacil (0.3 kg/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: 5 days Rainfast: moisture required for activation Max. Applications: not stated
Trade Name: TREFLAN EC (480 g/L), RIVAL EC (500 g/L), BONANZA 480 (480 g/L) Product Rate/acre: 0.80-1.68 L/acre Active Ingredient(s): trifluralin (1.0-2.0 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.00 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 40 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.250 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 1 day Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 1.4 L/acre, 0.68-0.90 L/acre, 0.78 L/acre Active Ingredient(s): 2,4-D (1.0-1.6 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 day Max. Applications: not stated

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- 2nd year and established plantings **ONLY**.
 - PRE – Apply before spears emerge, or immediately after clean cutting.
 - Apply only once throughout the entire growing season.
 - Apply before weeds emerge, or to small, actively growing weeds (up to 2 in.).
 - **Do NOT** use on soils containing less than 1% organic matter, or where subsoil or roots are exposed.
 - **Do NOT** plant any other crop for 2 years.
-
- Established plantings of 3 or more years **ONLY**.
 - PPI – Incorporate within 24 hours of application. Application should occur early enough in the spring to ensure that spears are not injured by the required incorporation (2-4 in.) or apply after last cutting of spears (post-harvest disking) and incorporate.
 - Apply the higher rates to heavy clay soils.

POST-EMERGENCE GRASS HERBICIDES

- Apply to direct seeded, 1st year crown, 2nd year and established plantings.
 - For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
 - For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage.
 - For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough preplant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
 - **Do NOT** use flood jet or hollow cone nozzles.
-
- Apply to direct seeded, 1st year crown and established plantings.
 - Apply POST to actively growing grasses before tillering.
 - Apply 0.32 L/acre at the 2-5-leaf stage of volunteer wheat and barley.
 - Apply 0.4 L/acre at the 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
 - Apply 0.8 L/acre at the 3-5-leaf stage of quackgrass and wirestem muhly.
 - **Do NOT** cultivate between rows until 5 days after application.

POST-EMERGENCE BROADLEAF HERBICIDES

- 2nd year and established plantings **ONLY**.
- After last cutting immediately after harvest or 3 weeks after the post-cut disking. Direct spray to avoid wetting the asparagus fern.
- May be applied early in the season just after a cutting.
- Spray immediately after harvest to avoid injury.
- Emerging spears may be twisted and should be discarded. Later emerging spears will be normal.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: SANDEA (72.6 WG) Product Rate/acre: 14-42.5 g/acre Active Ingredient(s): halosulfuron (25-76 g/ha)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 1 day Rainfast: 4 hours Max. Applications: 2
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.15 kg/acre Active Ingredient(s): terbacil (0.3 kg/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: 5 days Rainfast: rainfall required for activation Max. Applications: not stated
POST-HARVEST HERBICIDES		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.6-0.7 L/acre Active Ingredient(s): s-metolachlor (1.42-1.60 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 16 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.5-1.0 L/acre, 0.38-0.75 L/acre, 0.36-0.72 L/acre, 0.33-0.67 L/acre Active Ingredient(s): glyphosate (0.45-0.90 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 7 days Rainfast: 1 hour Max. Applications: 1
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2.00 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.750 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: not stated Rainfast: 4 hours Max. Applications: not stated
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 14.0-42.5 g/acre + 2 L/1,000 L Active Ingredient(s): halosulfuron (25-76 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 1 day Rainfast: 4 hours Max. Applications: 2

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

*continued***PRECAUTIONS - For more information, see the label.**

- Post transplant and established plantings.
- For first year plantings, apply no sooner than six weeks after fern emergence.
- Apply as a single or double application of 14-42.5 g/acre, allow a minimum of 21 days between applications.
- Split applications will provide better nutsedge control if weed pressure is heavy.
- **Do NOT** apply more than 56 g/acre per season.
- **Do NOT** spray over top of plastic mulch.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES

- Apply before emergence of direct seeded asparagus **ONLY**.
- PRE – Apply as a broadcast treatment within 2 days of seeding.
- Plant asparagus seed to a depth of 1.6 in. in coarse (sandy) soils or 1 in. deep in fine (clay) soils into newly cultivated fields.

POST-HARVEST HERBICIDES

- Apply after last cutting of established asparagus.
- Application may result in injury to the asparagus crop, which may include potential stand loss, delayed maturity and even loss of yield.
- **Do NOT** apply to soil with less than 1% or more than 10% organic matter.

- Not all formulations registered on all crops. See label for specific uses and rates.

- Apply after last cutting of established asparagus.

- SANDEA may be applied at the end of the harvest season.
- Under heavy nutsedge pressure, split applications are recommended.
- Contact with the fern may cause temporary yellowing.
- A non-ionic surfactant or crop oil concentrate should be used with post-harvest applications. Crop injury will be minimized and nutsedge and listed broadleaf weeds will be controlled more effectively when applications are made with drop nozzles to direct the spray below the fern to allow for more complete coverage of target weeds.
- **Do NOT** apply more than 56 g/acre per season.
- Split applications must be made 21 days apart.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
BEANS (EDAMAME)		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDE		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.46-0.7L/acre Active Ingredient(s): s-metolachlor (1.05-1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: requires rainfall for activation Max Applications: 1
POST - EMERGENCE GRASS HERBICIDES		
Trade Name: SELECT (240g/L) or CENTURION (240g/L) + AMIGO Product Rate/acre: 0.076 L/acre + 0.5% v/v Active Ingredient(s): clethodim (240g/L) + surfactant (0.5% v/v)	Group #: 1 PCP #: 22625 or 27598	REI: 12 hours PHI: 21 days Rainfast: 1 hour Max Applications: 1
BEANS (LIMA AND SNAP)		
SOIL-APPLIED BROADLEAF HERBICIDE		
Trade Name: PERMIT (72.6%) Product Rate/acre: 14-19 g/acre Active Ingredient(s): halosulfuron (26.25-35.25 g/ha)	Group #: 2 PCP #: 31210	REI: 12 hours PHI: not stated Rainfast: 4 hours Max Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.46-0.7 L/acre Active Ingredient(s): s-metolachlor (1.05-1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: requires rainfall for activation Max Applications: 1
Trade Name: EPTAM (800 g/L) Product Rate/acre: 1.7-2.2 L/acre Active Ingredient(s): EPTC (3.4-4.4 kg/ha)	Group #: 15 PCP #: 29194	REI: 24 hours PHI: not stated Rainfast: not stated Max Applications: 2

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.
BEANS (EDAMAME)
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDE
<ul style="list-style-type: none"> • Can be applied PPI or PRE. • Ground application only. • Use lower rate of DUAL II MAGNUM on coarse-textured soil and higher rates on fine-textured and muck soils, or for heavier weed infestations. • PPI application and incorporation must occur within 14 days of planting.
POST - EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • Apply in a minimum spray volume of 110 L/ha. • Ground application only.
BEANS (LIMA AND SNAP)
SOIL-APPLIED BROADLEAF HERBICIDE
<ul style="list-style-type: none"> • For use on snap beans ONLY. • Apply PRE after seeding but prior to soil cracking. Use the lower rate on lighter textured soils with low organic matter. • Applications may cause temporary stunting and/or delayed maturity which may result in a delayed harvest.
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • DUAL II MAGNUM must be applied PPI to snap and lima beans. • Beans should be seeded at least 4 cm deep or crop injury may result. • Do NOT use on muck, peat or high organic matter soils. • Use the low rate on coarse-textured soils low in organic matter. • Requires rainfall for activation. Rotary hoe if no rainfall occurs within 7 days. • Use the high rate to control of heavier weed infestations.
<ul style="list-style-type: none"> • For use on snap beans ONLY. • Apply PPI. Incorporate immediately. • If dry weather has preceded the application of EPTAM, delay seeding 7-10 days. • Under extreme weather conditions, such as cold temperatures and wet soils or higher temperatures and dry soils, stunting may occur. • Use the high rate for nutsedge control.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: FRONTIER MAX (720g/L) Product Rate/acre: 0.305-0.390 L/acre Active Ingredient(s): dimethenamid-P (544-693 g/ha)	Group #: 15 PCP #: 29194	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 1
Trade Name: PROWL H20 (455 g/L) Product Rate/acre: 0.95 L/acre Active Ingredient(s): pendimethalin (1.08 kg/ha)	Group #: 3 PCP #: 29542	REI: 24 hours PHI: Lima: 80 days Snap: 50 days Rainfast: moisture required for activation Max Applications: 1
Trade Name: PURSUIT (240 g/L) or PHANTOM (240 g/L) or NU-IMAGE (240 g/L) Product Rate/acre: 0.126 L/acre Active Ingredient(s): imazethapyr (0.075 kg/ha)	Group #: 2 PCP #: 21537 or 30017 or 30420	REI: 12 hours PHI: Lima: 90 days Snap: 40 days Rainfast: moisture required for activation Max Applications: 1
Trade Name: RIVAL (500 g/L) or TREFLAN EC (480 g/L) or BONANZA 480 (480g/L) Product Rate/acre: 0.48-0.92 L/acre, 0.48 - 0.96 L/acre, 0.5 - 0.92 L/acre Active Ingredient(s): trifluralin (0.6-1.155 kg/ha)	Group #: 3 PCP #: 18612 or 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max Applications: 1
SOIL-APPLIED TANK-MIX OPTIONS		
Trade Name: DUAL II MAGNUM (915 EC) + PURSUIT or PHANTOM or NU-IMAGE (240 g/L) Product Rate/acre: 0.46-0.7 L/acre + 0.126 L/acre Active Ingredient(s): s-metolachlor (1.05-1.60 kg/ha) + imazethapyr (0.075 kg/ha)	Group #: 15 + 2 PCP #: 25728 + 21537 or 30017 or 30420	REI: 12 hours PHI: 100 days Rainfast: moisture required for activation Max Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Snap beans **ONLY**.
- **PPI ONLY**.
- Minimum **PPI** rate is 348 mL/acre.
- Use the low rate on coarse-textured soils low in organic matter.
- Use the higher rate of FRONTIER MAX for the control of nightshade and pigweed.
- Rotary hoe if no rainfall occurs within 7 days.
- Early crop injury may be observed, but yield should not be reduced.
- Beans should be seeded at least 4 cm deep or crop injury may occur.

- **PPI ONLY**.
- **Do NOT** apply after planting snap and lima beans as crop injury may occur.

- Apply **PPI** or **PRE** to snap beans (*Phaseolus vulgaris*).
- Apply **PRE ONLY** to lima beans.
- Delayed maturity or stunting may occur if cold and/or wet conditions are experienced within the first week after application.
- If adequate moisture is not received within 7 to 10 days of application, perform a shallow inter-row cultivation.
- Some rotational cropping restrictions apply (see Table 1-4 Recropping restrictions in months for horticulture crops).

- Apply **PPI**. Apply and incorporate immediately, within 24 hours, prior to or up to 3 weeks before planting.
- **Do NOT** exceed 0.48L/acre in medium textured soils and 0.68L/acre in heavy textured soils of TREFLAN for lima beans
- **Do NOT** apply to peat and muck soils, or soils which contain more than 15% organic matter.
- Refer to labels for exact product rates for lima and snap beans.

SOIL-APPLIED TANK-MIX OPTIONS

- Snap beans **ONLY**.
- **PPI ONLY**.
- **Do NOT** use on muck, peat or high organic matter soils.
- Use the low rate on coarse-textured soils low in organic matter.
- adequate moisture is not received within 7 to 10 days of application, perform a shallow inter-row cultivation.
- Some rotational cropping restrictions apply (see Table 1-4 Recropping restrictions in months for horticulture crops).

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: FRONTIER MAX (720 g/L) + PURSUIT (240 g/L) Product Rate/acre: 0.305-0.390 L/acre + 0.126 L/acre Active Ingredient(s): dimethenamid-P (544-693 g/ha) + imazethapyr (0.075 kg/ha)	Group #: 15 + 2 PCP #: 29194 + 21537	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 1
Trade Name: PERMIT (72.6%) + EPTAM (800 g/L) Product Rate/acre: 35-47 g/ha (14-19 g/acre) + 1.7-2.1 L/acre Active Ingredient(s): halosulfuron (26.25-35.25 g/ha) + EPTC (3.4-4.2 kg/ha)	Group #: 2 + 8 PCP #: 31210 + 11284	REI: 24 hours PHI: not stated Rainfast: 4 hours Max Applications: 1
Trade Name: ASSURE II (96 g/L) + SURE-MIX or YUMA GL (96 g/L) + XA Oil Concentrate Product Rate/acre: 0.15-0.3 L/acre + 0.5% v/v Active Ingredient(s): quizalofop-p-ethyl 96 g/L + oil concentrate (0.5% v/v)	Group #: 1 PCP #: 25462 or 30100	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max Applications: 1
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.26-0.45 L/acre + 0.4-0.8 L/acre Active Ingredient(s): sethoxydim (0.15-0.5 kg/ha) + surfactant (1-2 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: Lima: 80 days Snap: 15 days Rainfast: 1 hour Max Applications: 1
Trade Name: SELECT (240 g/L) + AMIGO Product Rate/acre: 0.076 L/acre + 5 L/1,000 L Active Ingredient(s): clethodim (0.03-0.046 kg/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 22625	REI: 12 hours PHI: Lima: 60 days Snap: 21 days Rainfast: 1 hour Max Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Snap beans **ONLY**.
 - **PPI ONLY**.
 - **Do NOT** use on muck, peat or high organic matter soils.
 - Use the low rate on coarse-textured soils low in organic matter.
 - Rotary hoe if no rainfall occurs within 7 days.
 - Some rotational cropping restrictions apply (see Table 1-4 Recropping restrictions in months for horticulture crops).
- Snap beans **ONLY**.
 - Apply **PPI** to a depth of approximately 5 cm just before planting.
 - Use lower rate on lighter textured soils with low organic matter.
 - Refer to EPTAM 8-E label for specific incorporation directions.
 - Rotary hoe lightly during or shortly after emergence of the beans to break any crust which occurs.
- For use on lima and snap beans.
 - Apply at the 2-5-leaf stage of the annual grasses and up to the 3-leaf stage of quackgrass.
 - Use the 0.15 L/acre rate for control of volunteer corn, volunteer cereals and green foxtail.
 - The 0.2 L/acre rate will suppress quackgrass and control barnyard grass.
 - Use the 0.3 L/acre rate for control of quackgrass.
- For annual grass, use 0.13 L/acre at the 1-6 leaf stage.
 - For volunteer grains, use 0.19 L/acre.
 - For quackgrass, use 0.44 L/acre. Apply up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
 - Maximum application rates: 0.44 L/acre for lima and 0.26 L/acre for snap beans.
- For the control of annual grasses and quackgrass in the 2-6 leaf stage.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + non-ionic surfactant Product Rate/acre: 0.030-0.047 L/acre + 2.5 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (0.0175-0.028 kg/ha) + non-ionic surfactant (0.25% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 6-8 hours Max Applications: 1
Trade Name: BASAGRAN (480 g/L) + ASSIST Product Rate/acre: 0.7-0.9 L/acre + 0.8 L/acre Active Ingredient(s): bentazon (0.84-1.08 kg/ha) + oil concentrate (2 L/ha)	Group #: 6 PCP #: 12221	REI: 12 hours PHI: not stated Rainfast: 6-8 hours Max Applications: 2
Trade Name: REFLEX (240 g/L) + AGRAL 90 Product Rate/acre: 0.4 L/acre + 2.5 L/1,000 L Active Ingredient(s): fomesafen (0.24 kg/ha) + adjuvant (0.25% v/v)	Group #: 14 PCP #: 24779	REI: 12 hours PHI: Lima: 46 days Snap: 30 days Rainfast: 4 hours Max Applications: once every 2 years
POST-EMERGENCE GRASS AND BROADLEAF TANK-MIX OPTIONS		
Trade Name: REFLEX (240 g/L) + VENTURE L (125 g/L) + AGRAL 90 Product Rate/acre: 0.4 L/acre + 0.243-0.8 L/acre + 0.1-0.25% v/v Active Ingredient(s): fomesafen (0.24 kg/ha) + fluazifop-p-butyl (6 g/ha) + 0.1% v/v	Group #: 14 + 1 PCP #: 24779 + 21209	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max Applications: once every 2 years

continued

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Apply to actively growing weeds up to 4 in. tall. • Coverage of weed and crop foliage is essential for control.
<ul style="list-style-type: none"> • Apply POST when snap and lima beans are in the 1 to 3 trifoliate leaf stage. Tolerant after 1st trifoliate leaf has fully expanded. • Apply when weeds are small and actively growing. • Two applications of 0.7 L/acre 10 days apart may be required to control perennial weeds.
<ul style="list-style-type: none"> • Apply POST when beans are in the 1-2 trifoliate leaf stage. Do NOT use before the 1st trifoliate leaf stage or increased risk of crop injury may result. • Apply when weeds are small and actively growing. • Do NOT apply to crop under stress. • Some bronzing, crinkling or spotting of leaves may occur. • Some rotational cropping restrictions apply (see Table 1-4 Recropping restrictions in months for horticulture crops).
POST-EMERGENCE GRASS AND BROADLEAF TANK-MIX OPTIONS
<ul style="list-style-type: none"> • Snap beans ONLY. • Apply POST when snap beans are in the 1-2 trifoliate leaf stage. Do NOT use before the 1st trifoliate leaf stage or increased risk of crop injury may result. • Do NOT apply REFLEX to any field more often than once every 2 years.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
BEETS (RED)		
SOIL-APPLIED BROADLEAF HERBICIDE		
Trade Name: PYRAMIN FL (430 g/L) Product Rate/acre: 3.3-4.1 L/acre Active Ingredient(s): pyrazon (3.54-4.40 kg/ha)	Group #: 5 PCP #: 15857	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDE		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5 L/acre Active Ingredient(s): s-metolachlor (1.14 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: SELECT (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.08-0.15 L/acre + 5-10 L/1,000 L Active Ingredient(s): clethodim (46-91 g/ha) + surfactant (0.5-1.0 % v/v)	Group #: 1 PCP #: 22625 or 27598	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 2
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: LONTREL 360 (360 g/L) Product Rate/acre: 0.17-0.23 L/acre Active Ingredient(s): clopyralid (0.15-0.20 kg/ha)	Group #: 4 PCP #: 23545	REI: 12 hours PHI: 30 days Rainfast: not stated Max Applications: 1
Trade Name: PYRAMIN FL (430 g/L) + CITOWETT PLUS Product Rate/acre: 3.3 L/acre + 2.5 L/1,000 L Active Ingredient(s): pyrazon (3.54 kg/ha) + surfactant (0.25% v/v)	Group #: 5 PCP #: 15857	REI: 12 hours PHI: not stated Rainfast: 6 hours Max. Applications: not stated

continued

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.
BEETS (RED)
SOIL-APPLIED BROADLEAF HERBICIDE
<ul style="list-style-type: none"> • PPI or PRE. • PPI – Do NOT incorporate more than 2 in. • Do NOT use on soils with less than 3% organic matter.
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDE
<ul style="list-style-type: none"> • PRE • Irrigate after application to activate the herbicide if rainfall is not expected, but use only 0.5 in. of water to incorporate the herbicide. Excessive irrigation will increase the risk of crop injury. Mechanical incorporation of DUAL II MAGNUM will increase the risk of crop injury.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • For the control of annual grasses and quackgrass. • Apply when grassy weeds are at 2-6-leaf stage.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Apply POST with a hooded sprayer between the rows or between the plastic mulch. • Apply to actively growing weeds up to 4 in. tall.
<ul style="list-style-type: none"> • Make one application per year to control labeled weeds. • Apply to beets in the 2-8 leaf stage. • Apply when weeds are actively growing. • Apply post planting as a ground application ONLY.
<ul style="list-style-type: none"> • For best results, apply before the third true leaf of crop and weeds. • Do NOT use any other oils or surfactants, including ASSIST or MERGE or crop injury may result.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: UPBEET (50 DF) + AGRAL 90 or AG-SURF or CITOWETT PLUS Product Rate/acre: 14-28 g/acre + 2.5 L/1,000 L Active Ingredient(s): triflusaluron-methyl (17.5-35.0 g/ha) + non-ionic surfactant (0.25% v/v)	Group #: 2 PCP #: 25813	REI: 12 hours PHI: 30 days Rainfast: 6 hours Max. Applications: 3
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: BETAMIX B EC (1:1) 153 g/L Product Rate/acre: 0.46-0.70 L/acre Active Ingredient(s): desmedipham/phenmedipham (0.18-0.28 kg/ha)	Group #: 5 PCP #: 28650	REI: 24 hours PHI: 30 days Rainfast: 6 hours Max. Applications: 3
CABBAGE, CAULIFLOWER, BROCCOLI, BRUSSELS SPROUTS		
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: GOAL 2XL (22.3%) Product Rate/acre: 0.46-0.81 L/acre Active Ingredient(s): oxyfluorfen (252-446 mL/ha)	Group #: 14 PCP #: 24913	REI: 12 hours PHI: 60 days Rainfast: 3 hours Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.084 kg/acre Active Ingredient(s): flumioxazin (107.31 g/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 3.6-6.2 kg/acre Active Ingredient(s): chlorthal dimethyl (6.75-11.63 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply at the 2-4, 4-6, and the 6-8-leaf stages. Use the higher rate for larger weeds and heavy weed populations.
- **Do NOT** use more than 43.2 g/acre of UPBEET in a season.
- **Do NOT** apply under extreme temperatures or drought conditions.
- Yellowing of the crop may occur, but beets will recover.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES

- The first application must be made when the weeds have reached the cotyledon stage.
- **Do NOT** spray more than 2.1 L/acre of BETAMIX per year.
- **Do NOT** spray under extreme temperature or drought conditions.
- **Do NOT** spray if dew is present.
- Temporary reduced growth and/or tip burn may occur. Beets will resume growth in 10 days.

CABBAGE, CAULIFLOWER, BROCCOLI, BRUSSELS SPROUTS**SOIL-APPLIED BROADLEAF HERBICIDES**

- Apply once after completion of soil preparation but prior to transplanting.
- Transplanting should be completed with minimal soil disturbance.
- Treated soil surfaces should be left undisturbed to obtain maximum control of broadleaf weeds. However, once weeds emerge, cultivation will help to control them.
- Leaf cupping or crinkling may result after transplanting, but the crops rapidly outgrow this and develop normally.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Apply as a broadcast or banded treatment to soil surface in the spring up to 72 hours prior to transplanting head and stem brassica (broccoli, Brussels sprouts, Chinese (napa) cabbage, cabbage, cauliflower).
- **Do NOT** mechanically incorporate after application.
- **Do NOT** apply to frozen soil.
- **Do NOT** use on sandy soils with less than 1% organic matter.

- Apply on broccoli **ONLY**.
- Apply as a hooded or shielded application to row middles prior to transplanting.
- **Do NOT** apply on soils with greater than 5% organic matter or on fine-textured soils.
- **Do NOT** apply more than 84 g/acre during a single growing season.

- PPI or PRE.
- Apply at a rate of 3.6-5.4 kg/acre on light sand or sandy loam soils and at a rate of 4.4-6.2 kg/acre on medium silt loam soils.
Do NOT use on muck soils.
- Apply immediately after seeding or directly over transplants, pre-emergence to weeds. If weeds have emerged, cultivate the soil before application.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.9-1.8 kg/acre Active Ingredient(s): napropamide (1.12-2.25 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: FRONTIER MAX (900 g/L) Product Rate/acre: 305-390 mL/acre Active Ingredient(s): dimethenamid (544-693 g/ha)	Group #: 15 PCP #: 29194	REI: 24 hours PHI: 60 days Rainfast: not stated Max. Applications: 1
Trade Name: PROWL H2O (455 g/L) Product Rate/acre: 1 L/acre Active Ingredient(s): pendimethalin (1.12 kg/ha)	Group #: 3 PCP #: 29542	REI: 24 hours PHI: 60 days broccoli PHI: 70 days cabbage and cauliflower Rainfast: moisture required for activation Max Applications: 1
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.50-0.96 L/acre Active Ingredient(s): trifluralin (0.6-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.15-0.50 kg/ha) + surfactant/solvent (0.25-2.00 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 70 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.32-0.80 L/acre Active Ingredient(s): fluzafop-p-butyl (0.1-0.250 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 40 days Rainfast: 2 hours Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- PPI or PRE – Use **ONLY** on transplanted cabbage, cauliflower, and broccoli.
 - Use the lower rate on light soils (coarse textured sandy and sandy loam).
 - Apply to well worked soil that is dry enough to permit thorough incorporation to a depth of 1-2 in. Incorporate the same day as applied.
 - Damage to subsequent cover crops can be reduced by tillage across the rows after harvest. Small grains seeded in the fall may be stunted but not otherwise affected.
- PRE – Use **ONLY** on transplanted cabbage, cauliflower and broccoli. Apply within 2 days.
 - Use the higher rate for heavier weed pressure.
 - **Do NOT** incorporate and **Do NOT** use on seeded cole crops.
 - **Do NOT** apply to soil with less than 1% or more than 10% organic matter.
- For use on transplanted cabbage **ONLY**.
 - Apply to soil prior to transplant and before weed emergence.
- Apply once as a directed spray to soil surface between rows of cabbage, cauliflower or broccoli when the crops is at the 2-4 leaf stage for both direct seeded and transplanted crops. Be sure roots of transplants are established before application.
 - **Do NOT** apply as a broadcast spray over top of broccoli, cabbage or cauliflower or crop injury may result. Avoid direct spray contact with foliage or stems.
 - **Do NOT** apply PROWL H2O with liquid fertilizers.
- PPI – Incorporate within 24 hours of application.
 - Use **ONLY** on direct seeded cabbage or cauliflower or on transplants of cabbage, cauliflower, broccoli and Brussels sprouts.

POST-EMERGENCE GRASS HERBICIDES

- **Do NOT** exceed 0.18 L/acre on broccoli.
 - For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
 - For volunteer grains, use 0.19 L/acre.
 - For quackgrass, use 0.44 L/acre. Apply up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
 - Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
 - Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
 - Thorough pre-plant tillage, fragmenting quackgrass rhizome improves control.
 - **Do NOT** cultivate between rows until 5 days after application.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6–46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: LONTREL 360 (360 g/L) or XC (600 g/L) Product Rate/acre: 0.2 L/acre or 0.14 L/acre Active Ingredient(s): clopyralid (0.20 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 30 days Rainfast: not stated Max. Applications: 1
CARROTS		
SOIL-APPLIED FOLLOWED BY POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: GESAGARD 480 SC (480 g/L) followed by LOROX L (480 g/L) Product Rate/acre: 1.50–2.83 L/acre followed by 0.44–0.90 L/acre Active Ingredient(s): prometryne (1.8–3.4 kg/ha) followed by linuron (0.55–1.125 kg/ha)	Group #: 5 followed by 7 PCP #: 24771 followed by 16279	REI: 24 hours PHI: not stated Rainfast: 8 hours Max. Applications: 1 Gesagard
Trade Name: LOROX L (480 g/L) followed by LOROX L (480 g/L) Product Rate/acre: 0.44–0.90 L/acre followed by 0.9–1.8 L/acre Active Ingredient(s): linuron (0.55–1.125 kg/ha) followed by linuron (1.125–2.25 kg/ha)	Group #: 7 PCP #: 16279	REI: 24 hours PHI: not stated Rainfast: PRE: moisture required for activation POST: 8 hours Max. Applications: 2

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****POST-EMERGENCE BROADLEAF HERBICIDES**

- Apply to actively growing weeds up to 4 in. tall.
- Apply **ONLY** one POST application per growing season with a hooded sprayer between the rows.

- For use on transplanted cabbage, cauliflower, broccoli and brussel sprouts.
- Make 1 application per year after planting to control ragweed, vetch, common groundsel, Canada thistle and for suppression of sheep sorrel.

CARROTS**SOIL-APPLIED FOLLOWED BY POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES**

- PRE followed by POST – Use on muck soils **ONLY**.
- For POST – Spray when crop has 2 or more fully developed leaves (3.2-6 in. tall).
- Apply before annual grasses are 2 in. high and broadleaf weeds are 6 in. high.
- Carrot leaves will become yellow or light green, but they will soon regain their normal colour.
- **Do NOT** apply during hot, dry weather (greater than 32°C) or when crop is under stress.
- **Do NOT** apply if heavy rains are expected.

- PRE followed by POST.
- **Do NOT** apply the 2nd treatment closer than 2 weeks after the first treatment.
- Spray POST when crop has 2 or more fully developed leaves (3.2-6 in. tall).
- Apply POST before annual grasses are 2 in. high and before broadleaf weeds are 6 in. high.
- Carrot leaves will become yellow or light green, but they soon recover.
- **Do NOT** apply during hot, dry weather (greater than 32°C) or when crop is under stress.
- **Do NOT** apply if heavy rains are expected.
- Use the lower rates on sandy soils and for smaller weeds.
- **Do NOT** use on coarse-textured soils low in organic matter.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: LOROX L (480 g/L) followed by SENCOR 75 DF (75%) Product Rate/acre: 0.9 L/acre followed by 0.077 kg/acre Active Ingredient(s): linuron (1.125 kg/ha) followed by metribuzin (0.143 kg/ha)	Group #: 7 followed by 5 PCP #: 16279 followed by 17242	REI: 24 hours PHI: 60 days Rainfast: PRE: moisture required for activation POST: 8 hours Max. Applications: 2
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (480 g/L) or BONANZA 480 (480 g/L) followed by LOROX L (480 g/L) Product Rate/acre: 0.50-0.96 L/acre followed by 0.44-1.30 L/acre Active Ingredient(s): trifluralin (0.6-1.15 kg/ha) followed by linuron (0.55-1.625 kg/ha)	Group #: 3 followed by 7 PCP #: 23933 or 18612 or 28289 followed by 16279	REI: 24 hours PHI: not stated Rainfast: PRE: not stated POST: 8 hours Max. Applications: 1 Treflan
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: GESAGARD 480 SC (480 g/L) Product Rate/acre: 1.5-2.83 L/acre Active Ingredient(s): prometryne (1.8-3.4 kg/ha)	Group #: 5 PCP #: 24771	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
Trade Name: LOROX L (480 g/L) Product Rate/acre: 0.44-1.3 L/acre Active Ingredient(s): linuron (0.55-1.625 kg/ha)	Group #: 7 PCP #: 16279	REI: 24 hours PHI: not stated Rainfast: 8 hours Max. Applications: 2
Trade Name: PARDNER (280 g/L) Product Rate/acre: 0.40-0.48 L/acre Active Ingredient(s): bromoxynil (0.280-0.336 kg/ha)	Group #: 6 PCP #: 18001	REI: 24 hours PHI: 45 days Rainfast: 1 hour Max. Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- To be used only on carrots previously treated with a PRE application of linuron.
- **Do NOT** tank-mix with liquid fertilizers, oils, oil concentrates, or surfactants when applying post-emergence because severe crop injury may occur.
- On sunny days application should be made in the afternoon or early evening.
- **Do NOT** apply on coarse soils with less than 2% organic matter.

- Apply trifluralin PPI followed by LOROX L POST on mineral soils. Trifluralin must be incorporated within 24 hours.
- Spray linuron when crop has 2 or more fully developed leaves (3.2-6 in. tall).
- Apply POST before annual grasses are 2 in. high and before broadleaf weeds are 6 in. high.
- Carrot leaves will become yellow or light green, but they soon recover.
- **Do NOT** apply linuron with herbicidal oil.
- **Do NOT** apply linuron during hot, dry weather (greater than 32°C) or when crop is under stress.
- **Do NOT** apply linuron if heavy rains are expected.
- Use the lower rates on sandy soils and for smaller weeds.
- **Do NOT** use on coarse-textured soils low in organic matter or on soils that contain more than 15% organic matter.

SOIL-APPLIED BROADLEAF HERBICIDES

- PRE – Apply soon after seeding.
- Use the lower rate on sandy soils and the higher rate on muck soils.
- **Do NOT** use at or near the time of emergence.

- PRE – Apply as a band or broadcast spray after planting but before carrots emerge.
- Use the lower rate on sandy soils.
- Carrots are very sensitive to this treatment at the time of emergence and severe injury can occur at this time if there is a heavy rain or if the area is irrigated.

- Apply **ONLY** to muck soils containing greater than 10% organic matter.
- **Do NOT** irrigate carrots for at least 2 days following application or 3 days after crop emergence.
- Use the higher rate on wild mustard, cow cockle, stinkweed and pigweed that are at the 4-leaf stage.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.48-0.60 L/acre Active Ingredient(s): s-metolachlor (1.098-1.601 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 30 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PROWL H2O (455 g/L) Product Rate/acre: 1.5-2.67 L/acre Active Ingredient(s): pendimethalin (1.68-3.00 kg/ha)	Group #: 3 PCP #: 29542	REI: 24 hours PHI: 90 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.576-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.15-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 50 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: SELECT (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.08-0.15 L/acre + 5-10 L/1,000 L Active Ingredient(s): clethodim (46-91 g/ha) + surfactant (0.5-1.0% v/v)	Group #: 1 PCP #: 22625 or 27598	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 2

continued

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

continued

PRECAUTIONS - For more information, see the label.
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • PRE, after planting, prior to crop and weed emergence. • Mineral soils – 0.48-0.6 L/acre. • Muck soils (> 20% organic matter) – 0.6-0.7 L/acre. • Do NOT follow a PRE application with a POST spray later in the season. • Reduced levels of weed control may be observed when weed densities are high. • NOTE: level and duration of weed suppression may be reduced in muck soils with higher organic matter content. • NOTE: applications may cause significant injury to carrots, resulting in reduced yields.
<ul style="list-style-type: none"> • Apply 2 days after planting and before carrots and weeds have emerged. • Apply 1.5 L/acre on mineral soil and 2.67 L/acre on muck soil. • Do NOT apply PROWL H2O with liquid fertilizers.
<ul style="list-style-type: none"> • PPI – Incorporate within 24 hours of application. Apply the higher rate to heavy clay soils. • Do NOT apply to soils with more than 15% organic matter.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage. • For quackgrass, use 0.44 L/acre. Apply up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass. • Do NOT use flood jet or hollow cone nozzles.
<ul style="list-style-type: none"> • For the control of annual grasses and quackgrass in the 2-6-leaf stage.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.8 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 Group #: 21209	REI: 12 hours PHI: 50 days Rainfast: 2 hours Max. Applications: not stated
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6–46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 Group #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.48–0.60 L/acre Active Ingredient(s): s-metolachlor (1.098–1.373 kg/ha)	Group #: 15 Group #: 25729	REI: 12 hours PHI: 30 days Rainfast: not stated Max. Applications: 1
Trade Name: LOROX L (480 g/L) Product Rate/acre: 0.9–1.8 L/acre Active Ingredient(s): linuron (1.125–2.25 kg/ha)	Group #: 7 Group #: 16279	REI: 24 hours PHI: not stated Rainfast: 8 hours Max. Applications: 2
CELERY		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 56.7–85.0 g/acre Active Ingredient(s): flumioxazin (71.5–107.3 g/ha)	Group #: 14 Group #: 29231	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply when the crop is 4 in. in height (2-5-leaf stage) or less.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Thorough pre-plant tillage, fragmenting quackgrass rhizomes improves control.
- **Do NOT** cultivate between rows until 5 days after application.
- Apply other post-emergence herbicides separately at least 3 days after VENTURE L.

POST-EMERGENCE GRASS HERBICIDES

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES

- Apply during the crop's 3-5-leaf stage and before the weed's 2-leaf stage.
- Reduced levels of weed control may be observed when weed densities are high.
- NOTE: level and duration of weed suppression may be reduced in muck soils with higher organic matter content.
- NOTE: applications may cause significant injury to carrots, resulting in reduced yields.

- For carrots not treated with linuron PRE.
- Spray when the crop has 2 or more fully developed leaves (3.2-6 in. tall).
- Apply before annual grasses are 2 in. high and before broadleaf weeds are 6 in. high.
- Carrot leaves will become yellow or light green, but they will soon regain their normal colour.
- **Do NOT** apply with herbicidal oil.
- **Do NOT** apply during hot, dry weather (greater than 32°C) or when the crop is under stress.

CELERY**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Apply as a hooded or shielded spray to row middles prior to transplanting celery for pre-emergence control of weeds.
- Rainfall or irrigation must occur between application and transplanting in order to activate the product.
- **Do NOT** apply more than 85 g/acre per season.
- Plants should be grown on raised or plastic mulched beds that are at least 4 in. higher than the treated row middle and the mulched bed must have a minimum of 23.6 in. bed width.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.48–0.61 L/acre mineral soil, 0.61–0.71 L/acre muck soil Active Ingredient(s): s-metolachlor (1.14–1.60 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 62 days Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13–0.44 L/acre + 0.1–0.8 L/acre Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + surfactant/solvent (0.1% v/v)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6–46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: GESAGARD 480 SC (480 g/L) Product Rate/acre: 1.5–1.83 L/acre Active Ingredient(s): prometryne (1.8–2.2 kg/ha)	Group #: 5 PCP #: 24771	REI: 24 hours PHI: 54 days Rainfast: not stated Max. Applications: 1
Trade Name: LOROX L (480 g/L) Product Rate/acre: 0.73–1.8 L/acre Active Ingredient(s): linuron (0.91–2.26 kg/ha)	Group #: 7 PCP #: 16279	REI: 24 hours PHI: not stated Rainfast: 8 hours Max. Applications: 2

continued

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Risk of crop injury is less with a directed spray than a broadcast spray. • Only suppression of listed weeds is achievable on muck soil. • For muck soils, irrigate IMMEDIATELY with 0.5 in. of water. • The use of a spray adjuvant or a registered herbicide tank mixture with DUAL II MAGNUM will increase the risk of crop injury.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage. • For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Apply POST with a hooded sprayer between the rows. • Apply to actively growing weeds up to 4 in. tall.
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Do NOT apply until 21 days after transplanting the crop when the celery plants are established. • Apply before weeds reach 2 in. tall.
<ul style="list-style-type: none"> • Apply to transplants as soon as new growth has started. Some temporary discolouration may occur. • All dosages are expressed as broadcast rates. For band treatment use proportionately less. • Do NOT use on sandy or coarse-textured soils low in organic matter (less than 1%), as crop injury may result.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
CELERIAC, TRANSPLANTED		
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: GESAGARD 480 SC (480 g/L) Product Rate/acre: 1.44-1.85 L/acre (1.8-2.2 kg/ha) Active Ingredient(s): prometryne	Group #: 5 Group #: 24771	REI: 12 hours PHI: 54 days Rainfast: not stated Max. Applications: 1
CHICORY, ROOT		
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.45 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.15-0.5 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 Group #: 24835	REI: 12 hours PHI: 60 days Rainfast: 1 hour Max. Applications: not stated
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: UPBEET (50 DF) + AGRAL 90 or AG-SURF or CITOWETT PLUS Product Rate/acre: 14-28 g/acre + 2.5 L/1,000 L Active Ingredient(s): triflusaluron-methyl (17.5-35 g/ha) + non-ionic surfactant (0.25% v/v)	Group #: 2 PCP #: 25813	REI: 12 hours PHI: 60 days Rainfast: 6 hours Max. Applications: not stated

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****CELERIAC, TRANSPLANTED****POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES**

- Apply after the celeriac transplants are well established (21 days).
- Treatment may be pre or early post to the weeds, but before the weeds are 2 in. high.

CHICORY, ROOT**POST-EMERGENCE GRASS HERBICIDES**

- For annual grass, use 0.13 L/acre at the 2-6-leaf stage.
- For volunteer grass, apply at a rate of 0.19 L/acre.
- For quackgrass, use 0.44 L/acre and the high rate of MERGE up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
 - Apply to actively growing weeds up to 4 in. tall.
-
- For control of velvetleaf.
 - Apply POST after emergence of chicory and velvetleaf, but prior to the 4-leaf stage of velvetleaf.
 - **Do NOT** exceed 28 g/acre per season.
 - If the lower rate has been used and velvetleaf continues to emerge, repeat application in 2-3 weeks.
 - Temporary yellowing of the crop may occur.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
CUCUMBER		
PRE-PLANT (STALE SEEDBED TECHNIQUE)		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.3-1.4 L/acre, 0.23-1.05 L/acre, 0.21-1.01 L/acre, 0.2-0.94 L/acre Active Ingredient(s): glyphosate (0.267-1.246 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 7 days Rainfast: 1 hour Max. Applications: not stated
SOIL-APPLIED GRASS HERBICIDES		
Trade Name: PREFAR (480 g/L) Product Rate/acre: 4.8-5.6 L/acre Active Ingredient(s): bensulide (5.76-6.72 kg/ha)	Group #: 8 PCP #: 14113	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: REFLEX (240 g/L) + AGRAL 90 Product Rate/acre: 0.4 L/acre + 1.0 L/1,000 L Active Ingredient(s): fomesafen (0.24 kg/ha) + adjuvant (0.1% v/v)	Group #: 14 PCP #: 24779	REI: 12 hours PHI: 42 days Rainfast: 4 hours Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: COMMAND 360 ME (360 g/L) Product Rate/acre: 0.31-0.47 L/acre Active Ingredient(s): clomazone (0.28-0.42 kg/ha)	Group #: 13 PCP #: 27827	REI: 12 hours PHI: 30 days Rainfast: not stated Max. Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 3.6-6.2 kg/acre Active Ingredient(s): chlorthal dimethyl (6.75-11.625 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****CUCUMBER****PRE-PLANT (STALE SEEDBED TECHNIQUE)**

- Till and fertilize soil in early spring, and then allow weeds to grow.
- Spray weeds just before seeding the crop.
- Use low rate for small weeds (3.2 in.), medium rates for weeds 3.2-6 in. and higher rate for weeds over 6 in. tall.
- Apply appropriate PRE or POST herbicides to control new flushes of weeds or use mechanical means of control.
- Not all formulations registered on all crops. See label for specific uses and rates.

SOIL-APPLIED GRASS HERBICIDES

- PPI – For mineral soils **ONLY**.
- Incorporate thoroughly into the soil to a depth of 1-2 in.

SOIL-APPLIED BROADLEAF HERBICIDES

- PRE – banded to row middles.
- Apply just after seeding but prior to crop emergence, or just prior to transplanting cucumber plants.
- **Do NOT** rotate to another crop in the same season.
- **Do NOT** apply REFLEX to any field more often than once every 2 years.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Apply PRE, after seeding but before crop emergence. **Do NOT** incorporate.
- For light textured soils – Apply COMMAND 360 ME at 0.31 L/acre. **Do NOT** apply to sandy soil.
- For heavy textured soils – Apply COMMAND 360 ME at 0.47 L/acre.
- Some rotational cropping restrictions apply.
- Apply only when cucumber plants have 4-5 true leaves, are well established and growing conditions are favourable for good plant growth otherwise crop injury may result.
- Apply PRE prior to weed seed germination. If weeds have emerged, cultivate the soil before application.
- Apply at a rate of 3.6-5.4 kg/acre on light sand or sandy loam soils.
- Apply at a rate of 4.4-6.2 kg/acre on medium silt loam soils.
- **Do NOT** use on muck soils.
- Rainfall or irrigation (about 0.4 in.) is necessary for activation.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.46 L/acre Active Ingredient(s): s-metolachlor (1.05 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 30 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SANDEA (72.6 WG) Product Rate/acre: 14-28 g/acre Active Ingredient(s): halosulfuron (21-51 g/ha)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: 2
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: ASSURE II (96 g/L) + MERGE or SURE-MIX or YUMA GL (96 g/L) + surfactant Product Rate/acre: 0.15-0.3 L/acre + 5 L/1,000 L Active Ingredient(s): quizalofop-p-ethyl (0.036-0.07 kg/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 25462 or 30100	REI: 4 days PHI: 30 days Rainfast: 1 hour Max. Applications: 1
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.5 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.32-0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.1-0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 30 days Rainfast: 2 hours Max. Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply prior to transplanting or within 48 hours after transplanting.
- Apply PRE in direct seeded crops prior to weed emergence OR at the 1-2-leaf stage of the crop but still PRE to weed emergence.
- Reduced control in heavy weed populations may occur.
- Risk of crop injury increases with cool and wet conditions.
- Foliar contact can increase the potential to cause crop injury. Avoid overspray.

- For use on direct seeded and transplanted cucumbers on bare soil or before installation of plastic mulch.
- Apply after planting and before soil cracking on direct seeded plants.
- **Do NOT** direct seed in plastic mulch or transplant sooner than 7 days after application.
- **Do NOT** apply more than 56 g/acre per season.
- Use a lower rate on lighter textured soils.
- Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
- **Do NOT** spray over top of plastic mulch.

POST-EMERGENCE GRASS HERBICIDES

- Apply when the crop is at the 2-6-leaf stage.
- Apply at the labelled leaf stage of grassy weeds.
- **Do NOT** enter or allow worker entry into treated areas during the restricted entry interval of 4 days for scouting, irrigation and hand weeding activities.

- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of merge for quackgrass.
- **Do NOT** use flood jet or hollow cone nozzles.

- Apply POST to actively growing grasses before tillering.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Thorough fragmentation of quackgrass rhizomes by pre-application tillage will improve control.
- **Do NOT** cultivate between rows until 5 days after application.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6–46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 14–28 g/acre + 2.5 L/1,000 L Active Ingredient(s): halosulfuron (25–51 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: 2
GARLIC		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.112–0.156 kg/acre Active Ingredient(s): flumioxazin (0.07 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: not stated Rainfast: requires rainfall for activation Max Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 3.6–7.2 kg/acre Active Ingredient(s): chlorthal dimethyl (6.75–13.5 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.9–1.8 kg/acre Active Ingredient(s): napropamide (1.12–2.25 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****POST-EMERGENCE BROADLEAF HERBICIDES**

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

- Apply to direct seeded or actively growing transplanted cucumbers between 3-5-true-leaf stage or 14 days after transplanting and before the appearance of first female flower.
- Row middles can be sprayed at all crop stages.
- **Do NOT** apply more than 56 g/acre per season.
- **Do NOT** spray over top of plastic mulch.

GARLIC**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- **PRE** - Apply prior to weed and crop emergence and within 3 days of planting garlic.
- Apply to coarse (0.112 kg/acre) and medium (0.156 kg/acre) textured soils with less than 5% organic matter. **Do NOT** apply on soils with greater than 5% organic matter or fine-textured soils.
- **Do NOT** apply through irrigation equipment.
- Severe crop injury will result when soils are flooded or poorly drained following application and/or if applications are made under cool, wet conditions.

- **PRE** - Apply immediately after seeding or directly over transplants, pre-emergence to weeds.
- Apply 3.6-5.4 kg/acre on light sand or sandy loam soils.
- Apply 4.4-6.2 kg/acre on medium silt loam soils.
- Apply 7.2 kg/acre on heavy clay soils.
- **Do NOT** use on muck soils.
- If weeds have emerged, cultivate the soil before application.
- Rainfall or irrigation (about 0.4 in.) is necessary for activation.

- **PRE** - prior to crop and weed emergence.
- Use the lower rate on light soils (coarse textured to sandy and sandy loam).
- Damage to subsequent crops and cover crops can be reduced by tillage across the rows after harvest. Small grains seeded in the fall may be stunted but not otherwise affected.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: PROWL H ₂ O (455 g/L) Product Rate/acre: 0.89-2.67 L/acre Active Ingredient(s): pendimethalin (1-3 kg/ha)	Group #: 3 PCP #: 29542	REI: 5 days for scouting and thinning all other activity 24 hours PHI: 45 days Rainfast: moisture required for activation Max Applications: Mineral: 1 Muck: 2
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 50 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: SELECT (240 g/L) or CENTURION (240 g/L) Product Rate/acre: 0.15 L/acre Active Ingredient(s): clethodim (91.2 g/ha)	Group #: 1 PCP #: 22625 or 27598	REI: 12 hours PHI: 45 days Rainfast: 1 hour Max. Applications: 1
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.4-0.8 L/acre Active Ingredient(s): fluazifop-p-butyl (0.125-0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 14 days Rainfast: 2 hours Max Applications: 2
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

*continued***PRECAUTIONS - For more information, see the label.****POST-EMERGENCE GRASS HERBICIDES**

- Apply after the crop has emerged, up to the 4-leaf stage, but prior to weed emergence.
- **EASTERN CANADA Mineral Soil** - Maximum 1 application per year at 0.89-1.34 L/acre.
- **WESTERN CANADA Mineral Soil** - Maximum 1 application per year at 0.98 L/acre.
- **Muck Soil** - Maximum 2 applications per year at 2.67 L/acre a minimum 3 week interval between applications.
- **Do NOT** plant any succeeding crops other than carrots or direct seeded lettuce within 12 months of the last **PROWL H₂O** herbicide application.
- **ONLY** onions may be planted in the year of **PROWL H₂O** herbicide application.
- Best results occur when rainfall or irrigation is received within 7 days after application.
- Should weeds develop, a shallow cultivation or rotary hoeing will generally result in better weed control. When cultivating for any reason, it should be shallow.

- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
- **Do NOT** use flood jet or hollow cone nozzles.

- Post-emergence application when crop is in the 1-4-leaf stage.
- Control of listed grasses and suppression of annual bluegrass at the 2-6-leaf stage.

- Apply POST to actively growing grasses before tillering.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Fragmenting quackgrass rhizomes with thorough pre-plant tillage improves control.
- Do NOT make more than 2 applications per season at the 0.4 L/acre rate. A repeat application may be made after a minimum re-treatment interval of 14 days.
- **ONLY** 1 application is permitted per season at the 0.8 L/acre rate.
- **Do NOT** cultivate between rows until 5 days after application.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
- Apply **POST** to actively growing weeds up to 4 in. tall.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: PARDNER (280 g/L) Product Rate/acre: 0.4 L/acre Active Ingredient(s): bromoxynil (0.29 kg/ha)	Group #: 6 PCP #: 18001	REI: 24 hours PHI: 58 days Rainfast: 1 hour Max. Applications: 1
Trade Name: BROMOTRIL (240 g/L) or KORIL (235 g/L) or BROTEX (240 g/L) Product Rate/acre: 0.48 L/acre Active Ingredient(s): bromoxynil (0.29 kg/ha)	Group #: 6 PCP #: 28276 or 25341 or 28519	REI: 24 hours PHI: 58 days Rainfast: 1 hour Max. Applications: 1
Trade Name: BROMAX (480 g/L) or BROTEX (480 g/L) Product Rate/acre: 0.24 L/acre Active Ingredient(s): bromoxynil (0.29 kg/ha)	Group #: 6 PCP #: 31431 or 31348	REI: 24 hours PHI: 58 days Rainfast: 1 hour Max. Applications: 1
GINSENG		
PRE-PLANT OR PRIOR TO CROP EMERGENCE (STALE SEEDBED TECHNIQUE)		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.85-1.0 L/acre, 0.63-0.76 L/acre, 0.61-0.73 L/acre, 0.56-0.68 L/acre Active Ingredient(s): glyphosate (0.75-0.90 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 7 days Rainfast: 1 hour Max. Applications: not stated
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: Do NOT apply in year of harvest. Rainfast: 2 hours Max. Applications: 3
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply to actively growing broadleaf weeds in the 1-4-leaf stage.
- **Do NOT** use flood jet nozzles.
- **Do NOT** spray at temperatures above 25°C.

- Apply to actively growing broadleaf weeds in the 1-4-leaf stage.
- **Do NOT** use flood jet nozzles.
- **Do NOT** spray at temperatures above 25°C.

- Apply to actively growing broadleaf weeds in the 1-4-leaf stage.
- **Do NOT** use flood jet nozzles.
- **Do NOT** spray at temperatures above 25°C.

GINSENG**PRE-PLANT OR PRIOR TO CROP EMERGENCE (STALE SEEDBED TECHNIQUE)**

- Apply POST to weeds once in the spring but before the crop has emerged above the soil.
- **Do NOT** exceed rate or spray volume as crop injury may result.
- **Do NOT** contact actively growing ginseng foliage.
- **Do NOT** use a fall application in existing/established gardens.
- Not all formulations registered on all crops. See label for specific uses and rates.

POST-EMERGENCE GRASS HERBICIDES

- Apply to actively growing grasses prior to tillering.
- Maximum of 3 applications per year. Apply in early May; late June; mid August.
- Ground application only.
- **Do NOT** exceed 2 L/ha at any application timing.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

continued

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
HERBS		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.113 kg/acre Active Ingredient(s): flumioxazin (0.14 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 80 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: COMMAND 360 ME (360 g/L) Product Rate/acre: 0.32 L/acre Active Ingredient(s): clomazone (0.28 kg/ha)	Group #: 13 PCP #: 27827	REI: 12 hours PHI: 50 days Rainfast: not stated Max Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.88-1.76 kg/acre Active Ingredient(s): napropamide (1.1-2.2 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: GESAGARD 480 SC (480 g/L) Product Rate/acre: 1.5-1.83 L/acre Active Ingredient(s): prometryne (1.8-2.2 kg/ha)	Group #: 5 PCP #: 24771	REI: 24 hours PHI: 30 days Rainfast: not stated Max Applications: 1
Trade Name: AFOLAN (450 g/L) or LOROX L (480 g/L) Product Rate/acre: 0.52-1.0 L/acre Active Ingredient(s): linuron (0.65-1.25 kg/ha)	Group #: 7 PCP #: 16363 or 16279	REI: 24 hours PHI: 60 days Rainfast: 8 hours Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****HERBS****SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- For use on mint **ONLY**.
- May be applied to new and dormant plantings, pre-emergence to weeds and mint.
- Applications made to new plantings must be reduced to 25% of the rate listed for established plantings and for particular soil characteristics. See label for those restrictions.
- Applications to emerged mint will result in **SEVERE INJURY** to exposed plant tissue.
- Rainfall or overhead irrigation is **REQUIRED** after application.
- **Do NOT** use on sandy soils with less than 1% organic matter.

- Apply **ONLY** to peppermint and spearmint.
- Apply **ONLY** to established, dormant mint for pre-emergence control of weeds. Application to non-dormant mint may result in unacceptable crop injury.

- PRE - Use on cilantro **ONLY**
- Apply broadcast after seeding but prior to crop and weed emergence.
- **Do NOT** incorporate.
- **Do NOT** apply to sandy soil.

- PRE or PPI - Use on basil **ONLY**.
- **Do NOT** plant non-labeled crops until 12 months after application to avoid injury.
- High rates may result in temporary crop stunting. However, crops will outgrow the injury and yield is unaffected.

- Apply **ONLY** to parsley.
- Apply **PRE** or **EARLY POST** to parsley before weeds reach 2 in. high.
- **Do NOT** apply if parsley is under stress.
- **Do NOT** overlap application, as crop injury may occur.
- Application on sandy soils may result in injury to the crop. Always use the lower rate for sandy soils.
- For domestic use **ONLY**. **Do NOT** export parsley treated with GESAGARD 480 SC.

- Use on dill **ONLY**.
- Plant seed at least 0.5 in. deep.
- PRE apply as a band or broadcast application after planting, at a rate of 0.5-0.8 L/acre on loam or clay soil with low organic matter, or at a rate of 0.8-1 L/acre on muck or clay soil with medium organic matter.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.7 kg/acre Active Ingredient(s): terbacil (1.4 kg/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: rainfall required for activation Max. Applications: 1
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.26 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.29 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 70 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: SELECT (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.05-0.152 L/acre + 5-10 L/1,000 L Active Ingredient(s): clethodim (0.03-0.091 kg/ha) + surfactant (0.5%-1.0% v/v)	Group #: 1 PCP #: 22625 or 27598	REI: 12 hours PHI: 30 days (chives, cilantro and dill), 40 days (dill seed), 60 days (coriander seed) Rainfast: 1 hour Max. Applications: 1
SOIL-APPLIED FOLLOWED BY POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: AFOLAN (450 g/L) or LOROX L (480 g/L) Product Rate/acre: 0.52-1.0 L/acre Active Ingredient(s): linuron (0.65-1.25 kg/ha)	Group #: 7 PCP #: 16363 or 16279	REI: 24 hours PHI: 60 days Rainfast: PRE: moisture required for activation POST: 8 hours Max. Applications: 2
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: AFOLAN (450 g/L) or LOROX L (480 g/L) Product Rate/acre: 0.77-1.9 L/acre Active Ingredient(s): linuron (0.95-2.35 kg/ha)	Group #: 7 PCP #: 16363 or 16279	REI: 24 hours PHI: 60 days Rainfast: 8 hours Max. Applications: 2

continued

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • PRE – Use on peppermint and spearmint ONLY. • Do NOT use on soils with less than 1% organic matter.
<ul style="list-style-type: none"> • Use on borage, spearmint and peppermint ONLY. • Use the minimum application rate for borage ONLY. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre. • For quackgrass suppression, use 0.26 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
<ul style="list-style-type: none"> • For use on fresh herbs such as cilantro, chives, dill and coriander (seed) ONLY. • Apply a post-emergence spray when coriander (cilantro) is in the 2-5-leaf stage and dill is in the 3-5-leaf stage.
SOIL-APPLIED FOLLOWED BY POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Use on dill ONLY. • Apply a maximum of 0.8 L/acre pre-emergence followed by a maximum of 1 L/acre post-emergence. • These treatments must be at LEAST two weeks apart or crop injury may result. NEVER apply more than these two applications per season and do NOT use higher rates. • Observe instructions for both pre-emergence and post-emergence use carefully before using.
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Use on dill ONLY. • Apply when crop has 2 or more fully developed leaves. Use lower rates on small seedling weeds and the higher rates on established weeds. • Apply LOROX in a water volume of 88-160 L/acre. • Apply before annual grasses exceed 2 in. in height and before broadleaf weeds exceed 6 in. During hot, dry weather, spray in cool part of the day to avoid injury. • Nozzle pressure must not exceed 275 kPa as crop injury may result.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
LEEKS		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: PROWL H20 (455 g/L) Product Rate/acre: 0.95-2.67 L/acre Active Ingredient(s): pendimethalin (1.08-3 kg/ha)	Group #: 3 PCP #: 29542	REI Leeks: 4 days for scouting 7 days for hand-set irrigation 15 days for hand weeding PHI: 30 days Rainfast: moisture required for activation Max Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES HEADING		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: GESAGARD 480 SC (480 g/L) Product Rate/acre: 1.5 L/acre Active Ingredient(s): prometryne (1.8 kg/ha)	Group #: 5 PCP #: 24771	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 2
LETTUCE		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: KERB SC (400 g/L) Product Rate/acre: 0.98 L/acre Active Ingredient(s): propyzamide (1.1 kg/ha)	Group #: 15 PCP #: 30264	REI: 24 hours PHI: 55 days Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 2

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****LEEKS****SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Apply a single application after transplanting leeks, before weed emergence.
- Mineral soil rate for leeks: 0.95 L/acre
- **Muck soil rate: 2.67 L/acre.**
- **Do NOT** apply PROWL H2O with liquid fertilizers.
- Best results occur when rainfall or irrigation is received within 7 days after application.

POST-EMERGENCE BROADLEAF HERBICIDES HEADING

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply two applications 10 days apart, before weeds are 2 in. high.
- Make the first application to well-established transplanted leeks that have produced 1 new fully expanded leaf.
- Can be used on either muck or mineral soils.
- Temporary injury can occur to the lower leaves in some cultivars of leek.

LETTUCE**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Apply PPI, PRE or POST to direct seeded lettuce or 7 to 10 days after transplanting.
- All applications must be made to weed free soil.
- **Do NOT** replant lettuce in KERB treated fields in the same year.
- **Do NOT** use on muck soils.

POST-EMERGENCE GRASS HERBICIDES

- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage (2-5 is optimum).
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
- For transplanted lettuce, apply the first application between 1-6-leaf stage and the second application 14-21 days after thinning.
- **Do NOT** exceed an application rate of 0.44 L/acre with direct seeded lettuce.
- **Do NOT** use flood jet or hollow cone nozzles.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.8 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 14 days Rainfast: 2 hours Max Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
MUSKMELON, WATERMELON, SQUASH AND PUMPKIN		
SOIL-APPLIED BROADLEAF HERBICIDE		
Trade Name: SANDEA (72.6 WG) Product Rate/acre: 14-28 g/acre Active Ingredient(s): halosulfuron (25-51 g/ha)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 57 days Rainfast: 4 hours Max. Applications: 2
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: COMMAND 360 ME (360 g/L) Product Rate/acre: 0.31-0.47 L/acre Active Ingredient(s): clomazone (0.28-0.42 kg/ha)	Group #: 13 PCP #: 27827	REI: 12 hours PHI: 60 days for muskmelon and watermelon, 30 days for squash and pumpkin Rainfast: not stated Max. Applications: 1

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

*continued***PRECAUTIONS - For more information, see the label.**

- Apply as a post-emergence broadcast application to actively growing grasses before tillering.
- Apply **ONLY** 1 application per season.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Fragmenting quackgrass rhizomes with thorough pre-plant tillage improves control.
- **Do NOT** cultivate between rows until 5 days after application.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply **POST** with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

MUSKMELON, WATERMELON, SQUASH AND PUMPKIN**SOIL-APPLIED BROADLEAF HERBICIDE**

- For use on direct seeded and transplanted plants on bare soil.
- Apply after planting and before soil cracking on direct seeded plants.
- For use on muskmelon and watermelon before installation of plastic mulch. **Do NOT** direct seed in plastic mulch or transplant sooner than 7 days after application.
- Apply at a rate of 14-28 g/acre on muskmelon, direct seeded processing pumpkins and winter squash; 14-21 g/acre on watermelon, fresh market pumpkins and winter squash; and 19-28 g/acre on direct seeded processing summer squash.
- **Do NOT** apply more than 28 g/acre per season on watermelon, pumpkins and winter squash and 56 g/acre on muskmelon and summer squash. Minimum of 21 days between applications.
- Use a lower rate on lighter textured soils.
- Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
- **Do NOT** spray over top of plastic mulch.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Apply **PRE**, once per season. **Do NOT** incorporate. Apply after seeding but before emergence.
- Apply the lower rate for melons.
- Apply broadcast at 0.31 L/acre to squash and pumpkins on light soils.
- Apply broadcast at 0.47 L/acre to squash and pumpkins on heavy soils.
- Some rotational cropping restrictions apply.
- **Do NOT** apply to Jack-O-Lantern pumpkins.
- **Do NOT** apply to sandy soil.
- Consult the product label for varieties sensitive to colouration after application.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 3.6-6.2 kg/acre Active Ingredient(s): chlorthal dimethyl (6.75-11.625 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.9-1.8 kg/acre Active Ingredient(s): napropamide (1.12-2.25 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.47 L/acre Active Ingredient(s): s-metolachlor (1.05 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 30 days Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: ASSURE II (96 g/L) + MERGE or SURE-MIX or + YUMA GL (96 g/L) + surfactant Product Rate/acre: 0.15-0.30 L/acre + 5 L/1,000 L Active Ingredient(s): quizalofop-p-ethyl (0.036-0.07 kg/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 25462 or 30100	REI: 4 days PHI: 30 days Rainfast: 1 hour Max. Applications: 1
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.20 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- PRE - apply prior to weed seed germination. If weeds have emerged, cultivate the soil before application.
- **Do NOT** use on pumpkins.
- Apply **ONLY** when plants have 4-5 true leaves, are well established and growing conditions are favourable for good plant growth otherwise crop injury may result.
- Apply at a rate of 3.6-5.4 kg/acre on light sand or sandy loam soils.
- Apply at a rate of 4.4-6.2 kg/acre on medium silt loam soils.
- **Do NOT** use on muck soils.
- Rainfall or irrigation (about 0.4 in.) is necessary for activation.

- Use on direct seeded pumpkin and squash **ONLY**.
- Use the lower rate on light soils (coarse textured, sandy or sandy loam).
- Apply before rainfall if irrigation is not available.
- Damage to subsequent crops and cover crops can be reduced by tillage across the rows after harvest. Small grains seeded in the fall may be stunted but not otherwise affected.

- Apply prior to transplanting or within 48 hours after transplanting.
- Apply PRE in direct seeded crops prior to weed emergence OR at the 1-2-leaf stage of the crop but still PRE to weed emergence.
- Risk of crop injury increases with cool and wet conditions.
- Foliar contact can increase the potential to cause crop injury. Avoid overspray.

POST-EMERGENCE GRASS HERBICIDES

- Apply at the labelled leaf stage of grassy weeds.
- **Do NOT** enter or allow worker entry into treated areas during the restricted entry interval of 4 days for scouting, irrigation and hand weeding activities.

- For pumpkins and squash **ONLY**.
- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre.
- For quackgrass, use 0.44 L/acre. Apply up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6–46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 14–28 g/acre + 2.5 L/1,000 L Active Ingredient(s): halosulfuron (25–51 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 57 days Rainfast: 4 hours Max. Applications: 2
ONIONS (DRY BULB AND GREEN) AND SHALLOTS		
<p>Most experience with the herbicides below has been with the seeded crop. Experience with sets and limited experience with Spanish onions have been satisfactory. On green bunching onions, the granular formulations (applied when the leaves are dry) help to avoid leaf injury.</p>		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.056 kg/acre Active Ingredient(s): flumioxazin (0.07 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 45 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 3.6–7.2 kg/acre Active Ingredient(s): chlorthal dimethyl (6.75–13.5 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****POST-EMERGENCE BROADLEAF HERBICIDES**

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

- Apply to row middles at all crop stages.
- Apply to direct seeded or actively growing transplanted muskmelons, pumpkins and winter squash **ONLY** between 3-5-true-leaf stage or 14 days after transplanting and before the appearance of first female flower.
- Apply at a rate of 14-28 g/acre on muskmelon, direct seeded processing pumpkins and winter squash; 14-21 g/acre on watermelon, fresh market pumpkins and winter squash; and 19-28 g/acre on direct seeded processing summer squash.
- Minimum of 21 days between applications.
- **Do NOT** apply more than 28 g/acre per season on watermelon, pumpkins and winter squash and 56 g/acre on muskmelon and summer squash.
- **Do NOT** spray over top of plastic mulch as significant injury may result.

ONIONS (DRY BULB AND GREEN) AND SHALLOTS**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Apply to transplanted onions between the 2-6-leaf stage and on direct seeded onions between the 3-6-leaf stage prior to weed emergence.
- Apply to coarse and medium textured soils with less than 5% organic matter and to muck soils.
- **Do NOT** apply through irrigation equipment.
- Severe crop injury will result when soils are flooded or poorly drained following application and/or if applications are made under cool, wet conditions.
- **PRE** – Apply immediately after seeding or directly over transplants.
- Apply at a rate of 3.6-5.4 kg/acre on light sand or sandy loam soils.
- Apply at a rate of 4.4-6.2 kg/acre on medium silt loam soils.
- Apply at a rate of 7.2 kg/acre on heavy clay soils.
- **Do NOT** use on muck soils.
- Remove weeds by cultivating before application.
- Rainfall or irrigation (about 0.4 in.) is necessary for activation.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: FRONTIER MAX (720 g/L) Product Rate/acre: 0.39-0.52 L/acre Active Ingredient(s): dimethenamid (0.69-0.93 kg/ha)	Group #: 15 PCP #: 29194	REI: 24 hours PHI: dry bulb onions-60 days, green onions-30 days Rainfast: not stated Max. Applications: 1
Trade Name: PROWL H2O (455 g/L) Product Rate/acre: 0.95 and 2.67 L/acre Active Ingredient(s): pendimethalin (1 and 3 kg/ha)	Group #: 3 PCP #: 29542	REI Green Onions: 4 days for scouting 7 days for hand-set irrigation 15 days for hand weeding PHI: 30 days Rainfast: moisture required for activation Max Applications: 1
Trade Name: PROWL H2O (455 g/L) Product Rate/acre: 0.89-1.34 and 2.67 L/acre Active Ingredient(s): pendimethalin (1.0-1.5 and 3 kg/ha)	Group #: 3 PCP #: 29542	REI Dry Bulb Onions: 24 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 2
Trade Name: PROWL H ₂ O (455 g/L) Product Rate/acre: 0.89-2.67 L/acre Active Ingredient(s): pendimethalin (1-3 kg/ha)	Group #: 3 PCP #: 29542	REI: 5 days for scouting and thinning all other activity 24 hours PHI: 45 days Rainfast: moisture required for activation Max Applications: Mineral: 1 WESTERN CANADA Mineral: 2 EASTERN CANADA Muck: 2
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 50 days Rainfast: 1 hour Max. Applications: not stated

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****DRY BULB ONIONS:**

- Apply **ONLY** at the loop stage of onion.
- FRONTIER MAX will only suppress yellow nutsedge when applied prior to emergence on muck soils.

GREEN ONIONS:

- Apply alone as a single application at a rate of 0.39 L/acre to green onions on mineral soil and 0.52 L/acre on muck soil at the loop stage and before weed emergence. Application made prior to the loop stage of green onion may result in significant crop injury, including possible stand reduction.
- Avoid application under cool conditions as stunting may result.

FOR GREEN ONIONS

- Apply a single application at the 2-3 leaf stage of green onions, before weed emergence.
- **Mineral soil rate** for green bunching onions: 0.95 L/acre
- **Muck soil rate** for direct seeded bunching onions: 2.67 L/acre
- Application made prior to green onion full emergence may result in significant crop injury.
- **Do NOT** apply PROWL H2O with liquid fertilizers.
- **Do NOT** use PROWL H2O on onions grown from sets on muck soil.
- Best results occur when rainfall or irrigation is received within 7 days after application.

FOR DRY BULB ONIONS

- **Mineral soil rate:** 0.89-1.34 L/acre applied at the 2-6 leaf stage of crop development for season long control.
- **Muck soil rate:** 2.67 L/acre applied at the loop and 2-leaf stage of crop development. Application at both growth stages is required for season long control.
- **Do NOT** apply PROWL H2O with liquid fertilizers.
- **Do NOT** use PROWL H2O on onions grown from sets on muck soil.
- Best results occur when rainfall or irrigation is received within 7 days after application.

FOR SHALLOTS:

- **EASTERN CANADA Mineral Soil** - Maximum 2 applications per year at 0.89-1.34 L/acre a minimum 3 weeks interval between applications. Apply at the 2-6 true leaf stage, but prior to weed emergence.
- **WESTERN CANADA Mineral Soil** - Maximum 1 application per year at 0.98 L/acre. Apply at the loop - 2 true leaf stage.
- **Muck Soil** - Maximum 2 applications per year at 2.67 L/acre a minimum 3 weeks interval between applications. Apply at the loop and 2 true leaf stage.
- **Do NOT** plant any succeeding crops other than carrots or direct seeded lettuce within 12 months of the last **PROWL H₂O** herbicide application.
- **ONLY** onions may be planted in the year of **PROWL H₂O** herbicide application.
- Best results occur when rainfall or irrigation is received within 7 days after application.
- Should weeds develop, a shallow cultivation or rotary hoeing will generally result in better weed control. When cultivating for any reason, it should be shallow.

POST-EMERGENCE GRASS HERBICIDES

- For dry bulb onions **ONLY**.
- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre.
- For quackgrass, use 0.44 L/acre. Apply up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: SELECT (240 g/L) or ARROW (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.15 L/acre + 5 L/1,000 L Active Ingredient(s): clethodim (0.09 L/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 22625 or 28224 or 27598	REI: 12 hours PHI: 45 days Rainfast: 1 hour Max. Applications: 1
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.4-0.8 L/acre Active Ingredient(s): fluazifop-p-butyl (0.125-0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 0.4 L/acre-42 days; 0.8 L/acre-60 days Rainfast: 2 hours Max. Applications: 2
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: GOAL 2XL (240 g/L) Product Rate/acre: 0.2 L/acre Active Ingredient(s): oxyfluorfen (0.12 kg/ha)	Group #: 14 PCP #: 24913	REI: 48 hours PHI: 56 days Rainfast: 3 hours Max. Applications: 4
Trade Name: PARDNER (280 g/L) Product Rate/acre: 0.2 L/acre Active Ingredient(s): bromoxynil (0.14 kg/ha)	Group #: 6 PCP #: 18001	REI: 24 hours PHI: 75 days Rainfast: 1 hour Max. Applications: 2
Trade Name: BROMOTRIL (240 g/L) or KORIL (235 g/L) or BROTEX (240 g/L) Product Rate/acre: 0.24 L/acre Active Ingredient(s): bromoxynil (0.14 kg/ha)	Group #: 6 PCP #: 28276 or 25341 or 28519	REI: 24 hours PHI: 75 days Rainfast: 1 hour Max. Applications: 2

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- For use on dry bulb onions and shallots.
 - For suppression of annual bluegrass and the control of other annual grasses and quackgrass.
 - See label for detailed information on rates to control all annual grasses.
 - Apply using ground equipment.
 - Apply when the crop is in the 1-4-leaf stage and grassy weeds are in the 2-6-leaf stage.
- For use on dry bulb onions, green onions, pearl onions and shallots.
 - Apply POST to actively growing grasses before tillering.
 - Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
 - Apply 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
 - Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
 - Fragmenting quackgrass rhizomes with thorough pre-plant tillage improves control.
 - **Do NOT** cultivate between rows until 5 days after application.
 - **Do NOT** make more than 2 applications per season at the 0.4 L/acre rate. A repeat application may be made after a minimum re-treatment interval of 14 days.
 - **ONLY** 1 application is permitted per season at the 0.8 L/acre rate.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
 - Apply to actively growing weeds up to 4 in. tall.
- Apply after onions have 2 fully developed leaves and when weeds are in the 2-4-leaf stage.
 - **Do NOT** exceed a total of 0.8 L/acre per year.
 - **Do NOT** apply to sandy soil.
- For use on dry bulb onions **ONLY**.
 - Apply POST to actively growing weeds up to the 4-leaf stage.
 - Apply when onions are at the 2-3-leaf stage, repeat application when onions are at the 4-5-leaf stage.
 - Severe leaf burn may result in onions if weather conditions have not been conducive to the development of the outer waxy layer of the onion leaf.
- For use on dry bulb onions **ONLY**.
 - Apply POST to actively growing weeds up to the 4-leaf stage.
 - Apply when onions are at the 2-3-leaf stage, repeat application when onions are at the 4-5-leaf stage.
 - Severe leaf burn may result in onions if weather conditions have not been conducive to the development of the outer waxy layer of the onion leaf.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: BROMAX (480 g/L) or BROTEX (480 g/L) Product Rate/acre: 0.12 L/acre Active Ingredient(s): bromoxynil (0.14 kg/ha)	Group #: 6 PCP #: 31431 or 31348	REI: 24 hours PHI: 75 days Rainfast: 1 hour Max. Applications: 2
PARSNIPS		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.48–0.70 L/acre Active Ingredient(s): s-metolachlor (1.098–1.601 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: LOROX L (480 g/L) Product Rate/acre: 0.50–0.96 L/acre Active Ingredient(s): linuron (0.625–1.20 kg/ha)	Group #: 7 PCP #: 16279	REI: 24 hours PHI: 60 days Rainfast: 8 hours Max. Applications: 2
Trade Name: LOROX L (480 g/L) followed by LOROX L (480 g/L) Product Rate/acre: 0.5–0.73 L/acre followed by 0.5–0.96 L/acre Active Ingredient(s): linuron (0.625–0.91 kg/ha) followed by linuron (0.625–1.2 kg/ha)	Group #: 7 PCP #: 16279	REI: 24 hours PHI: 60 days Rainfast: PRE: moisture required for activation POST: 8 hours Max. Applications: 2
POST-EMERGENCE GRASS HERBICIDE		
Trade Name: SELECT (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.08–0.15 L/acre + 5–10 L/1,000 L Active Ingredient(s): clethodim (46–91 g/ha) + surfactant (0.5–1.0% v/v)	Group #: 1 PCP #: 22625 or 27598	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 2

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- For use on dry bulb onions **ONLY**.
- Apply POST to actively growing weeds up to the 4-leaf stage.
- Apply when onions are at the 2-3-leaf stage, repeat application when onions are at the 4-5-leaf stage.
- Severe leaf burn may result in onions if weather conditions have not been conducive to the development of the outer waxy layer of the onion leaf.

PARSNIPS**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Make a pre-emergence ground application after planting but before crop or weed emergence.
- **Do NOT** follow a pre-emergence application with a post-emergence spray later in the season.
- Muck soil: apply prior to weed emergence and irrigate with 0.5 in. of water **IMMEDIATELY** following application.
- **CAUTION:** Application may result in injury to the crop which may include stand loss, delayed maturity and even loss of yield.

- PRE – Apply soon after seeding, prior to crop emergence.
- Plant seed at least 0.5 in. deep.
- Use a rate of 0.53-0.77 L/acre on loam or clay soil with low organic matter.
- Use a rate of 0.77-1.0 L/acre on muck soil or clay soil with medium organic matter.
- Heavy rains or irrigation at time of emergence may cause injury.
- An additional post-emergence treatment may be needed.

- PRE (maximum 0.77 L/acre), followed by POST (maximum 1.0 L/acre).
- These treatments must be applied at least 2 weeks apart or crop injury may result.
- **Do NOT** apply more than these 2 applications per season and **Do NOT** use higher rates.
- Observe instructions for both PRE and POST use carefully before using.

POST-EMERGENCE GRASS HERBICIDE

- For the control of annual grasses and quackgrass.
- Apply when grassy weeds are at 2-6-leaf stage.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDE		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6–46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDE		
Trade Name: LOROX L (480 g/L) Product Rate/acre: 0.77–1.9 L/acre Active Ingredient(s): linuron (0.91–2.26 kg/ha)	Group #: 7 PCP #: 16279	REI: 24 hours PHI: 60 days Rainfast: 8 hours Max. Applications: 2
PEAS		
SOIL-APPLIED BROADLEAF HERBICIDE		
Trade Name: GESAGARD 480 SC (480 g/L) Product Rate/acre: 1.5–1.83 L/acre Active Ingredient(s): prometryne (1.8–2.2 kg/ha)	Group #: 5 PCP #: 24771	REI: 12 hours PHI: 55 days Rainfast: not stated Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5–0.7 L/acre Active Ingredient(s): s-metolachlor (1.14–1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PURSUIT (240 g/L) or PHANTOM (240 g/L) or NU-IMAGE (240 g/L) Product Rate/acre: 0.125 L/acre Active Ingredient(s): imazethapyr (0.075 kg/ha)	Group #: 2 PCP #: 23844 or 30017 or 30420	REI: 12 hours PHI: 50 days Rainfast: moisture required for activation Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****POST-EMERGENCE BROADLEAF HERBICIDE**

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDE

- Apply when the crop has 2 or more fully developed leaves.
- Use lower rates on small seedling weeds and higher rates on established weeds.
- On muck soils, parsnips must be more than 3 in. tall when spraying.
- **Do NOT** mix with oil or other surfactants.
- Apply before annual grasses exceed 2 in. and before broadleaf weeds exceed 6 in.
- During hot, dry weather, spray in the cool part of the day to avoid crop injury.
- If unusually heavy rains follow application, severe injury may result.

PEAS**SOIL-APPLIED BROADLEAF HERBICIDE**

- PRE – Apply **ONLY** once per year before weeds emerge, including Eastern black nightshade.
- Dry soil may need light incorporation.
- Use lower rate on sandy soils.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- PRE
- **Do NOT** use on muck, peat, high organic matter soils or soils with less than 1% organic matter.

- Allow at least 24 months between PPI applications.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: REFLEX (240 g/L) + AGRAL 90 Product Rate/acre: 0.4 L/acre + 1.0 L/1,000 L Active Ingredient(s): fomesafen (0.24 kg/ha) + adjuvant (0.1% v/v)	Group #: 14 PCP #: 24779	REI: 12 hours PHI: 46 days Rainfast: 4 hours Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.5-0.68 L/acre Active Ingredient(s): trifluralin (0.6-0.8 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: ASSURE II (96 g/L) + MERGE or SURE-MIX or + YUMA GL (96 g/L) + surfactant Product Rate/acre: 0.15-0.30 L/acre + 5 L/1,000 L Active Ingredient(s): quizalofop-p-ethyl (0.036-0.07 kg/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 25462 or 30100	REI: 12 hours PHI: 65 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: fresh peas-30 days, dry peas-60 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: SELECT (240 g/L) or ARROW (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.08 L/acre + 5 L/1,000 L Active Ingredient(s): clethodim (0.05 L/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 22625 or 28224 or 27598	REI: 12 hours PHI: 21 days Rainfast: 1 hour Max Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- PRE – Apply just after seeding but prior to crop emergence.
- **Do NOT** rotate to another crop in the same season.
- **Do NOT** apply REFLEX to any field more often than once every 2 years.

- PPI – Incorporate within 24 hours of application.
- **Do NOT** exceed the low rate on medium textured soils.
- **Do NOT** exceed the high rate on heavy textured soils.
- **Do NOT** apply to peat or muck soils (greater than 15% organic matter).
- **Do NOT** apply to soils with less than 2% organic matter.
- **Do NOT** apply to fields spread with manure within the last 12 months.

POST-EMERGENCE GRASS HERBICIDES

- Apply to emerged annual grasses and volunteer cereals in the 2-leaf to tillering stage and volunteer corn and quackgrass in the 2-6-leaf stage.
- 0.15 L/acre will control volunteer corn, volunteer cereals and green foxtail.
- 0.2 L/acre will suppress quackgrass and also control barnyard grass.
- 0.3 L/acre will control quackgrass.

- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence.
- Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
- **Do NOT** apply herbicides other than MCPA SODIUM 300 or PURSUIT within 4 days of application.
- **Do NOT** graze treated crop.
- **Do NOT** use flood jet or hollow cone nozzles.
- Use **ONLY** on fresh or dry processing peas, not on fresh edible pod peas.

- Apply when the crop is in the 1-4-leaf stage and grassy weeds are in the 2-6-leaf stage.
- For suppression of annual bluegrass and the control of other annual grasses and quackgrass. See label for detailed information on rates to control all annual grasses.
- Apply using ground equipment.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: BASAGRAN or BROADLOOM (480 g/L) + SUPER SPREADER or + ASSIST Product Rate/acre: 0.7-0.9 L/acre + 1.25-2.50 L/1,000 L or + 0.4-0.8 L/acre Active Ingredient(s): bentazon (0.84-1.08 kg/ha) + surfactant (0.125- 0.25% v/v) or + oil concentrate	Group #: 6 PCP #: 12221 or 32661	REI: 12 hours PHI: not stated Rainfast: 6 hours Max. Applications: 2
Trade Name: MCPA SODIUM 300 (300 g/L) Product Rate/acre: 0.4-0.6 L/acre Active Ingredient(s): MCPA (0.3-0.45 kg/ha)	Group #: 4 PCP #: 9858	REI: 12 hours PHI: not stated Rainfast: 6 hours Max. Applications: not stated
Trade Name: MCPA AMINE (500 g/L) Product Rate/acre: 0.22-0.28 L/acre Active Ingredient(s): MCPA (0.275-0.35 kg/ha)	Group #: 4 PCP #: 9516	REI: 12 hours PHI: not stated Rainfast: 4 hours Max. Applications: not stated
Trade Name: MCPA AMINE (600 g/L) Product Rate/acre: 0.112-0.186 L/acre Active Ingredient(s): MCPA (0.165-0.274 kg/ha)	Group #: 4 PCP #: 31432	REI: 12 hours PHI: not stated Rainfast: 4 hours Max. Applications: not stated
Trade Name: TROPOTOX Plus (400 g/L) or CLOVITOX Plus (400 g/L) or TOPSIDE (400 g/L) Product Rate/acre: 1.1-1.7 L/acre Active Ingredient(s): MCPB/MCPA (1.1-1.7 kg/ha)	Group #: 4 PCP #: 8211 or 24336 or 22003	REI: 12 hours PHI: not stated Rainfast: 4 hours Max. Applications: 1
PEPPERS		
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: SANDEA (72.6 WG) Product Rate/acre: 14-28 g/acre Active Ingredient(s): halosulfuron (25-51 g/ha)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: 2

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply POST when peas have at least 3 pairs of leaves, before flowering.
- Under hot, humid conditions reduce ASSIST oil concentrate to 0.4 L/acre.
- Refer to the BASAGRAN label for information on specific weed stage and height. Two applications, 10 days apart, of 0.7 L/acre may be required for top growth control of nutsedge and Canada thistle, and suppression of field bindweed.
- Apply the higher rate of SUPER SPREADER if hard water is being used.

- Apply POST when peas are 4-8 in. high.
- **Do NOT** apply after flower buds have formed on peas.
- **Do NOT** apply when temperatures are over 27°C, high humidity, or under drought conditions.
- Not all formulations registered on all crops. See label for specific uses and rates.

- Apply POST when peas are 4-8 in. high.
- **Do NOT** apply after flower buds have formed on peas.
- **Do NOT** apply when temperatures are over 27°C, high humidity, or under drought conditions.
- Not all formulations registered on all crops. See label for specific uses and rates.

- Apply POST when peas are 4-8 in. high.
- **Do NOT** apply after flower buds have formed on peas.
- **Do NOT** apply when temperatures are over 27°C, high humidity, or under drought conditions.
- Not all formulations registered on all crops. See label for specific uses and rates.

- Apply POST when peas have 3-6 expanded leaves.
- **Do NOT** apply after the 6-leaf stage as damage may occur.
- **Do NOT** apply when temperatures are over 27°C, high humidity, or under drought conditions.
- **Do NOT** graze or cut treated crop for forage.
- Top growth only: Canada thistle, creeping buttercup, field bindweed, horsetail, perennial sow-thistle, tall buttercup.

PEPPERS**SOIL-APPLIED BROADLEAF HERBICIDES**

- For use on chile, bell and banana peppers.
- Apply **ONLY** to row middles for direct seeded or transplanted peppers.
- Apply as a single or split application of 14-28 g/acre, allow a minimum of 21 days between applications.
- **Do NOT** apply more than 56 g/acre per season.
- Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
- **Do NOT** spray over top of plastic mulch.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.056-0.084 kg/acre Active Ingredient(s): flumioxazin (0.071-0.107 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: COMMAND 360 ME (360 g/L) Product Rate/acre: 0.62-0.95 L/acre Active Ingredient(s): clomazone (0.558-0.846 kg/ha)	Group #: 13 PCP #: 27827	REI: 12 hours PHI: 70 days Rainfast: not stated Max Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 3.6-6.2 kg/acre Active Ingredient(s): chlorthal dimethyl (6.75-11.625 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: not stated
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.9-1.8 kg/acre Active Ingredient(s): napropamide (1.12-2.25 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.46-0.50 L/acre Active Ingredient(s): s-metolachlor (1.05-1.14 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 80 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.5-0.96 L/acre Active Ingredient(s): trifluralin (0.58-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Apply before transplanting field peppers.
 - Apply the higher rate to medium-textured soils and the lower rate to coarse-textured soils.
 - Apply product with a hooded or shielded sprayer to row middles.
 - **Do NOT** apply more than 0.084 kg/acre a season.
 - Rainfall or irrigation is required after transplanting and before application.
 - **Do NOT** apply through irrigation equipment.
-
- **Do NOT** use on banana peppers.
 - Apply before transplant and prior to weed emergence. Place roots of the transplants below the chemical barrier when planting.
 - Use the lower labeled rate on coarse soils and the higher labeled rate on fine soils.
 - **Do NOT** incorporate.
 - **Do NOT** apply to sandy soil.
-
- PRE – if weeds have emerged, cultivate the soil before application.
 - Apply 4-6 weeks after transplanting or when direct seeded plants have reached a height of 4-6 in.
 - Apply at a rate of 3.6-5.4 kg/acre on light sand or sandy loam soils.
 - Apply at a rate of 4.4-6.2 kg/acre on medium silt loam soils.
 - **Do NOT** use on muck soils.
 - Rainfall or irrigation (about 0.4 in.) is necessary for activation.
-
- PPI – Incorporate within 24 hours of application.
 - **Do NOT** apply to soils with over 10% organic matter.
 - Damage to subsequent cover crops can be reduced by tillage across the rows after harvest. Small grains seeded in the fall may be stunted but not otherwise affected.
-
- Apply within 48 hours of transplanting peppers and PRE to weeds.
 - Risk of crop injury increases with early transplanting and soil temperatures below 10°C.
 - Applications made more than 48 h after transplanting may increase the risk of foliar injury.
 - **Do NOT** apply to soils that contain less than 1% or more than 10% organic matter.
 - **Do NOT** tank-mix with fluid fertilizers, oil, oil concentrates or surfactants.
-
- PPI – Incorporate within 24 hours of application.
 - **Do NOT** exceed the low rate on medium textured soils.
 - **Do NOT** apply to peat or muck soils (greater than 15% organic matter).
 - **Do NOT** apply to soils with less than 2% organic matter.
 - **Do NOT** apply to fields spread with manure within the last 12 months.
 - **Do NOT** apply on the same land for 2 consecutive years.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE GRASS HERBICIDE		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28753	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 14-28 g/acre + 2.5 L/1,000 L Active Ingredient(s): halosulfuron (25-51 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: 2
POTATOES		
<p>The best weed management system for potato uses a combination of chemical weed control with cultivation and other techniques. Cultivation prior to potato emergence using various kinds of cultivation equipment (light harrows, finger weeders, hillers, etc.) will control the early flush of weeds. Root pruning of the crop should be minimized. If the crop is hilled after application of herbicides, untreated soil will surface and another flush of weeds may result.</p>		
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: LOROX L (480 g/L) Product Rate/acre: 0.88-1.72 L/acre Active Ingredient(s): linuron (1.1 -2.15 kg/ha)	Group #: 7 PCP #: 16279	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****POST-EMERGENCE GRASS HERBICIDE**

- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
- **Do NOT** use flood jet or hollow cone nozzles.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

- For use on chile, bell and banana peppers.
- Apply to row middle for direct seeded or transplanted peppers.
- A directed spray can be applied at 21 days after transplanting or when plants have reached a height of 6 in., but before flowering.
- Apply as a single or split application of 14-28 g/acre, allow a minimum of 21 days between applications.
- **Do NOT** apply more than 56 g/acre per season.
- **Do NOT** spray over top of plastic mulch.

POTATOES

POTATO VINE KILLING - For information on products and rates of application of vine killing, consult OMAFRA Publication 838, *Vegetable Crop Protection Guide*, and follow the product label.

SOIL-APPLIED BROADLEAF HERBICIDES

- **PRE** - Apply immediately after hilling. The potato tops must be covered with soil to avoid injury.
- Use the lower rate on light sandy soils and the higher rate on muck or clay soils.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: REFLEX (240 g/L) Product Rate/acre: 0.4 L/acre Active Ingredient(s): fomesafen (0.24 kg/ha)	Group #: 14 PCP #: 24779	REI: 12 hours PHI: 70 days Rainfast: 4 hours Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: BOUNDARY LQD (628 g/L + 149 g/L) Product Rate/acre: 0.74-1.0 L/acre Active Ingredient(s): s-metolachlor/metribuzin (1443 g/ha-1943 g/ha)	Group #: 5 + 15 PCP #: 30812	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: EPTAM (800 g/L) Product Rate/acre: 1.7-3.4 L/acre Active Ingredient(s): EPTC (3.4-6.8 kg/ha)	Group #: 8 PCP #: 11284	REI: 24 hours PHI: not stated Rainfast: not stated Max. Applications: 1
Trade Name: FRONTIER MAX (720 g/L) Product Rate/acre: 306-390 mL/acre Active Ingredient(s): dimethenamid-p (544-693 g/ha)	Group #: 15 PCP #: 29194	REI: 24 hours PHI: 40 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PYROXASULFONE 85 WG (85 %) Product Rate/acre: 59-116 g/acre Active Ingredient(s): pyroxasulfone (125-246.5 g/ha)	Group #: 15 PCP #: 30572	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 1

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Apply PRE after planting but prior to potato emergence. • If weeds are emerged at time of application, include a non-ionic adjuvant, such as AGRAL 90 at 0.1% v/v. • Do NOT apply on soils with > 5% organic matter or fine textured soils. • Do NOT cultivate for 7 days after application as effectiveness will be reduced. • Do NOT apply REFLEX to any field more than once every two years. • Some rotational cropping restrictions apply.
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Do NOT apply at ground crack or if potatoes have emerged. • Do NOT apply to coarse textured soils with less than 1% organic matter. • Do NOT apply to varieties Belleisle, Tobique or Superior. • Apply after hilling. Hilling operations made after application will reduce weed control.
<ul style="list-style-type: none"> • PRE or PPI (for nutsedge control). • Do NOT use on the variety Superior. • Do NOT apply on sandy or coarse textured soils low in organic matter. • Do NOT apply at ground crack or if potatoes have emerged.
<ul style="list-style-type: none"> • PPI – Apply to a dry soil surface before planting and incorporate immediately, at next to the last or last cultivation for grass escapes. Use at 1.7-2.2 L/acre. • Avoid wet soil conditions or weed control may be poor. • Use 2.2-3.4 L/acre rates for heavy weed infestations and nutsedge control.
<ul style="list-style-type: none"> • Apply PRE before weeds emerge and after planting. • Do NOT apply before planting or onto emerged potatoes as injury may result. • Do NOT apply during periods of dead calm. Avoid application of this product when winds are gusty. Do NOT apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE) medium classification. Boom height must be 24 in. or less above the crop or ground. • Do NOT graze or feed treated crop to livestock prior to 40 days after application. • Rainfall is required within 7-10 days of treatment to activate and move FRONTIER MAX into the soil zone. • In cold and wet growing conditions, delayed emergence or early season stunting of potatoes may result.
<ul style="list-style-type: none"> • PRE - after planting or immediately following drag-off or hilling, but before potato and weeds emerge. • Do NOT apply PYROXASULFONE 85 WG prior to planting potato seed pieces. • Do NOT apply PYROXASULFONE 85 WG if potato has emerged. • Do NOT apply PYROXASULFONE 85 WG in soils classified as a Sand. • Where “drag off” or “hilling” is practiced, Do NOT apply PYROXASULFONE 85 WG until the process is complete. • PYROXASULFONE 85 WG selectivity on potato varieties must be confirmed with your local seed company or supplier to avoid potential injury to sensitive varieties. Crop seeds must be planted a minimum 2 in. deep. • Temporary growth suppression may occur if extreme conditions of high rainfall and extended periods of water-saturated soil occur during potato germination or early seedling development. These suppressions have not resulted in reduced potato yield potential. • Apply 59 g/acre on coarse soil, 78 g/acre on medium soils with < or equal to 3% organic matter, 98 g/acre on medium fine soils between 3 and 7% organic matter and 116 g/acre on fine soils.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: SENCOR 480 F (480 g/L) Product Rate/acre: 0.34-0.90 L/acre Active Ingredient(s): metribuzin (0.4-1.1 kg/ha)	Group #: 5 PCP #: 26280	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: not stated
Trade Name: SQUADRON (75%) Product Rate/acre: 0.202-0.607 kg/acre Active Ingredient(s): metribuzin (0.550-1.500 kg/ha)	Group #: 5 PCP #: 32081	REI: 12 hours PHI: 60 days Rainfast: not stated Max. Applications: not stated
SOIL-APPLIED TANK-MIX OPTIONS		
Trade Name: DUAL II MAGNUM (915 g/L) + LOROX L (480 g/L) Product Rate/acre: 0.5-0.7 L/acre + 0.7-0.9 L/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha) + linuron (0.88-1.13 kg/ha)	Group #: 15 + 7 PCP #: 25729 + 16279	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + SENCOR 480 F (480 g/L) Product Rate/acre: 0.5-0.7 L/acre + 0.44-0.9 L/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha) + metribuzin (0.53-1.08 L/ha)	Group #: 15 + 5 PCP #: 25729 + 16280	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: EPTAM (800 g/L) + SENCOR 480 F (480 g/L) Product Rate/acre: 1.7-2.2 L/acre + 0.44-0.7 L/acre Active Ingredient(s): EPTC (3.4-4.4 kg/ha) + metribuzin (0.53-0.84 kg/ha)	Group #: 8 + 5 PCP #: 11284 + 27091	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

*continued***PRECAUTIONS - For more information, see the label.**

- PRE – Apply after hilling before emergence of crop or weeds, or POST before weeds are 1.6 in. tall.
- Use the lower rate on sandy soil.
- Apply higher rates to longer season potatoes, or when longer weed control is needed.
- **Do NOT** use on muck soils.
- **Do NOT** use on coarse soils that have less than 2% organic matter.
- **Do NOT** use on Belleisle and Tobique varieties.
- When growing new or potentially sensitive varieties (such as early maturing, red-skinned, Atlantic, Eramosa or Shepody) first use of SENCOR and SQUADRON herbicide should be limited to a small test area to ensure risk or level of potential injury is acceptable to the grower prior to adoption as a general field practice.

- PRE – Apply after hilling before emergence of crop or weeds, or POST before weeds are 1.6 in. tall.
- Use the lower rate on sandy soil.
- Apply higher rates to longer season potatoes, or when longer weed control is needed.
- **Do NOT** use on muck soils.
- **Do NOT** use on coarse soils that have less than 2% organic matter.
- **Do NOT** use on Belleisle and Tobique varieties.
- When growing new or potentially sensitive varieties (such as early maturing, red-skinned, Atlantic, Eramosa or Shepody) first use of SENCOR and SQUADRON herbicide should be limited to a small test area to ensure risk or level of potential injury is acceptable to the grower prior to adoption as a general field practice.

SOIL-APPLIED TANK-MIX OPTIONS

- PRE – Apply after the first hilling before emergence of the crop and weeds.
- See precautions for DUAL II MAGNUM above.
- **Do NOT** use on the variety Superior.

- PPI or PRE – Apply after the first hilling before emergence of the crop and weeds.
- See precautions for DUAL II MAGNUM above.
- **Do NOT** use on Superior, Belleisle, or Tobique potatoes.
- **Do NOT** apply on sandy or on coarse textured soils low in organic matter, or on muck soils.
- **Do NOT** apply at ground crack or if potatoes have emerged.

- PPI – Apply as a tank-mix and incorporate immediately.
- **Do NOT** use on muck soils.
- **Do NOT** use on Belleisle or Tobique varieties.
- When growing new or potentially sensitive varieties (such as early maturing, red-skinned, Atlantic, Eramosa or Shepody) first use of SENCOR herbicide should be limited to a small test area to ensure risk or level of potential injury is acceptable to the grower prior to adoption as a general field practice.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: SENCOR 75 DF (75 %) + LOROX L (480 g/L) Product Rate/acre: 0.23-0.44 kg/acre + 0.64-1.5 L/acre Active Ingredient(s): metribuzin (0.42-0.825 kg/ha) + linuron (0.768-1.8 kg/ha)	Group #: 5 + 7 PCP #: 17242 + 16279	REI: 24 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: STZ (480 g/L) + SENCOR 75 DF (75 %) Product Rate/acre: 63.6-88.7 mL/acre + 0.24-0.32 kg/acre Active Ingredient(s): sulfentrazone (75.4-105.1 g/ha) + metribuzin (0.45-0.6 kg/ha)	Group #: 14 + 5 PCP #: 32621 + 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for application Max. Applications: 1
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2.0 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: not stated Rainfast: 4 hours Max. Applications: not stated
Trade Name: IGNITE (150 g/L) + SENCOR 480 F (480 g/L) Product Rate/acre: 1.08-2.0 L/acre + 0.44 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + metribuzin (0.55 kg/ha)	Group #: 10 + 5 PCP #: 28532 + 27091	REI: 24 hours PHI: 9 days Rainfast: 4 hours Max. Applications: not stated
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 80 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: SELECT (240 g/L) or ARROW (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.05-0.15 L/acre + 5-10 L/1,000 L Active Ingredient(s): clethodim (0.03-0.09 kg/ha) + surfactant (0.5-1.0% v/v)	Group #: 1 PCP #: 22625 or 28224 or 27598	REI: 12 hours PHI: 60 days Rainfast: 1 hour Max. Applications: not stated

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

*continued***PRECAUTIONS - For more information, see the label.**

- PRE – Apply after hilling and before emergence of the crop, or POST before weeds are 1.6 in. tall.
 - Use the lower rate on sandy soils.
 - Use the higher rate on late potatoes for season long control.
 - **Do NOT** use on muck soils.
 - **Do NOT** use on Belleisle and Tobique varieties.
 - When growing new or potentially sensitive varieties (such as early maturing, red-skinned, Atlantic, Eramosa or Shepody) first use of SENCOR herbicide on a potato variety should be limited to a small test area to ensure risk or level of potential injury is acceptable to the grower prior to adoption as a general field practice.
- **Do NOT** apply to emerged potato shoots, injury will occur. A minimum of 1 in. of soil must cover emerging potato shoots at time of application. After a hilling event, allow the soil to settle or crust before application. Avoid soil incorporation after application.
 - **Do NOT** use on the varieties Belleisle or Tobique.
 - **Do NOT** use on soils with a pH of 7.8 or greater.
 - **Do NOT** use on soils with less than 1.5% or more than 6% organic matter.
 - Sulfentrazone is persistent and will last in soils (carryover) for 1-2 years.
 - **Do NOT** apply STZ to fields previously treated with STZ (wait a minimum of 2 years).

NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS

- Apply no later than ground crack of the crop.
 - Only emerged weeds will be controlled.
- POST – Apply no later than ground crack of the crop.
 - Only emerged weeds will be controlled.
 - **Do NOT** use SENCOR on muck soils or on Belleisle or Tobique varieties.

POST-EMERGENCE GRASS HERBICIDES

- For annual grasses, use 0.13 L/acre at the 1-6-leaf stage.
 - For volunteer grains, use 0.19 L/acre.
 - For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
- Potatoes are tolerant at any growth stage.
 - For annual grasses and volunteer cereals, apply at the 2-6-leaf stage.
 - For quackgrass, apply at the 2-5-leaf stage at the higher rate.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 45 days Rainfast: 2 hours Max. Applications: not stated
POST-EMERGENCE BROADLEAF HERBICIDE		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 7 days Rainfast: 8 hours Max. Applications: 1
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: PRISM (25 DF) or PRISM (25 SG) + AGRAL 90 or AG-SURF Product Rate/acre: 24 g/acre + 2 L/1,000 L Active Ingredient(s): rimsulfuron (15 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 23983 or 30057	REI: 12 hours PHI: 30 days Rainfast: 2-4 hours Max. Applications: not stated
Trade Name: SENCOR 480 F (480 g/L) Product Rate/acre: 0.34-0.9 L/acre Active Ingredient(s): metribuzin (0.4-1.1 kg/ha)	Group #: 5 PCP #: 26280	REI: 12 hours PHI: 60 days Rainfast: not stated Max. Applications: not stated
Trade Name: TITUS PRO (sold as a co-pack): PRISM (25 SG) + TRICOR 75 + AGRAL 90 or AG-SURF Product Rate/acre: 24 g/acre + 113-152 g/acre + 2 L/1,000 L Active Ingredient(s): rimsulfuron (15 g/ha) + metribuzin (210-281 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 + 5 PCP #: 30057 + 30661	REI: 12 hours PHI: 90 days Rainfast: 2-4 hours Max. Applications: not stated

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply POST to actively growing grasses before tillering.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Thorough preplant tillage, fragmenting quackgrass rhizomes improves control.
- **Do NOT** cultivate between rows until 5 days after application.
- May be tank-mixed with SENCOR or LEXONE formulations for early post-emergent application.
- Add LEXONE or SENCOR formulation to spray tank and agitate for two minutes before adding VENTURE L.

POST-EMERGENCE BROADLEAF HERBICIDE

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES

- Apply when quackgrass is at 3-6-leaf stage (less than 4 in. tall), annual grasses are at 1-6-leaf stage and redroot pigweed is in the 4-6-leaf stage.
- Apply before potatoes initiate flowering.
- **Do NOT** cultivate within 7-10 days before and after applying PRISM.

- Apply soon after potatoes emerge and before weeds are 1.6 in. high.
- Apply in the afternoon or early evening on sunny days.
- **Do NOT** use on Belleisle or Tobique varieties.
- When growing new or potentially sensitive varieties (such as early maturing, red-skinned, Atlantic, Eramosa or Shepody) first use of SENCOR herbicide on a potato variety should be limited to a small test area to ensure risk or level of potential injury is acceptable to the grower prior to adoption as a general field practice.
- **Do NOT** use on muck soil to avoid injury on subsequent crops.

- Apply POST when potatoes are less than 4 in. high.
- **Do NOT** apply after Atlantic, Eramosa, Shepody, red-skinned or any early maturing varieties have emerged.
- Avoid application when the crop is under stress from poor growing conditions such as cool, wet and cloudy weather.
- Spray before weeds are 1.6 in. high.
- Use high rates of TRICOR for grasses and dense broadleaf weeds.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
PRE-HARVEST		
Trade Name: AIM EC (240 g/L) + non-ionic surfactant or MERGE Product Rate/acre: 94-142 mL/acre + 2.5 L/1,000 L or + 10 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (56-84 g/ha) + non-ionic surfactant (0.25% v/v) or surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 7 days Rainfast: 8 hours Max. Applications: 1
Trade Name: REGLONE DESSICANT (240 g/L) Product Rate/acre: 0.5-1.4 L/acre Active Ingredient(s): diquat (0.3-0.84 kg/ha)	Group #: 22 PCP #: 26396	REI: 24 hours PHI: 1 day Rainfast: 0-15 minutes Max. Applications: 2
RHUBARB		
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: CALLISTO (480 g/L) Product Rate/acre: 0.12 L/acre Active Ingredient(s): mesotrione (0.14 kg/ha)	Group #: 27 PCP #: 27833	REI: 12 hours PHI: 42 days Rainfast: 3 hours for emerged weeds Max. Applications: 1
Trade Name: SANDEA (72.6 WG) Product Rate/acre: 14-28 g/acre Active Ingredient(s): halosulfuron (25-51 g/ha)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 60 days Rainfast: 4 hours Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.8 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 14 days Rainfast: 2 hours Max Applications: 2

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****PRE-HARVEST**

- Coverage of weed and crop foliage is essential for control.
 - If a second burndown application is required, use REGLONE DESSICANT at the rates listed below.
-
- Use 0.5-1.4 L/acre by ground and 0.7-0.9 L/acre for aerial applications.
 - Use the higher rate for heavy canopy of crop and weeds.
 - A second application may be necessary 4-6 days after first application within the normal top killing time.
 - **Do NOT** apply to drought stressed potatoes or if soil is water logged.

RHUBARB**SOIL-APPLIED BROADLEAF HERBICIDES**

- Apply to dormant (prior to spring greenup) rhubarb. Applications to rhubarb that is not dormant will result in crop injury. Rainfall or irrigation after application may increase the risk of injury to emerging rhubarb.
 - Repeated use in low pH soils may cause injury to rhubarb plants.
 - Wait at least 18 months after the application in rhubarb before replanting rhubarb.
-
- Apply as a single application to dormant rhubarb.
 - Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
 - **Do NOT** spray over top of plastic mulch.

POST-EMERGENCE GRASS HERBICIDES

- Apply as a post-emergence broadcast application to actively growing grasses before tillering.
- **Do NOT** make more than 2 applications per season with a minimum re-treatment interval of 14 days.
- Apply in sufficient water volume for thorough coverage.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Fragmenting quackgrass rhizomes with thorough pre-plant tillage improves control.
- **Do NOT** cultivate between rows until 5 days after application.

continued

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

continued

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
RUTABAGAS		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.9-1.8 kg/acre Active Ingredient(s): napropamide (1.1-2.2 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.6-1.155 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: ASSURE II (96 g/L) + MERGE or SURE-MIX or + YUMA GL (96 g/L) + surfactant Product Rate/acre: 0.15-0.30 L/acre + 5 L/1,000 L Active Ingredient(s): quizalofop-p-ethyl (0.036-0.07 kg/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 25462 or 30100	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.8 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 45 days Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****RUTABAGAS****SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- PPI – Incorporate within 24 hours of application.
 - Use the lower rate on sandy soils.
 - **Do NOT** apply to soils with over 10% organic matter.
 - Damage to subsequent cover crops can be reduced by tillage across the rows after harvest.
- Apply PPI or PRE. PPI gives optimal control of yellow nutsedge; PRE gives optimal control of Eastern black nightshade.
 - **Do NOT** use on muck, peat and high organic matter soils.
 - **Do NOT** use on soils with less than 1% organic matter.
 - Use the higher rate for heavier weed populations.
 - Apply by ground application equipment **ONLY**.

- PPI – Incorporate within 24 hours of application.
- **Do NOT** apply to peat or muck soils (greater than 15% organic matter).
- **Do NOT** apply to soils with less than 2% organic matter.
- **Do NOT** apply to fields spread with manure within the last 12 months.
- **Do NOT** apply on the same land for 2 consecutive years.

POST-EMERGENCE GRASS HERBICIDES

- Apply to emerged annual grasses and volunteer cereals in the 2-leaf to tillering stage, and volunteer corn and quackgrass in the 2-6-leaf stage.
 - Use the 0.15 L/acre for control of volunteer corn, volunteer cereals and green foxtail.
 - Use 0.2 L/acre to suppress quackgrass and also control barnyard grass.
 - Use the 0.3 L/acre rate for control of quackgrass.
- Apply POST to actively growing grasses before tillering.
 - Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
 - Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
 - Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly. Thorough preplant tillage will ensure more uniform emergence. Cultivate 5 days after treatment in wide row crops.
 - **Do NOT** apply other herbicides within 3 days of application.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.22 or 0.14 L/acre Active Ingredient(s): clopyralid (0.2 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 83 days Rainfast: 4 hours Max. Applications: 1
Trade Name: MUSTER Toss-N-Go (75%) + AGRAL 90 or AG-SURF Product Rate/acre: 0.006 kg/acre + 2 L/1,000 L Active Ingredient(s): ethametsulfuron-methyl (0.011 kg/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 23569	REI: 12 hours PHI: 45 days Rainfast: 4 hours Max. Applications: 1
SPECIALTY VEGETABLES: CHINESE BROCCOLI, RADISH AND CABBAGE, KOHLRABI, MUSTARD CABBAGE, FUZZY SQUASH, SNOW PEAS		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.9-1.8 kg/acre Active Ingredient(s): napropamide (1.125-2.25 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 1.2 kg/acre Active Ingredient(s): napropamide (1.5 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.48-0.70 L/acre Active Ingredient(s): s-metolachlor (1.098-1.601 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 30 days Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply POST when ragweed is 2-4 in. tall.
- MUSTER can be used for control of wild mustard on Laurentian rutabagas from the cotyledon to 6-leaf stage.

SPECIALTY VEGETABLES: CHINESE BROCCOLI, RADISH AND CABBAGE, KOHLRABI, MUSTARD CABBAGE, FUZZY SQUASH, SNOW PEAS**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Apply to soil surface as an early pre-plant/pre-emergence application in the spring up to 72 hours prior to planting leafy brassica (broccoli raab, Chinese (bok choy) cabbage, collards, kale, mizuna, mustard greens, mustard spinach, rape greens, arugula, Chinese broccoli).
- **Do NOT** mechanically incorporate after application.
- **Do NOT** apply to frozen soil.
- **Do NOT** use on sandy soils with less than 1% organic matter.
- PRE or PREPLANT – For use **ONLY** on seeded Chinese broccoli, mustard, cabbage, Chinese radish, Chinese mustard cabbage, Chinese cabbage, transplanted Chinese cabbage and kohlrabi.
- Use the lower rate on light soils (coarse textured to sandy and sandy loam).
- After harvest, soil should be worked (across rows if banded) to prevent injury to succeeding crops.
- Small grains seeded in the fall may be stunted but not otherwise affected.
- PPI – For use on fuzzy squash transplants **ONLY**.
- Requires rainfall or sufficient irrigation to wet the soil to a depth of 2-4 in. soon after application.
- Some crop stunting may be observed but this should not affect yield.
- Apply to Asian radish and mustard green transplants **ONLY**.
- For mustard green transplants, apply 0.48-0.60 L/acre PRE or POST (weeds at the 2-leaf stage or less).
- Yield losses may occur when applied to transplanted mustard greens.
- For Asian radish, apply 0.48-0.60 L/acre on mineral soil and 0.60-0.70 L/acre on muck soil, either PPI or PRE to crop and weeds.
- Irrigate with 0.5 in. of water IMMEDIATELY if used on muck soil. Only suppression of listed weeds is achievable on muck soils.
- For Asian radish, PRE treatments may give better control of nightshades whereas PPI treatments may give better control of nutsedge.

continued

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

continued

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: PURSUIT (240 g/L) Product Rate/acre: 0.125 L/acre Active Ingredient(s): imazethapyr (0.075 kg/ha)	Group #: 2 PCP #: 23844	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: SELECT (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.08-0.15 L/acre + 5-10 L/1,000 L Active Ingredient(s): clethodim (46-91 g/ha) + surfactant (0.5%-1.0% v/v)	Group #: 1 PCP #: 22625 or 27598	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 2
Trade Name: SELECT (240 g/L) or ARROW (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.08 L/acre + 5 L/1,000 L Active Ingredient(s): clethodim (0.05 L/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 22625 or 28224 or 27598	REI: 12 hours PHI: 21 days Rainfast: 1 hour Max Applications: 1
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfacant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: BASAGRAN or BROADLOOM (480 g/L) + ASSIST Product Rate/acre: 0.7 L/acre + 0.4-0.8 L/acre Active Ingredient(s): bentazon (0.84 kg/ha) + oil concentrate (1-2 L/ha)	Group #: 6 PCP #: 12221 or 32661	REI: 12 hours PHI: 30 days Rainfast: 6 hours Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- PRE and PPI – For use on snow peas **ONLY**.

POST-EMERGENCE GRASS HERBICIDES

- For the control of annual grasses and quackgrass.
- Apply when grassy weeds are at 2-6-leaf stage.

- For use on snow peas.
- Apply when the crop is in the 1-4-leaf stage and grassy weeds are in the 2-6-leaf stage.
- For suppression of annual bluegrass and the control of other annual grasses and quackgrass. See label for detailed information on rates to control all annual grasses.
- Apply using ground equipment.

- For use **ONLY** on Chinese broccoli, Chinese cabbage, kohlrabi, mustard cabbage and Chinese radish and snow peas.
- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide-row crops. Use the high rate of MERGE for quackgrass.
- Use the 0.13 L/acre rate **ONLY** for snow peas.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

- For snow peas **ONLY**.
- Apply after the crop is at the 3-leaf stage when weeds are small and actively growing.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.2 or 0.14 L/acre Active Ingredient(s): clopyralid (0.20 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: 1
SPINACH		
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 15 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: SELECT (240 g/L) or ARROW (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.05-0.08 L/acre + 5 L/1,000 L Active Ingredient(s): clethodim (0.03-0.046 L/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 22625 or 28224 or 27598	REI: 12 hours PHI: 14 days Rainfast: 1 hour Max. Applications: 2
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: LONTREL 360 (360 g/L) Product Rate/acre: 0.12 L/acre Active Ingredient(s): clopyralid (0.10 kg/ha)	Group #: 4 PCP #: 23545	REI: 12 hours PHI: 21 days Rainfast: not stated Max Applications: 2

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- For use **ONLY** on nappa cabbage (transplanted and seeded), Chinese radish, mustard cabbage and Chinese broccoli (all seeded).
- Treat when weeds are young and actively growing.

SPINACH**POST-EMERGENCE GRASS HERBICIDES**

- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
 - For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage.
 - For quackgrass, use 0.44 L/acre. Apply up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of merge for quackgrass.
 - **Do NOT** use flood jet or hollow cone nozzles.
- Apply when grassy weeds are in the 2-6-leaf stage.
 - Allow for 14 days between applications.
 - See label for detailed information on rates to control all annual grasses.

POST-EMERGENCE BROADLEAF HERBICIDES

- Apply POST with a hooded sprayer between the rows.
 - Apply to actively growing weeds up to 4 in. tall.
- For the control of common ragweed and common groundsel.
 - Maximum of 2 applications per year, a minimum 14 days apart.
 - Apply to small actively growing weeds under good growing conditions.
 - Apply to spinach in the 2-5 leaf stage.
 - Crop injury may occur if application is made during times of less than favorable crop growing conditions. Some leaf curling may be observed on smaller spinach.
 - Not all varieties have been tested for crop tolerance. Test a small area first. **Do NOT** apply to the entire field unless you are comfortable with the level of crop safety of the planted variety.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
SUGAR BEETS (PROCESSING)		
Caution about herbicide residues – sugar beets are one of the most sensitive crops to herbicide residues from the previous year's crop. They are particularly sensitive to residues from many of the Group 2 herbicides, including PURSUIT, BROADSTRIKE, CLASSIC and PEAK.		
SOIL-APPLIED BROADLEAF HERBICIDE		
Trade Name: PYRAMIN FL (430 g/L) Product Rate/acre: 3.3-4.1 L/acre Active Ingredient(s): pyrazon (3.55-4.41 kg/ha)	Group #: 5 PCP #: 15857	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDE		
Trade Name: NORTRON FLOWABLE (480 g/L) Product Rate/acre: 1.28-3.3 L/acre Active Ingredient(s): ethofumesate (1.54-3.96 kg/ha)	Group #: 16 PCP #: 17293	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
SOIL-APPLIED TANK-MIX OPTION		
Trade Name: PYRAMIN FL (430 g/L) + NORTRON FLOWABLE (480 g/L) Product Rate/acre: 2.1 L/acre + 1.46 L/acre Active Ingredient(s): pyrazon (2.26 kg/ha) + ethofumesate (1.75 kg/ha)	Group #: 5 + 16 PCP #: 15857 + 17293	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: ASSURE II (96 g/L) + MERGE or SURE-MIX or + YUMA GL (96 g/L) + surfactant Product Rate/acre: 0.15-0.30 L/acre + 5 L/1,000 L Active Ingredient(s): quizalofop-p-ethyl (0.036-0.07 kg/ha) + surfactant (0.5% v/v)	Group #: 1 PCP #: 25462 or 30100	REI: 12 hours PHI: 80 days Rainfast: 1 hour Max. Applications: 2
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 85 days Rainfast: 1 hour Max. Applications: not stated

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****SUGAR BEETS (PROCESSING)**

Low soil pH (below 6.0) or high soil pH (above 7.5) can be a factor to delay the breakdown of these herbicides, increasing crop injury in rotational crops.

SOIL-APPLIED BROADLEAF HERBICIDES

- Apply PPI or PRE.
- **Do NOT** incorporate more than 2 in. deep.
- **Do NOT** apply to soils with less than 3% organic matter.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDE

- **Do NOT** incorporate more than 2 in. deep.
- Use **ONLY** on mineral soils.
- Use the lower rate on soils with less than 3% organic matter.
- **Do NOT** rotate to other crops for 12 months.

SOIL-APPLIED TANK-MIX OPTION

- PRE
- **Do NOT** apply to soil with less than 3% organic matter. **Do NOT** use on sandy soils.
- Use **ONLY** on mineral soils.
- **Do NOT** rotate to crops other than sugar beets for 12 months.

POST-EMERGENCE GRASS HERBICIDES

- Apply POST when annual grasses and volunteer cereals are in the 2-leaf to tillering stage and volunteer corn and quackgrass are in the 2-6-leaf stages.
- Apply before the crop canopy closes to maximize spray coverage.
- Use the 0.15 L/acre rate for annual grasses and volunteer cereals.
- Use the 0.30 L/acre rate for quackgrass.
- Use a second application of 0.15 L/acre to control late emerging weeds.
- **Do NOT** exceed an accumulative seasonal use rate of 0.30 L/acre.
- **Do NOT** use flood jet nozzles.
- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
- **Do NOT** graze treated crop.
- **Do NOT** use flood jet or hollow cone nozzles.
- **Do NOT** apply herbicides other than LONTREL 360 or LONTREL XC within 4 days of application.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6–46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: consult label and your processor for application rates Active Ingredient(s): clopyralid	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 90 days Rainfast: 4 hours Max. Applications: 1
Trade Name: PYRAMIN FL (430 g/L) + CITOWETT PLUS Product Rate/acre: 3.3 L/acre + 2.5 L/1,000 L Active Ingredient(s): pyrazon (3.55 kg/ha) + surfactant (0.25% v/v)	Group #: 5 PCP #: 15857	REI: 12 hours PHI: not stated Rainfast: 6 hours Max. Applications: not stated
Trade Name: UPBEET (50 DF) + AGRAL 90 or AG-SURF or CITOWETT PLUS or SURE-MIX Product Rate/acre: 14–28 g/acre + 2.5 L/1,000 L Active Ingredient(s): triflurosulfuron-methyl (17.5–35 g/ha) + non-ionic surfactant (0.25% v/v)	Group #: 2 PCP #: 25813	REI: 12 hours PHI: 60 days Rainfast: 6 hours Max. Applications: not stated
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: BETAMIX B EC [(1:1) 153 g/L] Product Rate/acre: 0.46–1.92 L/acre Active Ingredient(s): desmedipham/phenmedipham	Group #: 5 PCP #: 28650	REI: 24 hours PHI: 60 days Rainfast: 6 hours Max. Applications: not stated

continued

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Apply POST with a hooded sprayer between the rows. • Apply to actively growing weeds up to 4 in. tall.
<ul style="list-style-type: none"> • Apply POST when sugar beets are in the cotyledon to 8-leaf stage.
<ul style="list-style-type: none"> • Apply POST when first true leaf of sugar beets is at least 1 in. long. • Do NOT apply when beets are in the cotyledon stage. • Apply before the weeds have 3 true leaves. • Do NOT use on soils with less than 3% organic matter. • Avoid hot temperatures. • Do NOT use any other oils or surfactants.
<ul style="list-style-type: none"> • Apply POST when sugar beets are actively growing. • Yellowing of the crop may occur, but sugar beets will recover. • Use the higher rate for larger weeds and heavy weed populations. • Do NOT use more than 40 g/acre in a season. • Do NOT apply under extreme temperatures or drought conditions.
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Apply POST when sugar beets have at least 2 true leaves. • Apply before the weeds have 4 true leaves (before 2 true leaves is optimum). • Wait a minimum of 7 days before making a second full rate application. • Consult label for split (reduced rate) applications. • Do NOT spray in excess of 6.7 L/acre of BETAMIX B per year. • Do NOT spray under extreme temperature or drought conditions. • Do NOT spray if dew is present. • Yellowing of the crop may occur, but sugar beets will recover.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 120 days Rainfast: not stated Max. Applications: 1
POST-EMERGENCE TANK-MIX OPTION		
Trade Name: UPBEET (50 DF) + BETAMIX B ((1:1) 150 g/L) Product Rate/acre: Consult label and your processor for application rates Active Ingredient(s): triflusaluron-methyl + desmedipham/phenmedipham	Group #: 2 + 5 PCP #: 25813 + 28650	REI: 24 hours PHI: 60 days Rainfast: 6 hours Max. Applications: not stated
GLYPHOSATE TOLERANT ("ROUNDUP READY") VARIETIES ONLY		
Trade Name: ROUNDUP ULTRA2 (540 g/L) or ROUNDUP WEATHERMAX (540 g/L) Product Rate/acre: 0.332-0.67 L/acre Active Ingredient(s): glyphosate (0.45-0.90 kg/ha)	Group #: 9 PCP #: 28486, 27487	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 4
SWEET CORN		
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: AATREX 480 (480 g/L) Product Rate/acre: 1.24 L/acre Active Ingredient(s): atrazine (1.49 kg/ha)	Group #: 5 PCP #: 18450	REI: not stated PHI: 45 days Rainfast: not stated Max. Applications: 2

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply post-emergence to sugarbeets between cotyledon to the 4-leaf stage and before weed emergence.
- **Do NOT** feed sugar beet tops to livestock.

POST-EMERGENCE TANK-MIX OPTION

- Apply POST when sugar beets are actively growing.
- Yellowing of the crop may occur, but sugar beets will recover.
- Make 2 applications 5-10 days apart, or as weeds emerge, to weeds with fewer than 4 true leaves. Best control is obtained if weeds have less than 2 leaves.
- Use the higher rate for larger weeds and heavy weed populations.
- **Do NOT** use an adjuvant with this tank-mix.
- **Do NOT** use more than 40 g/acre in a season.
- **Do NOT** apply under extreme temperature or drought conditions.
- **Do NOT** spray if dew is present.

GLYPHOSATE TOLERANT ("ROUNDUP READY") VARIETIES ONLY

- Use **ONLY** on pedigreed (certified) sugarbeet seed designated as glyphosate tolerant (i.e., "Roundup Ready").
- Apply to emerged weeds up to 6 in. in height.
- Allow a minimum of 10 days between applications.

SWEET CORN**SOIL-APPLIED BROADLEAF HERBICIDES**

- Apply PPI, PRE.
- Weeds will normally emerge and die within a few days.
- Atrazine can persist for varying lengths of time; longer under dry, cool weather and coarse textured soils.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: CALLISTO 480 SC (480 g/L) Product Rate/acre: 0.12 L/acre Active Ingredient(s): mesotrione (144 g/ha)	Group #: 27 PCP #: 27833	REI: 12 hours PHI: 50 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: ERAGON (70%) or ERAGON LQ (342 g/L) Product Rate/acre: 28.7-57.9 g/acre or 59.0-118.0 mL/acre Active Ingredient(s): saflufenacil (50-100 g/ha)	Group #: 14 PCP #: 29372 or 31469	REI: 12 hours PHI: 60 days Rainfast: not stated Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ACURON Product Rate/acre: 1.96 L/acre Active Ingredient(s): bicyclopyrone (35 g/ha) + mesotrione (140 g/ha) + s-metolachlor (1.26 kg/ha) + atrazine (589 g/ha)	Group #: 27 + 15 + 5 PCP #: 31846	REI: 12 hours PHI: 50 days Rainfast: not stated Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/acre)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 45 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: FRONTIER MAX (720 g/L) Product Rate/acre: 0.31-0.39 L/acre Active Ingredient(s): dimethenamid-p (0.54-0.69 kg/acre)	Group #: 15 PCP #: 29194	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply PRE.
- For annual grass control, tank-mix with DUAL II MAGNUM, PRIMEXTRA II MAGNUM or DUAL II MAGNUM + AATREX Liquid 480.
- **Do NOT** apply to soils that contain less than 1% or more than 10% organic matter.
- Sweet corn varieties vary in their tolerance to CALLISTO, consult your seed supplier for more information.
- Although CALLISTO 480 SC herbicide has a flexible recropping profile, certain crops may be sensitive to low concentrations in the soil. Therefore, careful consideration should be given to crop rotation plans prior to using CALLISTO 480 SC herbicide.

- Apply PRE.
- The low rate will only provide short season weed control and should be used in a program where a later application of a herbicide is anticipated.
- An appropriate pre-emergence or post-emergence grass herbicide must be tank-mixed with ERAGON for broad spectrum weed control.
- Some sweet corn hybrids may be more sensitive to saflufenacil and injury might occur.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Apply PRE.
- No adjuvant required.
- **Do NOT** mix with ammonium sulphate (AMS).
- Apply in a minimum of 60 L/ac of water.
- Will not control grassy weeds that are beyond the 2-leaf stage.

- Apply PPI, PRE.
- For PPI timing, set incorporation equipment to work soil no deeper than 4 in.
- Improved control of yellow nutsedge is obtained when DUAL II MAGNUM is applied PPI.
- Grassy weeds beyond the 2-leaf stage will not be controlled.
- Optimum control of nightshade is obtained when DUAL II MAGNUM is applied PRE.
- **Do NOT** use on muck, peat, high organic matter soils.
- This product controls a limited amount of broadleaf weeds and therefore should be tank-mixed with a broadleaf herbicide for broad spectrum weed control.

- Apply PPI, PRE.
- For PPI timing, set incorporation equipment to work soil no deeper than 4 in.
- Improved control of yellow nutsedge is obtained when applied PPI at the highest rate.
- Sensitive weeds beyond the 2-leaf stage will not be controlled.
- Apply higher rates on fine textured or high organic matter soils or when targeting nightshade, nutsedge and pigweed.
- **Do NOT** use on muck, peat, high organic matter soils.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: LUMAX EZ (s-metolachlor 298 g/L + atrazine 112 g/L + mesotrione 30 g/L) Product Rate/acre: 1.9 L/acre Active Ingredient(s): s-metolachlor (1.4 kg/ha) + atrazine (0.53 kg/ha) + mesotrione (0.14 kg/ha)	Group #: 15 + 5 + 27 PCP #: 30864	REI: 12 hours PHI: 50 days Rainfast: rainfall required for activation Max. Applications: 1
Trade Name: PRIMEXTRA II MAGNUM (s-metolachlor 400 g/L + atrazine 320 g/L) Product Rate/acre: 1.2-1.6 L/acre Active Ingredient(s): s-metolachlor (1 kg/ha) + atrazine (0.8 kg/ha)	Group #: 15 + 5 PCP #: 29358	REI: 12 hours PHI: 45 days Rainfast: rainfall required for activation Max. Applications: 2 (1 PPI or PRE and 1 POST)
SOIL-APPLIED TANK-MIX OPTION		
Trade Name: LOROX L (480 g/L) + DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.32-0.63 L/acre + 0.5 L/acre Active Ingredient(s): linuron (0.4 kg/ha - 0.75 kg/ha) + s-metolachlor (1.14 kg/acre)	Group #: 7 + 15 PCP #: 16279 + 25729	REI: 12 hours PHI: 45 days Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AATREX LIQUID 480 (480 g/L) + crop oil Product Rate/acre: 1.24 L/acre + 6.8 L/acre Active Ingredient(s): atrazine 1.49 kg/ha	Group #: 5 PCP #: 18450	REI: 12 hours PHI: 45 days Rainfast: 2 hours Max. Applications: 2
Trade Name: BASAGRAN FORTÉ or BROADLOOM (480 g/L) Product Rate/acre: 0.9 L/acre Active Ingredient(s): bentazon (1.1 kg/ha)	Group #: 6 PCP #: 22006 or 32661	REI: 12 hours PHI: not stated Rainfast: 6 hours Max. Applications: 2
Trade Name: BUCTRIL M ((1:1) 560 g/L) Product Rate/acre: 0.4 L/acre Active Ingredient(s): bromoxynil/MCPA (0.56 kg/ha)	Group #: 6, 4 PCP #: 18022	REI: 24 hours PHI: 15 days Rainfast: 1 hour Max. Applications: 1

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply PRE up to 7 days prior to planting.
 - Grassy weeds beyond the 2-leaf stage will not be controlled.
 - **Do NOT** apply to corn treated with an organophosphorous insecticide.
 - **Do NOT** apply other mesotrione containing products to ground that has been treated with LUMAX EZ herbicide in the same season.
 - **Do NOT** apply to soils that contain less than 1% or more than 10% organic matter.
 - Temporary crop injury (bleaching) may occur under extreme weather conditions or when the crop is under stress.
-
- Apply PPI, PRE.
 - Use the higher rate where annual grass build up or nutsedge infestation is evident.
 - **Do NOT** plant any crop other than corn in the same year on land treated with PRIMEXTRA II MAGNUM as injury may occur. The following year there is virtually no hazard to soybeans, white beans, corn, oats or barley (not underseeded to a legume).

SOIL-APPLIED TANK-MIX OPTION

- Apply PRE.

POST-EMERGENCE BROADLEAF HERBICIDES

- For increased activity and extended period of activity, apply in an oil water emulsion of 4-6.8 L/ac of emulsifiable light mineral oil and 60-80 L/ac water.
 - Apply when most weeds have emerged and less than 4 in tall. The low rate can be used successfully if subsequent cultivation is planned.
 - Apply when corn is less than 12 in tall.
-
- Apply at the 1-5-leaf stage of sweet corn.
 - Top growth of nutsedge and Canada thistle are controlled and field bindweed may be suppressed by 2 applications of 0.7 L/acre applied 10 days apart.
 - Cool weather or drought may reduce control.
-
- Apply at the 4-6-leaf stage of sweet corn. Damage to sweet corn will result if sprayed beyond the 6-leaf stage.
 - Temporary leaf scorching may occur in adverse growing conditions, especially if applied during or after periods of cool and wet, or hot and humid weather conditions.
 - **Do NOT** add oil or surfactant.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
POST-EMERGENCE GRASS HERBICIDE		
Trade Name: ACCENT 75 DF (75%) + non-ionic surfactant Product Rate/acre: 13 g/acre + 2 L/1,000 L Active Ingredient(s): nicosulfuron (25 g/ha)	Group #: 2 PCP #: 25116	REI: 12 hours PHI: 40 days Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/acre)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 45 days Rainfast: not stated Max. Applications: 1
Trade Name: PERMIT WG (72.6%) + non-ionic surfactant Product Rate/acre: 19-38 g/acre + 2.5 L/1,000 L Active Ingredient(s): halosulfuron (34-68 g/ha)	Group #: 2 PCP #: 31210	REI: 12 hours PHI: 30 days Rainfast: 2 hours for emerged weeds Max. Applications: 2
Trade Name: PRIMEXTRA II MAGNUM (s-metolachlor 400 g/L + atrazine 320 g/L) Product Rate/acre: 1.2-1.6 L/acre Active Ingredient(s): s-metolachlor (1 kg/ha) + atrazine (0.8 kg/ha)	Group #: 15 + 5 PCP #: 29358	REI: 12 hours PHI: 45 days Rainfast: rainfall required for activation Max. Applications: 2 (1 PPI or PRE and 1 POST)
POST-EMERGENCE TANK-MIX OPTIONS		
Trade Name: CALLISTO 480 SC (480 g/L) + AATREX LIQUID 480 (480 g/L) Product Rate/acre: 0.085 L/acre + 0.24 L/acre Active Ingredient(s): mesotrione (100 g/ha) + atrazine (280 g/ha)	Group #: 27 + 5 PCP #: 27833 + 18450	REI: 12 hours PHI: 50 Rainfast: 3 hours for emerged weeds Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****POST-EMERGENCE GRASS HERBICIDES**

- Always add water soluble packages to clean water with the agitator running. Sweet corn should be within the 1-6-leaf stage of growth. Apply ACCENT when annual grasses are in the 1-6-leaf stage and quackgrass is in the 3-6-leaf stage.
- Weeds which emerge after application of ACCENT 75 DF will not be controlled. Application should be made when the majority of weeds have emerged.
- For quackgrass control apply ACCENT 75 DF with a recommended surfactant post-emergence when the majority of the quackgrass shoots are actively growing and in the 3-6-leaf stage (4-8 in. in height – leaf extended).
- For the control of yellow foxtail apply ACCENT 75 DF with 28% liquid urea ammonium nitrate (UAN) at 2 L/acre plus a recommended non-ionic surfactant (NIS) or apply ACCENT 75 DF with MERGE. Failure to use an NIS with UAN or MERGE as indicated above will result in suppression only of yellow foxtail.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES

- Apply POST up to the 3-leaf stage of sweet corn.
- Improved control of yellow nutsedge is obtained when DUAL II MAGNUM is applied PPI.
- Grassy weeds beyond the 2-leaf stage will not be controlled.
- Optimal control of nightshade is obtained when DUAL II MAGNUM is applied PRE.
- **Do NOT** use on muck, peat, high-organic matter soils.
- This product controls a limited amount of broadleaf weeds and therefore should be tank-mixed with a broadleaf herbicide for broad spectrum weed control.

- Apply when sweet corn is in the spike to 10-leaf stage.
- The maximum use rate for sweet corn is 28 g/acre.
- The 19 g/acre rate will control labelled broadleaf weeds and nutsedge shorter than 12 in.
- The 28-38 g/acre rate will control nutsedge that is 6-12 in tall.
- PERMIT WG can be applied up to twice per season, but **Do NOT** exceed a total of 56 g/acre in sweet corn.

- Apply POST up to the 3-leaf stage of corn.
- Use the higher rate where annual grass build up or nutsedge infestation is evident.
- Grassy weeds beyond the 2-leaf stage will not be controlled.
- **Do NOT** plant any crop other than corn in the same year on land treated with PRIMEXTRA II MAGNUM as injury may occur. The following year there is virtually no hazard to soybeans, white beans, corn, oats or barley (not underseeded to a legume).

POST-EMERGENCE TANK-MIX OPTIONS

- Apply from the 3-6-leaf stage of sweet corn.
- **Do NOT** apply to Delmonte 2038 sweet corn.
- Sweet corn varieties vary in their tolerance to CALLISTO, consult your seed supplier for more information.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: IMPACT or ARMEZONE (336 g/L) + AATREX LIQUID 480 (480 g/L) + UAN (28%) Product Rate/acre: 0.015 L/acre + 0.4 L/acre + 12.5 L/1,000 L Active Ingredient(s): topramezone (12.4 g/ha) + atrazine (480 g/ha)	Group #: 27 + 5 PCP #: 28141 or 30131 + 18450	REI: 12 hours PHI: 45 days Rainfast: 2 hours for emerged weeds Max. Applications: 1
Trade Name: PARDNER (280 g/L) + AATREX LIQUID 480 (480 g/L) Product Rate/acre: 0.4 L/acre + 0.84-1.24 L/acre Active Ingredient(s): bromoxynil (0.29 kg/ha) + atrazine (1.01-1.49 kg/ha)	Group #: 6 + 5 PCP #: 18001 + 18450	REI: 24 hours PHI: 45 days Rainfast: 1 hour Max. Applications: 1
Trade Name: BROMOTRIL (240 g/L) or KORIL (235 g/L) or BROTEX (240 g/L) + AATREX LIQUID 480 (480 g/L) Product Rate/acre: 0.48 L/acre + 0.84-1.24 L/acre Active Ingredient(s): bromoxynil (0.29 kg/ha) + atrazine (1.01-1.49 kg/ha)	Group #: 6 + 5 PCP #: 28276 or 25341 or 28519 + 18450	REI: 24 hours PHI: 45 days Rainfast: 1 hour Max. Applications: 1
Trade Name: BROMAX (480 g/L) or BROTEX (480 g/L) + AATREX LIQUID 480 (480 g/L) Product Rate/acre: 0.24 L/acre + 0.84-1.24 L/acre Active Ingredient(s): bromoxynil (0.29 kg/ha) + atrazine (1.01-1.49 kg/ha)	Group #: 6 + 5 PCP #: 31431 or 31348 + 18450	REI: 24 hours PHI: 45 days Rainfast: 1 hour Max. Applications: 1
POST-EMERGENCE TREATMENT FOR "ROUNDUP READY" SWEET CORN HYBRIDS ONLY		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1.0 L/acre or 0.75 L/acre or 0.72 L/acre or 0.67 L/acre Active Ingredient(s): glyphosate (0.9 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 7-14 days Rainfast: 1 hour Max. Applications: 2

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.**

- Apply to emerged grassy (up to 4-leaf) and broadleaf (up to 8-leaf) weeds.
- Apply between the spike and 7-leaf stage of sweet corn.
- ASSIST + UAN must be used instead of MERGE at a rate of 12.5 L/1,000 L. The use of MERGE will increase the risk of crop injury to sweet corn.

- Apply from the 4-8-leaf stage of sweet corn.
- Apply to actively growing broadleaf weeds in the 1-4-leaf stage.
- **Do NOT** add oil or surfactant.
- **Do NOT** use flood jet nozzles.
- **Do NOT** spray at temperatures above 25°C.

- Apply from the 4-8-leaf stage of sweet corn.
- Apply to actively growing broadleaf weeds in the 1-4-leaf stage.
- **Do NOT** add oil or surfactant.
- **Do NOT** use flood jet nozzles.
- **Do NOT** spray at temperatures above 25°C.

- Apply from the 4-8-leaf stage of sweet corn.
- Apply to actively growing broadleaf weeds in the 1-4-leaf stage.
- **Do NOT** add oil or surfactant.
- **Do NOT** use flood jet nozzles.
- **Do NOT** spray at temperatures above 25°C.

POST-EMERGENCE TREATMENT FOR "ROUNDUP READY" SWEET CORN HYBRIDS ONLY

- Can **ONLY** be applied to glyphosate tolerant sweet corn hybrids. Applications made to non glyphosate tolerant corn will result in complete plant death.
- Apply up to and including the 8-leaf stage of corn.
- Applications should be timed to keep the corn crop weed-free from the 3-8-leaf stage of corn.
- Not all formulations are registered on all crops. See label for specific uses and rates.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
SWEET POTATOES		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.042 kg/acre Active Ingredient(s): flumioxazin (0.054 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: COMMAND 360 ME (360 g/L) Product Rate/acre: 0.62 L/acre Active Ingredient(s): clomazone (0.558 kg/ha)	Group #: 13 PCP #: 27827	REI: 12 hours PHI: 95 days Rainfast: not stated Max. Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 3.6-6.2 kg/acre Active Ingredient(s): chlorthal dimethyl (6.75-11.625 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25% v/v)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
POST-EMERGENCE BROADLEAF HERBICIDE		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued***PRECAUTIONS - For more information, see the label.****SWEET POTATOES****SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Significant crop injury may occur from applications made to poorly drained soils and/or applications made under cool, wet conditions.
- Severe crop injury will result when soils are flooded following applications of CHATEAU WDG. Treated soil that is splashed onto newly emerged crops may result in temporary crop injury.
- **Do NOT** apply more than 42 g/acre during a single growing season.
- Apply prior to transplanting. **Do NOT** apply after sweet potato slips have been transplanted.
- **Do NOT** use on any sweet potato variety other than Beauregard, unless user has tested CHATEAU WDG on the other variety and has found crop tolerance acceptable.
- **Do NOT** apply on soils with > 5% OM, or fine textured soils.

- Apply as a single application post transplant surface applied to the crop and prior to weed emergence.
- **Do NOT** incorporate.

- Apply at a rate of 3.6-5.4 kg/acre on light sand or sandy loam soils.
- Apply at a rate of 4.4-6.2 kg/acre on medium silt loam soils.
- **Do NOT** use on muck soils.
- Apply directly over transplants, pre-emergence to weeds.
- If weeds have emerged, cleanly cultivate the soil before application.
- Rainfall or irrigation (about 0.4 in.) is necessary for activation.

POST-EMERGENCE GRASS HERBICIDES

- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.

POST-EMERGENCE BROADLEAF HERBICIDE

- Apply POST with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDE		
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 105 days Rainfast: not stated Max. Applications: 1
TOMATOES, TRANSPLANTED		
<p>Weed control in tomatoes usually consists of a combination of herbicide weed control and cultivation. Crop rotation is also beneficial in the control of weeds. Cultivation should be shallow to prevent bringing untreated soil to the surface, which may result in another flush of weeds. When tomatoes are grown on raised beds and beds are reshaped during the course of the season, it may be necessary or useful to apply another herbicide treatment to areas between the rows to prevent a new weed infestation from interfering with harvesting.</p>		
SOIL-APPLIED BROADLEAF HERBICIDE		
Trade Name: SANDEA (72.6 WG) Product Rate/acre: 14-28 g/acre Active Ingredient(s): halosulfuron (25-51 g/ha)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 60 days Rainfast: 4 hours Max. Applications: 2
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 19 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: BOUNDARY LQD (628 g/L) Product Rate/acre: 0.74-1.0 L/acre Active Ingredient(s): s-metolachlor/metribuzin (1443-1943 g/ha)	Group #: 15 + 5 PCP #: 30812	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.9-1.8 kg/acre Active Ingredient(s): napropamide (1.12-2.25 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

*continued***PRECAUTIONS - For more information, see the label.****POST-EMERGENCE GRASS AND BROADLEAF HERBICIDE**

- Apply as an early post-emergence application 2-5 days after transplanting.
- Varieties differ in their sensitivity.
- Test DUAL II MAGNUM on a small area of all new varieties for acceptable tolerance.

TOMATOES, TRANSPLANTED

Do NOT exceed the total label rate per season of any herbicide applied more than once per year. Band treatment of herbicides over the row will reduce the cost by one-half to two-thirds depending on the width of the band compared to the row spacing. Shallow inter-row cultivation will be required for weed control between the rows. Perennial weeds may be partially controlled by cultivation. Controlling perennial weeds in crops other than tomatoes when grown in rotation is the best approach to control. Perennials are easily spread with cultivators or tillage equipment. Till areas of perennial weeds last. Machinery sanitation is important when moving between fields.

SOIL-APPLIED BROADLEAF HERBICIDE

- **Do NOT** apply to direct seeded tomatoes.
- Avoid application under stressful conditions.
- **Do NOT** use on coarse soils.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Apply as a pre-emergence broadcast or banded treatment prior to transplanting.
 - Early crop injury may be observed, but the final yield should not be affected.
 - **Do NOT** use on sandy soils with less than 1% organic matter.
-
- **Do NOT** apply to direct seeded tomatoes.
 - Avoid application under stressful conditions.
 - **Do NOT** use on coarse soils.
-
- Apply PPI. Incorporate within 24 hours of application. Incorporate shallowly to maintain spatial separation between herbicide-treated zone and developing transplant roots.
 - Registered for use on field-seeded and transplanted tomatoes.
 - Use the lower rates on light textured soils.
 - **Do NOT** apply to soils with over 10% organic matter.
 - Damage to subsequent cover crops can be reduced by tillage across the rows after harvest. Small grains seeded in the fall may be stunted but not otherwise affected.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/acre)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) followed by DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.35 L/acre followed by 0.18-0.35 L/acre Active Ingredient(s): s-metolachlor (0.40-0.80 kg/acre)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 30 days Rainfast: moisture required for activation Max Applications: 2
Trade Name: PROWL H2O (455 g/L) Product Rate/acre: 0.9 L/acre Active Ingredient(s): pendimethalin (1 kg/ha)	Group #: 3 PCP #: 29542	REI: 24 hours PHI: 21 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.6-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1

continued

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.

- Apply PPI. Incorporate shallowly to maintain spatial separation between herbicide-treated zone and developing tomato roots.
- **Do NOT** use on muck, peat, high organic matter soils.
- **Do NOT** use on soils with less than 1% organic matter.
- Use the higher rate for heavier weed populations, Eastern black nightshade and yellow nutsedge.
- **Do NOT** apply on direct-seeded tomatoes.
- DUAL II MAGNUM may damage transplants that have been weakened by any cause. **Do NOT** plant when wet, cool or unfavourable growing conditions exist.
- Not all tomato varieties have been tested for tolerance to DUAL II MAGNUM, therefore, the first use should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice.

- **PPI followed by POST.**
- **PPI** - Incorporate shallowly to maintain spatial separation between herbicide-treated zone and developing tomato roots.
- **POST** - Make the second application within 7-14 days after transplanting. The interval between PPI and POST-transplant should be no longer than 14 days.
- **Do NOT** apply DUAL II MAGNUM within 7 days of transplanting.
- **Do NOT** exceed 0.7 L/acre of DUAL II MAGNUM on tomatoes per year.
- **Do NOT** use on muck, peat, high organic matter soils.
- **Do NOT** use on soils with less than 1% organic matter.
- Use the higher rate for heavier weed populations, Eastern black nightshade and yellow nutsedge.
- **Do NOT** apply on direct-seeded tomatoes.
- DUAL II MAGNUM may damage transplants that have been weakened by any cause. **Do NOT** plant when wet, cool or unfavourable growing conditions exist.
- Not all tomato varieties have been tested for tolerance to DUAL II MAGNUM, therefore, the first use should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice.

- Apply PROWL H2O as a broadcast surface application prior to transplanting tomatoes.
- Prowl H2O will **NOT** control emerged weeds.
- This treatment is most effective when adequate rainfall or irrigation is received with 7 days of application
- Avoid root contact with treated soil when placing transplants into furrow or hole or injury may result.
- **Do NOT** apply prior to direct-seeded tomatoes.
- **Do NOT** apply post-emergence over the top of or to foliage of tomatoes because severe injury may occur.
- **Do NOT** apply PROWL H2O with liquid fertilizers.
- **Do NOT** apply PROWL H2O more than once in two consecutive years.

- Use **ONLY** on transplant tomatoes grown for processing.
- PPI – Incorporate within 24 hours of application. Incorporate shallowly to maintain spatial separation between herbicide-treated zone and developing transplant roots.
- Cool, wet weather may delay transplant establishment but yield is not usually affected.
- **Do NOT** apply to peat or muck soils (greater than 15% organic matter).
- **Do NOT** apply to soils with less than 2% organic matter.
- **Do NOT** apply to fields spread with manure within the last 12 months.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
SOIL-APPLIED TANK-MIX OPTIONS		
Trade Name: DUAL II MAGNUM (915 g/L) + SENCOR 480 F (480 g/L) Product Rate/acre: 0.5-0.7 L/acre + 0.2-0.6 L/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/ha) + metribuzin (0.24-0.70 kg/ha)	Group #: 5 + 15 PCP #: 25729 + 26280	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) + SENCOR 480 F (480 g/L) or SENCOR 75 DF (75%) Product Rate/acre: 0.5-0.7 L/acre + 0.48-0.96 L/acre + 0.2-0.4 L/acre or 132-264 g/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/ha) + trifluralin (0.6-1.15 kg/ha) + metribuzin (0.24-0.48 kg/ha) or metribuzin (0.25-0.68 kg/ha)	Group #: 15 + 3 + 5 PCP #: 25729 + 23933 or 18612 or 28289 + 27091 or 17242	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 60 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.8 L/acre Active Ingredient(s): fluazifop-p-butyl (0.250 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 60 days Rainfast: 2 hours Max. Applications: not stated

TABLE 2-2

Herbicide treatment rates and precautions for vegetable crops

*continued***PRECAUTIONS - For more information, see the label.****SOIL-APPLIED TANK-MIX OPTIONS**

- Apply PPI. Incorporate shallowly to maintain spatial separation between herbicide-treated zone and developing transplant roots.
- **Do NOT** use on muck, peat, or high organic matter soils.
- **Do NOT** use on soils with less than 2% organic matter.
- Use the higher rate of DUAL II MAGNUM for heavier weed populations, Eastern black nightshade and yellow nutsedge.
- Use lower rate of metribuzin and repeat applications of metribuzin when the crop is established as described under post-emergence application of metribuzin.
- Refer to the product labels regarding application rates for different soil types.
- **Do NOT** exceed total maximum rate of metribuzin recommended on the label for your soil type.

- PPI – Incorporate within 24 hours of application. Incorporate shallowly to maintain spatial separation between herbicide-treated zone and developing transplant roots.
- **Use ONLY on transplant tomatoes grown for processing.**
- **Do NOT** apply to peat or muck soils (greater than 15% organic matter).
- **Do NOT** apply to soils with less than 2% organic matter.
- **Do NOT** apply to fields spread with manure within the last 12 months.
- Use lower rates on sandy soils or soils with low organic matter.
- **Use the higher rate of DUAL II MAGNUM for heavier weed populations, Eastern black nightshade and yellow nutsedge.**
- Use lower rate of metribuzin and repeat applications of metribuzin when crop is established as described under post-emergence application of metribuzin.
- **Do NOT** exceed total maximum rate of metribuzin recommended on the label for your soil type.
- Cool, wet weather may delay establishment, but yield is not usually affected.

POST-EMERGENCE GRASS HERBICIDES

- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
 - For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage (2-5 is optimum).
 - For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough pre-plant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass.
 - **Do NOT** apply any other chemicals within 4 days of POAST ULTRA application.
 - **Do NOT** use flood jet or hollow cone nozzles.
-
- Apply POST to actively growing grasses before tillering.
 - Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
 - Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
 - Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly. Thorough pre-plant tillage, fragmenting quackgrass rhizomes improves control.
 - **Do NOT** apply other herbicides within 3 days of application.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops***continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6–46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8–28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: PINNACLE SG TOSS-N-GO (50%) + AGRAL 90 Product Rate/acre: 3.3–4.8 g/acre + 2 L/1,000 L Active Ingredient(s): thifensulfuron methyl (4.1–6.0 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 30741	REI: 12 hours PHI: 45 days Rainfast: 4 hours Max. Applications: 1
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 14–28 g/acre + 2 L/1,000 L Active Ingredient(s): halosulfuron (25–51 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: 2
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: PRISM (25 DF) or PRISM (25 SG) + AGRAL 90 or AG-SURF Product Rate/acre: 24–57 L/acre + 2 L/1,000 L Active Ingredient(s): rimsulfuron (15–35 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 23983 or 30057	REI: 12 hours PHI: 30 days Rainfast: 2–4 hours Max. Applications: 1
Trade Name: SENCOR DF (75 DF) or TRICOR 75 DF (75%) or SQUADRON (75%) Product Rate/acre: 0.08–0.44 kg/acre Active Ingredient(s): metribuzin (0.15–0.83 kg/ha)	Group #: 5 PCP #: 17242 or 30661 or 32081	REI: 12 hours PHI: multiple applications: 30 days single application: 60 days Rainfast: not stated Max. Applications: 4

continued

TABLE 2-2
Herbicide treatment rates and precautions for vegetable crops
continued

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Apply POST with a hooded sprayer between the rows. • Apply to actively growing weeds up to 4 in. tall.
<ul style="list-style-type: none"> • Apply 3 weeks after transplanting to weeds less than 4 in. tall. • Add PINNACLE SG TOSS-N-GO to the spray tank and agitate, then add AGRAL 90. • Do NOT apply if rain is expected within several hours. • Do NOT apply to tomatoes that are stressed.
<ul style="list-style-type: none"> • Apply POST to tomatoes 14 days after transplanting through to first bloom. • To maximize control of nutsedge, a second spot application on emerged nutsedge may be necessary. • Minimum of 21 days between applications. Do NOT apply more than 28 g/acre per season. • Spraying over top of plastic mulch may result in significant injury.
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Use 57 g/acre for control of triazine-resistant lamb's-quarters, hairy nightshade plus other broadleaf weeds listed. • Apply POST when hairy nightshade is up to the 4-leaf stage, quackgrass is in the 3-6-leaf stage (less than 4 in. tall), annual grasses are in the 1-6-leaf stage and redroot pigweed is at the 4-6-leaf stage. • May be used on processing and fresh-market tomatoes. • Apply at least 21 days after transplanting the crop.
<ul style="list-style-type: none"> • May be used on processing and fresh market tomatoes. • Apply POST at least 3 weeks after transplanting before weeds exceed 1.6 in. in height. • When making multiple applications, apply at a rate of 0.08 kg/acre. • Direct spray to bottom one-third of tomato plants to reduce risk of crop injury. • Do NOT apply when crop is under stress due to cool, wet, cloudy weather or excessively hot temperatures. • Do NOT use on muck soils. • Do NOT use on soils with less than 2% organic matter. • Use lower rates on sandy soils, higher rates on clay soils.

continued

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops**

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: SENCOR 480 F (480 g/L) Product Rate/acre: 0.12 L/acre Active Ingredient(s): metribuzin (0.14 kg/ha)	Group #: 5 PCP #: 26280	REI: 12 hours PHI: 30 days Rainfast: not stated Max. Applications: 4
POST-EMERGENCE TANK-MIX OPTION		
Trade Name: PRISM (25 DF) or PRISM (25 SG) + PINNACLE SG TOSS-N-GO (50%) + AGRAL 90 Product Rate/acre: 25 g/acre + 4.8 g/acre + 2 L/1,000 L Active Ingredient(s): rimsulfuron (15 g/ha) + thifensulfuron methyl (4.125-6.0 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 + 2 PCP #: 23983 or 30057 + 30741	REI: 12 hours PHI: 45 days Rainfast: 2-4 hours Max. Applications: not stated

TABLE 2-2**Herbicide treatment rates and precautions for vegetable crops****PRECAUTIONS - For more information, see the label.**

- May be used on processing and fresh-market tomatoes.
- Apply up to four POST applications per season.
- Apply before the weeds are 1 in. in height.
- BRAVO 500 fungicide may be tank-mixed with this treatment at 0.404-0.808 L/acre. Control of annual grasses may be reduced.
- **Do NOT** apply when crop is under stress due to cool, wet, cloudy weather or excessively hot temperatures.
- **Do NOT** use on muck soils.
- **Do NOT** use on soils with less than 2% organic matter.
- **Do NOT** exceed the maximum total rate of SENCOR 480 F recommended on the label for your soil type.

POST-EMERGENCE TANK-MIX OPTION

- Use **ONLY** on transplant tomatoes grown for processing.
- Apply POST through ground application, when hairy nightshade is up to the 4-leaf stage, quackgrass is in the 3-6-leaf stage (less than 4 in. tall), annual grasses are in the 1-6-leaf stage and redroot pigweed is at the 4-6-leaf stage.
- Apply to weeds 10-21 days after transplanting tomatoes.
- **Do NOT** apply if rain is expected within 2 hours of application.
- **Do NOT** apply to tomatoes that are stressed.

3. Berry crops

TABLE 3-1

Berry herbicide weed control ratings

NOTES: Ratings are subjective values based on best available information and give general comparisons based on use as described in this guide. Under unfavourable conditions (e.g., too dry, too wet, too cold, or poor application) the herbicides may not be as effective as indicated. Ratings may vary with weed and crop stage and with the timing and rates of the product(s) being used. Please refer to product label for more information on registered weed species, product uses and precautions.

LEGEND: **N** = No Control **P** = Poor Control **F** = Fair Control **G** = Good Control **E** = Excellent Control
 - = insufficient information available to make a rating. ✓ = can be used on this crop
 X = cannot be used on this crop

TRADE NAME	Crop Registrations				Annual Grasses						Annual Broadleaves						
	blackberries	currants/gooseberries	highbush blueberries	raspberries	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	sandbur	chickweed, common	fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed
SOIL-APPLIED BROADLEAF HERBICIDES																	
SANDEA	X	X	✓	X	N	N	N	N	N	-	G	E	G	G	G	G	G ¹
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																	
ALION	✓	✓	✓	✓	E	E	E	E	E	E	-	E	E	E	E	F	-
AUTHORITY 480	✓	✓	✓	✓	-	G	-	-	-	-	-	G	-	G	-	G	P
CASORON G-4	✓	X	✓	✓	F	F	F	F	F	-	G	-	F	G	P	G	P
CHATEAU	X	X	✓	X	P	P	P	P	P	-	-	E	F	E	-	E	F
DEVRIOL DF-XT	✓	X	✓	✓	G	E	G	G	G	G	F	-	F	G	P	G	F
DUAL II MAGNUM	X	X	✓	X	E	E	G	E	E	-	F	-	P	F	P	G	P
PRINCEP NINE-T or SIMADEX or SIMAZINE 480	✓	X	✓	✓	G	G	F	G	G	-	G	-	E	E	E	E	G
SENCOR or SQUADRON	X	X	✓	✓	F	G	E	G	E	-	E	-	E	E	E	G	G
SINBAR WDG	X	X	✓	X	G	F	G	G	G	P	E	-	F	G	G	F	F

continued

¹ Registered for pre-emergent activity on common ragweed only.

² Weeds cannot be emerged at time of application to achieve this level of control.

³ Not all formulations are registered on all crops. See label for specific uses and rates.

⁴ Yellow foxtail will only be suppressed.

⁵ Top growth only, regrowth can be expected.

TABLE 3-1
Berry herbicide weed control ratings *continued*

TRADE NAME	Perennial Weeds																	
	bindweed, field	chickweed, mouse-eared	dandelion	goldenrod	grape, wild	ground-ivy (creeping charlie)	mallow	milkweed	nightshade, climbing	nutsedge	plantains	poison-ivy	quackgrass	sow-thistle	stinging nettle	thistle, Canada	vetches	virginia creeper
SOIL-APPLIED BROADLEAF HERBICIDES																		
SANDEA	F	-	-	-	-	-	G	-	-	F	G	-	-	-	-	-	-	-
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																		
ALION	E	E	F	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUTHORITY 480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CASORON G-4	F	F	F	-	P	F	-	-	-	F	F	P	F	F	-	F	F	-
CHATEAU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEVRIKOL DF-XT	-	-	P	-	-	-	-	P	-	P	P	P	P	P	-	P	P	-
DUAL II MAGNUM	N	-	P	-	-	-	-	N	-	G	P	-	N	N	N	N	N	N
PRINCEP NINE-T or SIMADIX or SIMAZINE 480	P	-	P	-	-	-	-	N	-	P	-	-	F	P	-	P	N	-
SENCOR or SQUADRON	P	-	-	-	-	-	-	P	P	P	-	-	P	P	-	P	P	N
SINBAR WDG	F	G	F	-	-	-	-	F	-	F	G	-	F	P	-	F	P	-

continued

TABLE 3-1
Berry herbicide weed control ratings

LEGEND: **N** = No Control **P** = Poor Control **F** = Fair Control **G** = Good Control **E** = Excellent Control
 - = insufficient information available to make a rating. ✓ = can be used on this crop
 X = cannot be used on this crop

TRADE NAME	Crop Registrations				Annual Grasses						Annual Broadleaves						
	blackberries	currant/gooseberries	highbush blueberries	raspberries	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	sandbur	chickweed, common	fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed
POST-EMERGENCE GRASS HERBICIDES																	
POAST ULTRA	X	X	✓	✓	G	G	E	G	E	-	N	N	N	N	N	N	N
SELECT or ARROW or CENTURION	X	X	✓	✓	G	G	E	G	E	-	N	N	N	N	N	N	N
VENTURE L	✓	X	✓	✓	E	E	E	E	E	-	N	N	N	N	N	N	N
POST-EMERGENCE BROADLEAF HERBICIDES																	
AIM EC (Hooded Sprayer)	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-	G	G	G	-
BASAGRAN	X	X	✓	X	N	N	N	N	N	N	G	-	E	F	G	G	G
CALLISTO	X	X	✓	X	-	-	-	-	-	-	-	-	-	E	E	E	F
GOAL 2XL	X	X	✓	X	P	P	P	P	P	-	F	-	G	G	E	E	G
SANDEA	X	X	✓	X	N	N	N	N	N	N	G ²	N	G ²	G ²	G	G	G
2,4-D ³	X	X	✓	✓	N	N	N	N	N	-	F	-	P	G	E	E	G
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES																	
GLYPHOSATE ³	✓	✓	✓	✓	E	E	E	E	E	-	E	E ³	E	E	E	E	E
IGNITE	X	X	✓	✓	E	E	E	E	E	-	E	G ⁵	E	E	G	E	E
PRISM	✓	X	✓	✓	E	G	E	G ⁴	E	-	-	-	F	F	E	E	P

¹ Registered for pre-emergent activity on common ragweed only.

² Weeds cannot be emerged at time of application to achieve this level of control.

³ Not all formulations are registered on all crops. See label for specific uses and rates.

⁴ Yellow foxtail will only be suppressed.

⁵ Top growth only, regrowth can be expected.

TABLE 3-1
Berry herbicide weed control ratings

TRADE NAME	Perennial Weeds																	
	bindweed, field	chickweed, mouse-eared	dandelion	goldenrod	grape, wild	ground-ivy (creeping charlie)	mallow	milkweed	nightshade, climbing	nutsedge	plantains	poison-ivy	quackgrass	sow-thistle	stinging nettle	thistle, Canada	vetches	virginia creeper
POST-EMERGENCE GRASS HERBICIDES																		
POAST ULTRA	N	N	N	N	N	N	N	N	N	N	N	N	F	N	N	N	N	N
SELECT or ARROW or CENTURION	N	N	N	N	N	N	N	N	N	N	N	N	F	N	N	N	N	N
VENTURE L	N	N	N	N	N	N	N	N	N	N	N	N	F	N	N	N	N	N
POST-EMERGENCE BROADLEAF HERBICIDES																		
AIM EC (Hooded Sprayer)	-	-	-	-	-	-	G	-	G	-	-	-	-	-	-	-	-	-
BASAGRAN	F	-	-	-	-	-	-	P	P	G ⁵	P	-	P	P	G ⁵	F	P	-
CALLISTO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GOAL 2XL	P	-	G	-	-	-	-	P	-	P	-	-	P	P	-	P	N	-
SANDEA	F	-	-	-	-	-	-	G	F	-	E	G	-	-	-	-	-	-
2,4-D ³	P	P	G	P	P	P	P	P	-	P	G	-	P	F	-	G	P	-
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES																		
GLYPHOSATE ³	G	E	E ⁵	-	G	P	P	E	-	P	E	E	E	E	P	E	P ⁵	G ⁵
IGNITE	G ⁵	G ⁵	G ⁵	G ⁵	G ⁵	G ⁵	G ⁵	G ⁵	G ⁵	G ⁵	G ⁵	G ⁵	P	E	G ⁵	G ⁵	G ⁵	G ⁵
PRISM	-	-	-	-	-	-	-	-	-	-	-	-	F	-	-	-	-	-

TABLE 3-2

Strawberry herbicide weed control ratings

LEGEND: N = No Control **P** = Poor Control **F** = Fair Control **G** = Good Control **E** = Excellent Control
 - = insufficient information available to make a rating.

TRADE NAME	Annual Grasses						Annual Broadleaves									
	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	volunteer grains	chickweed, common	fleabane, Canada	groundsel	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed	snapdragon, dwarf	violet, field (field pansy)
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																
AUTHORITY 480	-	G	-	-	-	-	-	G	G	-	G	-	G	P	-	-
BONANZA or TREFLAN or RIVAL	G	E	G	E	G	E	G	-	P	F	G	P	G	P	-	-
CHATEAU	P	P	P	P	P	-	-	E	-	F	E	-	E	F	G	-
DACTHAL W-75	F	G	G	G	G	G	G	-	N	N	G	P	F	N	F	F
DEVIRINOL DF-XT	G	E	G	G	G	G	G	-	G	F	G	P	G	F	N	N
DUAL II MAGNUM	E	E	E	E	E	-	-	-	-	P	F	P	G	P	-	-
GOAL 2XL	P	P	P	P	P	P	-	-	G	G	E	E	E	G	G	E
PRINCEP NINE-T	G	G	F	G	G	-	G	-	-	E	E	E	E	G	-	-
REFLEX	N	N	N	N	N	N	-	-	-	E	F ²	E	E	E	-	-
SINBAR WDG	G	F	G	G	G	G	G ³	-	P	F ³	G ³	G ³	F ³	F ³	P	p ³
POST-EMERGENCE GRASS HERBICIDES																
POAST + MERGE	E	G	E	E	E	E	N	N	N	N	N	N	N	N	N	N
VENTURE L	E	E	E	E	E	E	N	N	N	N	N	N	N	N	N	N

continued

¹ Seedling bindweed control only. This product will not control established bindweeds.

² Suppression only.

³ Low rates and single applications may provide less control.

⁴ Not all formulations are registered on all crops. See label for specific uses and rates.

⁵ Top growth only; regrowth can be expected. Repeated treatments may provide control.

⁶ Spot treatment only.

TABLE 3-2
Strawberry herbicide weed control ratings *continued*

TRADE NAME	Perennial Weeds																
	bindweeds	brome grass	chickweed, mouse-eared	daisy, ox-eye	dandelion	ground-ivy (creeping-charlie)	mallow	milkweed	nutsedge	plantains	poison-ivy	quackgrass	sorrel, sheep	sow-thistle	thistle, Canada	toadflax, yellow	vetches
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																	
AUTHORITY 480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BONANZA or TREFLAN or RIVAL	P	-	P	N	N	N	N	P	P	N	N	P	N	P	P	N	N
CHATEAU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DACTHAL W-75	-	-	G	N	F	-	-	-	N	N	-	N	-	-	-	-	-
DEVRIKOL DF-XT	G ¹	G	-	-	P	-	-	P	P	P	-	P	N	P	P	-	N
DUAL II MAGNUM	N	-	-	-	P	-	-	N	G	P	-	P	-	N	N	-	N
GOAL 2XL	-	-	-	P	-	-	-	-	-	-	-	-	P	P	P	-	-
PRINCEP NINE-T	P	-	-	-	P	-	-	N	P	-	-	F	-	P	P	-	N
REFLEX	-	N	-	-	-	-	-	-	-	-	-	N	-	-	-	-	-
SINBAR WDG	-	G	-	P	P	-	-	F	F	G	-	F	G	P	F	P	P
POST-EMERGENCE GRASS HERBICIDES																	
POAST + MERGE	N	-	N	N	N	N	N	N	N	N	N	F	N	N	N	N	N
VENTURE L	N	E	N	N	N	N	N	N	N	N	N	F	N	N	N	N	N

continued

TABLE 3-2
Strawberry herbicide weed control ratings

LEGEND: N = No Control **P** = Poor Control **F** = Fair Control **G** = Good Control **E** = Excellent Control
 - = insufficient information available to make a rating.

TRADE NAME	Annual Grasses						Annual Broadleaves									
	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	volunteer grains	chickweed, common	fleabane, Canada	groundsel	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed	snadragon, dwarf	violet, field (field pansy)
POST-EMERGENCE BROADLEAF HERBICIDES																
AIM EC (Hooded Sprayer)	-	-	-	-	-	-	-	-	G	-	G	G	G	-	-	-
2,4-D ¹	N	N	N	N	N	N	P	-	P	P	G	E	F	G	P	P
LONTREL 360 or LONTREL XC	N	N	N	N	N	N	N	-	G	-	P	-	P	E	-	-
REFLEX	N	N	N	N	N	N	-	-	-	E	F ²	E	E	E	-	-
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES																
BETAMIX	P	P	P	F	P	-	-	-	-	F	G	F	G	G	-	-
GLYPHOSATE ^{6,4}	E	E	E	E	E	E	E	E ⁴	G	E	G	E	E	G	-	-

¹ Seedling bindweed control only. This product will not control established bindweeds.

² Suppression only.

³ Low rates and single applications may provide less control.

⁴ Not all formulations are registered on all crops. See label for specific uses and rates.

⁵ Top growth only; regrowth can be expected. Repeated treatments may provide control.

⁶ Spot treatment only.

TABLE 3-2
Strawberry herbicide weed control ratings

TRADE NAME	Perennial Weeds																
	bindweeds	brome grass	chickweed, mouse-eared	daisy, ox-eye	dandelion	ground-ivy (creeping-charlie)	mallow	milkweed	nutsedge	plantains	poison-ivy	quackgrass	sorrel, sheep	sow-thistle	thistle, Canada	toadflax, yellow	vetches
POST-EMERGENCE BROADLEAF HERBICIDES																	
AIM EC (Hooded Sprayer)	-	-	-	-	-	-	-	G	-	-	-	-	-	-	-	-	-
2,4-D ⁴	P	N	P	P	G	P	N	N	N	G	-	N	G	F	G	-	P
LONTREL 360 or LONTREL XC	N	N	N	G	G	N	N	N	N	N	N	N	E	G ⁵	E	N	E
REFLEX	-	N	-	-	-	-	-	-	-	-	-	N	-	-	-	-	-
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES																	
BETAMIX	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
GLYPHOSATE ^{6,4}	G	E	E	-	G	P	P	E	G	E	E	G	G	E	E	G	P ²

Cultural weed control in berry crops

A successful weed control program must integrate cultural and chemical weed control practices. Growers cannot depend entirely on chemical weed control in berry crops, since there is a limited spectrum of herbicides registered for these crops.

PERENNIAL WEED CONTROL

It is important to identify and control perennial weeds in the preplanting year. It is very difficult to control perennial weeds once a planting is established because of crop sensitivity to some herbicides and since it is not possible to clean cultivate in established berry crops. The following perennial weeds present serious problems in these crops: quackgrass, bindweed, vetch, wild grape, perennial nightshade, thistles, ground-ivy (creeping charlie) and burdock. In strawberries, sheep sorrel, toad flax and milkweed also present problems. Systemic herbicides such as glyphosate should be applied to perennial weeds in the preplanting year. Consult the product label and be sure to use the recommended rate for the weed in question. Apply the herbicide at the proper stage of growth of the weed, otherwise only temporary control will be achieved. Repeated cultivation of some perennial weeds such as bindweed will also provide control.

SITE PREPARATION

A green manure crop such as perennial ryegrass, Sudan grass, oilseed radish, tillage radish or mustards should be established in the preplanting year following or in conjunction with measures to control perennial weeds. This crop will provide competition to reduce weed growth as well as improve the soil structure. Non-selective herbicides can be applied before planting the green manure crop and before plowing it under. Short residual selective herbicides such as 2,4-D may be used with the green manure crop, but avoid using herbicides that leave a soil residue that will carry over into the planting year.

MULCHING

For bramble and bush fruit, biodegradable plastic mulch could be used for weed control in the planting strip. Straw mulch will also assist in weed control beneath the plants or in the planting strip if it is applied early in the season before the weed seeds germinate. Use mulch that is free of weed seeds and ensure that enough nitrogen is provided for the plants. The mulch should be pulled away from around the plants for winter rodent protection. For strawberries, use of straw mulch before weeds germinate can help control weeds. Do not use straw that has been treated with glyphosate. Some growers are trying plasticulture as a way to improve weed control.

REDUCING WEED PRESSURE

Cultivation can provide weed control between the rows. In bramble and bush fruit, a vigorous sod between the rows will prevent weeds from becoming established. It is better to seed in a fescue sod rather than rely on a natural sod composed of weed and grass species, because the weeds will seed into the herbicide strip.

ROTATING HERBICIDE FAMILIES

(See Table 1-5. *Counties with confirmed resistant weed populations*).

In perennial crops, rotation of herbicide families is important to minimize the build up of seed from weed escapes, including triazine tolerant weeds. Rotation will also help avoid an accumulation of herbicide residues in the soil that may result in crop injury over a period of years and may hinder replanting.

continued

Herbicide application timings

PRE-PLANT (PP) TREATMENTS

Preplant treatments are applied before the berry field is planted. Some of these herbicides kill seedlings soon after germination while others also kill weed seeds. Most herbicides used for these treatments must be thoroughly incorporated into the soil by cultivation soon after application.

PRE-PLANT (PP) WEED AND COVER CROP CONTROL

Control cover crops and emerged weeds before planting berry crops. Alternatively, a grower may choose to kill the cover crop and/or emerged weeds just before planting the berry crop and either till the area or leave the seedbed untilled.

PRE-PLANT INCORPORATED (PPI)

Two incorporations at right angles operating at a depth of 4 in. using a double disk (7-10 km/h) or vibrating shank S-tine cultivator (10-13 km/h) are required unless otherwise stated. Cultivation-type equipment used for herbicide incorporation is known to spread perennial weeds to previously uninfested areas. Special attention should be directed toward machinery cleanliness, and/or treating fields with perennial weeds last.

PRE-EMERGENCE (PRE)

Rainfall at 0.6-0.8 in. within 7-10 days after application is necessary to activate pre-emergence treatments. Shallow cultivation, rotary hoeing or harrowing will control weed escapes and improve herbicide activity in the absence of rainfall. These materials prevent emergence of many weed seedlings without reducing crop stand. Apply immediately after seeding or at least before the emergence of the crop. If these materials are applied after weeds have emerged, kill is usually poor. Best results are obtained with this method when conditions for weed seed germination are good.

POST- EMERGENCE (POST)

These chemicals are applied after the berry crop is planted. Applied as directed, the weeds can be killed without injury to the crop. Leaf stage of the weeds is critical for good control. Smaller weeds are generally easier to kill but there needs to be enough leaf surface to intercept the herbicide. Apply according to leaf stages specified on pesticide label. Crop stage is important to optimize crop safety. Adjuvants will frequently improve the weed control when used as directed. Weather or other conditions may influence the optimum rate of adjuvant, see the product label for more details. Always use appropriate drift management technology.

INTER-ROW WEEDING

The herbicide is directed between the berry crop rows onto the emerged weeds. The herbicide is used as a rescue operation where other methods of weed control have failed. Use special low pressure (7-15 kPa) applicators such as dribble bars or vibra jets equipped with shields to prevent wetting the crop.

WIPER APPLICATORS FOR SELECTIVE WEED CONTROL

Wiper applicators (rope-wick, roller applicator or similar device) have been extensively used with glyphosate. Check product labels for use of this application technique with other herbicides.

WATER VOLUMES

All herbicide treatments should be applied in a minimum of 60-120 L/acre unless otherwise specified on the label.

CAUTION: Simazine, KARMEK, DEVRINOL, and SINBAR residues high enough to harm many crops may persist for several years after removal of the planting.

Rates per acre refer to area actually treated with herbicide.

TABLE 3-3

Herbicide treatment rates for berry crops

BLUEBERRIES, HIGHBUSH		
<p>Mulching: Biodegradable mulch could be used for weed control within the plant row. Sawdust mulch will assist in weed control if it is applied early in the season before the weed seeds germinate. Apply sawdust 2 in. thick. The mulch will not prevent the germination of weed seeds that may blow onto the surface of the mulch. In subsequent years, the organic matter in the mulch may tie up and thus reduce the effectiveness of certain residual herbicides.</p>		
TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
SOIL-APPLIED BROADLEAF HERBICIDE		
Trade Name: SANDEA Product Rate/acre: (72.6 WG) 14-28 g/acre Active Ingredient(s): halosulfuron (25-51 g/ha)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 14 days Rainfast: 4 hours Max. Applications: 2
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.15 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max Applications: 1
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 3 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CALLISTO 480 SC (480 g/L) Product Rate/acre: 0.12 L/acre Active Ingredient(s): mesotrione (0.144 kg/ha)	Group #: 27 PCP #: 27833	REI: 12 hours PHI: 60 days Rainfast: 3 hours for emerged weeds Max. Applications: 1

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

BLUEBERRIES, HIGHBUSH

The nitrogen requirements of the crop will change as the mulch is degraded. Initially nitrogen will be consumed by micro-organisms, thus necessitating higher rates of nitrogen fertilizer. Later, as the sawdust is degrading, nitrogen will be released and the crop may require less nitrogen fertilizer than an unmulched crop. It may take 2 years or more for sawdust mulch to significantly decompose. Adjust fertilizer rates according to mulch breakdown, plant growth and leaf nutrient analysis results.

PRECAUTIONS - For more information, see the label.

SOIL-APPLIED BROADLEAF HERBICIDE

- New, 1 year or more and established plantings.
- **Do NOT** apply to Elliot variety blueberries.
- 1-4 year bushes apply 14-19 g/acre.
- Older than 4 year bushes apply 14-28 g/acre.
- Allow a minimum of 45 days between applications.
- **Do NOT** apply more than 56 g/acre per season.
- Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
- **Do NOT** contact green tissue.
- **Do NOT** spray over top of plastic mulch.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Established plantings for at least one year after the bushes have been planted and exhibit normal growth and vigor.
 - PRE to weeds. Apply as a directed spray to the soil before weeds germinate. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
 - May be applied at any time throughout the growing season when the ground is not frozen or snow covered.
 - Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.
- Avoid spraying the green bark of trunks/branches, foliage and fruit.
 - Best results obtained when the soil is moist at the time of application and followed by at least 0.5 in. of rainfall or sprinkler irrigation 2 weeks after application.
 - **Do NOT** apply heavy irrigation immediately after application.
 - **Do NOT** apply using airblast sprayers or by air or using a mechanically pressurized handgun.
 - **Do NOT** tank mix with flumioxazin (CHATEAU) or other products containing sulfentrazone.
- PRE and up to the 2-leaf stage of weeds.
 - POST to weeds from the 3-8-leaf stage with AGRAL 90 at 0.2% v/v.
 - Apply up to the 8-leaf stage of weeds and prebloom of the crop.

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
Trade Name: CASORON G-4 (4%) Product Rate/acre: 70-90 kg/acre Active Ingredient(s): dichlobenil (7-9 kg/ha)	Group #: 20 PCP #: 12533	REI: 12 hours PHI: 100 days Rainfast: not stated Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.17 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/acre)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 3.6 kg/acre Active Ingredient(s): napropamide (4.5 kg/acre)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: 70 days Rainfast: moisture required for activation Max. Applications: not stated
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 30 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 1.0-1.5 kg/acre Active Ingredient(s): simazine (2.25-3.38 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SENCOR 75 DF (75 %) Product Rate/acre: 0.4 kg/acre Active Ingredient(s): metribuzin (0.75 kg/ha)	Group #: 5 PCP #: 17242	REI: 12 hours PHI: 2 years Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established plantings of at least 3 years ONLY. • PRE – apply to cool moist but unfrozen soil in late fall or spring before weeds emerge. • Use the higher application rate of 90 kg/acre ONLY every other year. • Do NOT apply if air temperatures are above 10°C-15°C to avoid injury from volatilization. • Use the lower rate if irrigation or rain will follow application. • Do NOT use on light, sandy soil.
<ul style="list-style-type: none"> • Established plantings of at least 2 years ONLY. • Maximum 2 applications per growing season at least 30 days apart. • Do NOT apply after budbreak unless using hooded or shielded equipment. • Apply lower rate on sandy (coarse textured) soils with less than 5% organic matter and the higher rate on clay (medium textured) soils with less than 5% organic matter. • Do NOT apply through irrigation equipment. • Please review label for more detailed instructions.
<ul style="list-style-type: none"> • New and established plantings. • Incorporation by rainfall or irrigation is essential. • Do NOT apply to frozen ground.
<ul style="list-style-type: none"> • New and established plantings. • Pre-emergence to weeds. • Apply as a banded application, directed at base of plants. • Avoid contact with trunk and foliage.
<ul style="list-style-type: none"> • Established plantings of 1 year or more ONLY. • Use lower rates for coarse, sandy soil. • Use higher rates for clay or higher organic matter soil. • Avoid spraying young shoots.
<ul style="list-style-type: none"> • New plantings ONLY. • Apply as a directed application in a band under the bushes. • Apply to weed-free soil after planting. • Light rain or irrigation is needed to move herbicide into soil. • Do NOT use on soils with less than 2% organic matter.

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 1.1-1.7 kg/acre Active Ingredient(s): terbacil (2.2-3.4 kg/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: 80 days Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.5-1.0% v/v)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 1 day Rainfast: 1 hour Max. Applications: 2
Trade Name: SELECT (240 g/L) or ARROW (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.08-0.15 L/acre + 5-10 L/1,000 L Active Ingredient(s): clethodim (0.46-0.91 L/ha) + surfactant (0.5-1.0% v/v)	Group #: 1 PCP #: 22625 or 28224 or 27598	REI: 12 hours PHI: 14 days Rainfast: 1 hour Max. Applications: 1
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 15 days Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D AMINE (560 g/L) Product Rate/acre: 0.69 L/acre Active Ingredient(s): 2,4-D (0.95 kg/ha)	Group #: 4 PCP #: See label	REI: 12 hours PHI: 15 days Rainfast: 1 day Max. Applications: not stated
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 L/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established plantings of at least 1 year ONLY. • Injury may occur on sandy soil even with the low rate. • Use the high rate only on muck or peat soils where experience has shown this to be a safe practice.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage. • For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough preplant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days. Use the high rate of MERGE for quackgrass. • Do NOT use flood jet or hollow cone nozzles. • Minimum of 14 days between applications.
<ul style="list-style-type: none"> • Blueberries are tolerant at all stages of growth. • Apply using ground equipment. • For quackgrass, use the higher application rate of 0.15 L/acre.
<ul style="list-style-type: none"> • New and established plantings. • Apply in a band using 100-300 L water/ha. • Apply at 2-6 leaf stage of annual grasses or 3-5 leaf stage of quackgrass.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Directed spray between rows of the crops in early spring after weeds have emerged and are actively growing. Do NOT overspray.
<ul style="list-style-type: none"> • New and established plantings. • Apply POST with a hooded sprayer between the rows or between the plastic mulch. • Apply to actively growing weeds up to 4 in. tall. • Crop injury may occur if the spray is allowed to come in contact with the green stem, leaves, bloom or fruit.

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. # APPLICATIONS
Trade Name: BASAGRAN or BROADLOOM (480 g/L) + ASSIST Product Rate/acre: 0.7 L/acre + 5 L/1,000 L Active Ingredient(s): bentazon (0.84 kg/ha) + oil concentrate (0.5% v/v)	Group #: 6 PCP #: 12221 or 32661	REI: 12 hours PHI: 25 days Rainfast: 6 hours Max. Applications: 2
Trade Name: CALLISTO 480 SC (480 g/L) Product Rate/acre: 0.12 L/acre Active Ingredient(s): mesotrione (0.144 kg/ha)	Group #: 6 PCP #: 27833	REI: 12 hours PHI: 60 days Rainfast: 3 hours for emerged weeds Max. Applications: 1
Trade Name: GOAL 2XL (240 g/L) Product Rate/acre: 0.4 L/acre Active Ingredient(s): oxyfluorfen (0.24 g/ha)	Group #: 14 PCP #: 24913	REI: 12 hours PHI: 50 days Rainfast: 3 hours Max. Applications: 1
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.17-0.33 or 0.10-0.20 L/acre Active Ingredient(s): clopyralid (0.15-0.30 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 45 days Rainfast: 4 hours Max. Applications: 1
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 14-28 g/acre + 2.5 L/1,000 L Active Ingredient(s): halosulfuron (25-51 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 14 days Rainfast: 4 hours Max. Applications: 2

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established plantings ONLY. • For top growth control of yellow nutsedge. • Make 2 applications 7-10 days apart, when weeds are small.
<ul style="list-style-type: none"> • POST to weeds from the 3-8-leaf stage with AGRAL 90 at 0.2% v/v. • Apply up to the 8-leaf stage of weeds and prebloom of the crop. • Apply by broadcast (direct spray to base of plant).
<ul style="list-style-type: none"> • Apply POST as a band on either side of the blueberry row. • Apply when weeds are at 2-4-leaf stage and are actively growing. • Do NOT apply to sandy soil.
<ul style="list-style-type: none"> • New and established plantings. • Apply once per year, directed under the bushes on emerged weeds. • For emerged vetch, use 0.17 or 0.1 L/acre depending on formulation. • For red and white clover, use 0.33 or 0.2 L/acre depending on formulation.
<ul style="list-style-type: none"> • New, 1 year or more and established plantings. • Do NOT apply to Elliot variety blueberries. • 1-4 year bushes apply 14-19 g/acre. • Older than 4 year bushes apply 14-28 g/acre. • Apply as a single or sequential application; allow a minimum of 45 days between applications. • For nutsedge control, apply when fully emerged. If applying twice, apply first application at 3-5-leaf stage. For best results apply 21 g/acre on bushes older than 4 years. • Do NOT apply more than 56 g/acre per season. • Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop. • Do NOT contact green tissue. • Do NOT spray over top of plastic mulch.

continued

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. # APPLICATIONS
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: PRISM (25 SG) + AGRAL 90 or AG-SURF Product Rate/acre: 24 g/acre + 2 L/1,000 L Active Ingredient(s): rimsulfuron (15 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 30057	REI: 12 hours PHI: 21 days Rainfast: 4 hours Max. Applications: 1
NON-SELECTIVE HERBICIDES AND TANK MIX OPTIONS		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1.12-2.24 L/acre, 0.83-1.67 L/acre, 0.80-1.60 L/acre, 0.74-1.48 L/acre Active Ingredient(s): glyphosate (1-2 kg/ha)	Group #: 9 PCP #: See label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2.0 L/acre Active Ingredient(s): glufosinate ammonium (0.41-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: 14 days Rainfast: 4 hours Max. Applications: 2
CRANBERRIES		
<p>Maintaining a healthy and vigorous crop will aid in weed control by avoiding openings in the bed for weed germination and establishment. Prevent weeds from setting seed on dikes and in adjacent uncropped areas by using cultural or chemical weed control measures.</p>		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CALLISTO 480 SC (480 g/L) Product Rate/acre: 0.084-0.12 L/acre Active Ingredient(s): mesotrione (0.10-0.144 kg/ha)	Group #: 27 PCP #: 27833	REI: 12 hours PHI: 60 days Rainfast: 48 hours Max. Applications: 1

continued

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> Established plantings of 1 year or more ONLY. Apply when quackgrass is at 3-6-leaf stage (less than 4 in. tall), annual grasses at 1-6-leaf stage and redroot pigweed is in the 4-6-leaf stage. Apply on highbush blueberries that are in good health and vigour. Use a directed spray application to completely cover weeds, while minimizing amount of spray on blueberry plants.
NON-SELECTIVE HERBICIDES AND TANK MIX OPTIONS
<ul style="list-style-type: none"> New and established plantings. Apply as a directed spray under the bushes, avoiding new shoots. Avoid contact with fruit, foliage or canes. Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> Established plantings ONLY. Do NOT apply to immature and weak plantings. Repeat treatment may be necessary. Do NOT apply more than 2.7 L/acre of product during a season. Avoid spray contact with foliage and bark. It is not necessary to remove suckers prior to application.
CRANBERRIES
Mowing at regular intervals will prevent many weeds from setting seed. Seeding the dikes with a desirable grass cover will reduce the opportunities for weed establishment and will provide bank stabilization.
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> Established plantings ONLY. Bearing Buds - Apply between bud break and fruit set. Non-Bearing Buds - Apply between bud break and 60 days before fall or winter flooding. Do NOT harvest within 1 year of application. Do NOT flood within 60 days of treatment. Do NOT apply if sprinkler irrigation for frost protection or rainfall is expected within 48 hours of application. Do NOT apply by hand. Do NOT apply through irrigation equipment.

continued

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44 kg/acre Active Ingredient(s): dichlobenil (4.4 kg/ha)	Group #: 20 PCP #: 12533	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 3.6-6.7 kg/acre Active Ingredient(s): napropamide (4.5-6.7 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 15 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: SELECT (240 g/L) or ARROW (240 g/L) or CENTURION (240 g/L) + AMIGO Product Rate/acre: 0.08-0.15 L/acre + 5-10 L/1,000 L Active Ingredient(s): clethodim (0.46-0.91 L/ha) + surfactant (0.5-1.0% v/v)	Group #: 1 PCP #: 22625 or 28224 or 27598	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: not stated Rainfast: 2 hours Max. Applications: 1

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established plantings ONLY. • PRE – For annual broadleaf weeds, certain sedges and Juncus species. • Apply in early spring pre-bloom. • Temporary reddening of plants may occur, especially with late spring applications. • Do NOT use on beds recently mowed for vines.
<ul style="list-style-type: none"> • Established plantings ONLY.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage. • For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough preplant tillage will ensure more uniform quackgrass emergence. Use the high rate of MERGE for quackgrass. • Do NOT use flood jet or hollow cone nozzles.
<ul style="list-style-type: none"> • Cranberry is tolerant at all stages of growth, however, do not apply between the hook stage and full fruit set. • Apply using ground equipment. • For quackgrass, use the higher application rate of 0.15 L/acre.
<ul style="list-style-type: none"> • New and established non-bearing plantings. • Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley. • Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails). • Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.

continued

TABLE 3-3

Herbicide treatment rates for berry crops *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 1 L/2 L water, 1 L/2.6 L water, 0.71 L/2 L water Active Ingredient(s): 2,4-D (0.47 kg/2 L water)	Group #: 4 PCP #: see label	REI: 12 hours PHI: 50 days Rainfast: 1 day Max. Applications: 1
Trade Name: CALLISTO 480 SC (480 g/L) + AGRAL 90 Product Rate/acre: 0.084 L/acre + 2 L/1,000 L Active Ingredient(s): mesotrione (0.1 kg/ha) + non-ionic surfactant (0.2% v/v)	Group #: 27 PCP #: 27833	REI: 12 hours PHI: 60 days Rainfast: 48 hours Max. Applications: 2
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 20 or 12 mL/L water (2% solution) Active Ingredient(s): clopyralid (7.2 g/L water)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 60 days Rainfast: 4 hours Max. Applications: 2
NON-SELECTIVE HERBICIDES		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1 L/4 L of water, 0.75 L/4 L of water, 0.72 L/4 L of water, 0.62 L/4 L of water Active Ingredient(s): glyphosate (0.36 kg/4 L of water)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • For emerged annual and perennial weeds, including hardhack, St. John's Wort, alder and purple aster. • Apply with a ropewick or other wiper to actively growing weeds (June to July). • Do NOT contact the crop.
<ul style="list-style-type: none"> • LATE POST – at the 3-8-leaf stage of weeds. • Allow 14 days between applications. • Bearing Buds – Apply between bud break and fruit set. • Non-Bearing Buds – Apply between bud break and 60 days before fall or winter flooding. • Do NOT harvest within 1 year of application. • Do NOT flood within 60 days of treatment. • Do NOT apply if sprinkler irrigation for frost protection or rainfall is expected within 48 hours of application. • Do NOT apply by hand. • Do NOT apply through irrigation equipment.
<ul style="list-style-type: none"> • New and established plantings. • For emerged vetch. • Do NOT use more than 2 applications a year – in spring before bud break, again until growth is 0.04-0.08 in. long, and/or in the fall at least 2 weeks after harvest, when vines have winter dormancy colour. • Apply with wiper equipment onto weed foliage that extends above the cranberry canopy. Avoid contact with cranberry shoots after growth begins.
NON-SELECTIVE HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • Apply with a rope wick or other similar device when weeds are 6 in. above the crop. • Avoid contact with the cranberry vines. • Do NOT apply when weeds are wet. • Not all formulations are registered on all crops. See label for specific uses and rates.

continued

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. # APPLICATIONS
CURRANTS AND GOOSEBERRIES		
A biodegradable straw mulch could be used for weed control in the planting strip. Do NOT use straw treated with glyphosate.		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.15 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max Applications: 1
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 3 days Rainfast: moisture required for activation Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
RASPBERRIES		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.15 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max Applications: 1

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.

CURRANTS AND GOOSEBERRIES

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Established plantings for at least one year after the bushes have been planted and exhibit normal growth and vigor.
- PRE to weeds. Apply as a directed spray to the soil before weeds germinate. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
- May be applied at any time throughout the growing season when the ground is not frozen or snow covered.
- Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.

- Avoid spraying the green bark of trunks/branches, foliage and fruit.
- Best results obtained when the soil is moist at the time of application and followed by at least 0.5 in. of rainfall or sprinkler irrigation 2 weeks after application.
- **Do NOT** apply heavy irrigation immediately after application.
- **Do NOT** apply using airblast sprayers or by air or using a mechanically pressurized handgun.
- **Do NOT** tank mix with flumioxazin (CHATEAU) or other products containing sulfentrazone.

POST-EMERGENCE BROADLEAF HERBICIDES

- Planting year, 2-4 weeks after planting.
- Apply POST with a hooded sprayer between the rows or between the plastic mulch.
- Apply to actively growing weeds up to 4 in. tall.
- Injury may result if the spray is allowed to come in contact with the green stem, leaves, bloom or fruit.

RASPBERRIES

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Established plantings for at least one year after the bushes have been planted and exhibit normal growth and vigor.
- PRE to weeds. Apply as a directed spray to the soil, either under dormant canes prior to bud break and new cane emergence or after mowing but prior to new cane emergence. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
- May be applied at any time throughout the growing season when the ground is not frozen or snow covered.
- Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. # APPLICATIONS
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 3 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CASORON G-4 (4%) Product Rate/acre: 45-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7 kg/ha)	Group #: 20 PCP #: 12533	REI: 12 hours PHI: 100 days Rainfast: not stated Max Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.16 kg/acre Active Ingredient(s): flumioxazin (0.22 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 7 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 3.6 kg/acre Active Ingredient(s): napropamide (4.5 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 0.8-1.0 kg/acre Active Ingredient(s): simazine (1.8-2.25 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SIMADEX (500 g/L) Product Rate/acre: 1.44-1.8 L/acre Active Ingredient(s): simazine (1.8-2.25 kg/ha)	Group #: 5 PCP #: 15902	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none">• Avoid spraying the green bark of trunks/branches, foliage and fruit.• Best results obtained when the soil is moist at the time of application and followed by at least 0.5 in. of rainfall or sprinkler irrigation 2 weeks after application.• Do NOT apply heavy irrigation immediately after application.• Do NOT apply using airblast sprayers or by air or using a mechanically pressurized handgun.• Do NOT tank mix with flumioxazin (CHATEAU) or other products containing sulfentrazone.
<ul style="list-style-type: none">• PRE - Apply on established raspberry plantings of at least one year during the dormant period (late winter or fall).• Apply to cool, moist but unfrozen soil before weeds emerge.• Apply the high rate of 70 kg/acre ONLY every other year.• Do NOT apply if air temperatures are above 10-15°C to avoid injury from volatilization.• Do NOT use on light, sandy soil.• Do NOT cultivate or work into the soil.
<ul style="list-style-type: none">• Apply a uniform, broadcast or banded spray directed at the base of canes prior to weed emergence.• Preferred application timing is in the fall to maximize herbicide activation through rainfall.• Crop injury may result from applications made to poorly drained soils and/or under cool, wet conditions.• Rainfall or irrigation of 0.2–0.4 in. MUST occur between application and transplanting in order for herbicide activation to occur.• AVOID spray contact to foliage and green canes.• Weed control will be reduced if there is any mechanical incorporation of the soil following application.• Do NOT apply within 100 metres of non-dormant pears.• Do NOT apply on soils with greater than 5% organic matter or on fine-textured soils.• Do NOT make a sequential application within 30 days of the first application.
<ul style="list-style-type: none">• New and established plantings.• PRE - Apply ONLY once per season, either in the fall or spring, before weeds emerge.• Incorporation by rainfall or irrigation is essential.• Do NOT apply to frozen ground.• Avoid contact with fruit or foliage.
<ul style="list-style-type: none">• Established plantings ONLY.• Apply as a directed spray at the base of the canes early in the spring before the weeds emerge.• Use lower rates for coarse, sandy soil.• Use higher rates for clay or higher organic matter soil.• Keep spray off young shoots.• Do NOT apply if a heavy rainfall is expected.
<ul style="list-style-type: none">• Established plantings ONLY.• Apply as a directed spray at the base of the canes early in the spring before the weeds emerge.• Use lower rates for coarse, sandy soil.• Use higher rates for clay or higher organic matter soil.• Keep spray off young shoots.• Do NOT apply if a heavy rainfall is expected.

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
Trade Name: SIMAZINE 480 (480 g/L) Product Rate/acre: 1.52-1.88 kg/acre Active Ingredient(s): simazine (1.8-2.25 kg/ha)	Group #: 5 PCP #: 23181	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR (80 WDG) + DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 0.16-0.34 kg/acre + 1.6 kg/acre Active Ingredient(s): terbacil (0.33-0.67 kg/ha) + napropamide (2 kg/ha)	Group #: 5 + 15 PCP #: 30082 + 31081	REI: 12 hours PHI: 70 days Rainfast: rainfall required for activation Max Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 37 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.48-0.80 L/acre Active Ingredient(s): fluzifop-p-butyl (0.15-0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 1 days Rainfast: 2 hours Max. Applications: 2
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 0.48 L/acre, 0.37 L/acre, 0.33 L/acre Active Ingredient(s): 2,4-D (0.55 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: not stated Rainfast: 1 day Max. Applications: 2

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established plantings ONLY. • Apply as a directed spray at the base of the canes early in the spring before the weeds emerge. • Use lower rates for coarse, sandy soil. • Use higher rates for clay or higher organic matter soil. • Keep spray off young shoots. • Do NOT apply if a heavy rainfall is expected.
<ul style="list-style-type: none"> • PRE - Apply on established raspberry plantings of at least one year. • Apply below the canes in the fall, or early spring before fruitset. • For best results, apply SINBAR before weeds emerge or apply to weeds that are less than 5 cm tall. • Injury may occur on sandy soil even when applying the low rate. • Do NOT spray on crop foliage. • Do NOT spray on exposed subsoil or roots. • Do NOT apply to weak or diseased plants.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • Established plantings ONLY. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage (2-5 is optimum). • For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage (2-5 is optimum). • For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough preplant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days. Use the high rate of MERGE for quackgrass. • Do NOT use flood jet or hollow cone nozzles.
<ul style="list-style-type: none"> • New and established plantings. • New Plantings – Apply POST at the 2-6-leaf stage and Do NOT make more than two applications per season with a minimum re-treatment interval of 14 days. • Established Plantings – Apply POST in early spring at prebloom stage to actively growing grasses before tillering or apply in the fall (August to October) and again in the spring. Do NOT make more than two applications per season. • Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley. • Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails). • Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly. Thorough preplant tillage will ensure more uniform quackgrass emergence. Cultivate after 5 days.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • Use the amine formulation. • Not all formulations are registered on all crops. See label for specific uses and rates. • Do NOT spray when plants are in bloom. • Keep spray off new shoots as much as possible. • Spot spraying at a rate equivalent to 0.4 kg a.i./acre may be necessary to control established dandelions and other broadleaf weeds.

continued

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. # APPLICATIONS
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 15 days Rainfast: 8 hours Max Applications: 1
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 60 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (36 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 30 day Rainfast: 8 hours Max. Applications: 2
Trade Name: IGNITE (150 g/L) Product Rate/acre: 2.7 L/acre Active Ingredient(s): glufosinate ammonium (1 kg/ha)	Group #: 10 PCP #: 28532	REI: 24 hours PHI: not stated Rainfast: 4 hours Max. Applications: not stated
STRAWBERRIES		
<p>Use straw mulch that is free of weed seeds to avoid importing weeds into the field. The mulch should be spread between the rows when it is pulled off the plants in the spring to provide additional weed control. Do NOT use straw treated with glyphosate.</p>		
SOIL-APPLIED BROADLEAF HERBICIDE		
Trade Name: REFLEX (240 g/L) + AGRAL 90 Product Rate/acre: 0.4 L/acre + 1.0 L/1,000 L Active Ingredient(s): fomesafen (0.24 kg/ha) + adjuvant (0.1% v/v)	Group #: 14 PCP #: 24779	REI: 12 hours PHI: 77 days Rainfast: 4 hours Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 70 days Rainfast: moisture required for activation Max. Applications: 1

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

<p>PRECAUTIONS - For more information, see the label.</p> <ul style="list-style-type: none"> • Apply POST with a hooded sprayer between the rows or between the plastic mulch. • Apply to actively growing weeds up to 4 in. tall. • Injury may result if the spray is allowed to come in contact with the green stem, leaves, bloom or fruit.
<p>NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS</p> <ul style="list-style-type: none"> • Use a post-emergence directed application using a banded boom sprayer for primocane control. • Apply to young tissue when primocanes are approximately 5 in. in height. • Do NOT allow spray to contact the fruit, foliage or green bark.
<ul style="list-style-type: none"> • Established plantings ONLY. • For use in the production year of raspberries grown in the biennial production system, or in a planting that will be removed after harvest. • Do NOT apply to immature and weak plantings. • Apply when shoots are 4-6 in. tall to suppress the emerged flush of primocanes, and control any weeds emerged at time of treatment. • Avoid drift onto green tissue of floricanes.
<p>STRAWBERRIES</p>
<p>SOIL-APPLIED BROADLEAF HERBICIDE</p> <ul style="list-style-type: none"> • Apply to perennial strawberries in the fall or early winter, prior to snowfall. • Not all varieties have been tested for tolerance. First use of REFLEX should be limited to a small area of each variety. • Apply with surfactant if weeds have emerged. • If growing on plastic mulch, application must be made prior to laying plastic. • Do NOT rotate to another crop in the same season. • Do NOT apply REFLEX to any field more often than once every 2 years.
<p>SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES</p> <ul style="list-style-type: none"> • Apply in the spring or fall as a broadcast or banded dormancy treatment to strawberry. • Spring applications may be made during dormancy to established plantings only. • Applications to strawberry plants with emerged growth are not recommended due to leaf burning and possible stand loss. • Best results obtained when the soil is moist at the time of application and followed by at least 0.5 in. of rainfall or springer irrigation 2 weeks after application. • Do NOT apply heavy irrigation immediately after application. • Do NOT apply using airblast sprayers or by air or using a mechanically pressurized handgun. • Do NOT harvest within 3 days of application. • Do NOT tank mix with flumioxazin (CHATEAU) or other products containing sulfentrazone.

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.08 kg/acre Active Ingredient(s): flumioxazin (0.11 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 7 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 3.6-5.4 kg/acre Active Ingredient(s): chlorthal dimethyl (6.75-10.125 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: not stated
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 3.6 kg/acre Active Ingredient(s): napropamide (4.5 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: 30 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: GOAL 2XL (240 g/L) Product Rate/acre: 0.4 L/acre Active Ingredient(s): oxyfluorfen (0.24 kg/ha)	Group #: 14 PCP #: 24913	REI: 24 hours PHI: 150 days Rainfast: 3 hours Max. Applications: 1

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Apply ONCE per season as a broadcast spray to dormant plants or as a row middle spray using a shielded sprayer to non-dormant plants. • Apply to coarse and medium textured soils with less than 5% organic matter. • Do NOT apply after fruit set. • Do NOT allow spray drift to come in contact with fruit or foliage. • Do NOT apply through irrigation equipment. Please review label for more detailed instructions.
<ul style="list-style-type: none"> • Planting year, 2-4 weeks after planting. • Planting year, late summer/fall (around Labour Day). • Harvesting year, spring immediately after mulch removal. • Apply the higher rate to transplants. • Shallow cultivation to incorporate herbicide into the soil surface may improve weed control. • Do NOT use on muck soils.
<ul style="list-style-type: none"> • Planting year, 2-4 weeks after planting. • Planting year, late summer/fall (around Labour Day). • Planting year, late fall. • Harvesting year, spring after mulch removal. • Harvesting year, late summer/fall (around Labour Day). • Harvesting year, late fall. • PRE- Apply once per season before weeds emerge or following cultivation. • Incorporation by rainfall, irrigation or cultivation is essential. • Where daughter plant establishment is important, (e.g., for plant producers) delay application until the desired number of daughter plants have been established. • Inhibition of daughter plant roots can occur where soil moisture is low and will be minimized if irrigation is applied shortly after application.
<ul style="list-style-type: none"> • Planting year, before planting. • Bearing years: After mulch removal but before weed emergence. • PPI or PRE – Apply and incorporate, or apply post-transplanting before weeds emerge. • Initial injury may occur but will be outgrown with no reduction in yield. • Do NOT apply to cultivar Joliette. • Incorporation is required for nutsedge control. Nutsedge control may be limited during extended periods of dry hot weather following application.
<ul style="list-style-type: none"> • Planting year, late fall. • Harvesting year, late fall. • PRE – Before weed emergence. • Apply to dormant plants before applying mulch in late fall. • For control of labeled weeds plus field pansy and wood sorrel (oxalis).

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. # APPLICATIONS
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 110-220 g/acre Active Ingredient(s): terbacil (220-440 g/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: rainfall required for activation Max Applications: 3 - new planting; 2 - harvesting year.
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 110 g/acre Active Ingredient(s): terbacil (220 g/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: rainfall required for activation Max Applications: 3 - new planting; 2 - harvesting year.
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 340-400 g/acre Active Ingredient(s): terbacil (680-800 g/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: rainfall required for activation Max Applications: 3 - new planting; 2 - harvesting year.
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 110-140 g/acre Active Ingredient(s): terbacil (220-280 g/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: rainfall required for activation Max Applications: 3 - new planting; 2 - harvesting year.

continued

TABLE 3-3**Herbicide treatment rates for berry crops** *continued***PRECAUTIONS - For more information, see the label.****FIRST (PLANTING) YEAR: 4-6 WEEKS AFTER PLANTING**

- PRE - Apply before weeds emerge or to very small weeds.
- Apply when mother plants are well established but before runnering becomes extensive and new runner plants are rooting.
- Apply in at least 300 L/ha water (120 L/acre).
- Use lower rate on sandy soils low in organic matter.
- Use lower rate on sensitive varieties such as, Annapolis, Cavendish, Kent and Mira or varieties which have not been adequately tested for SINBAR sensitivity since they may be severely injured.
- **Do NOT** apply to weak or diseased plants of any variety.
- **Do NOT** overlap spray swaths. Calibrate sprayer accurately.
- Shallow cultivation can be done to train runners and control escaped weeds without destroying the effectiveness of SINBAR.
- It is very important to wash SINBAR off the plants with rain or irrigation immediately following application to avoid injury. If SINBAR is not washed off avoid applying when temperatures are above 25°C.
- **Do NOT** replant treated areas to any crop within 2 years after the last application as injury to subsequent crops may occur. To reduce replanting injury to subsequent crops, cultivate or plough soil thoroughly and conduct a field bioassay.

FIRST (PLANTING) YEAR: LATE SUMMER/FALL APPLICATION

- PRE - Important timing for fall germinating weeds. Apply before weeds emerge or to very small weeds. If the low rate was used previously, this timing can be used as a booster application to maintain weed control until late fall.
- See other precautions for SINBAR above.

FIRST (PLANTING) YEAR: LATE FALL APPLICATION

- PRE - Apply to a weed-free soil surface just before mulching.
- To extend weed control through harvest of the following year, apply 340-400 g/acre just before late fall mulching.
- In areas of periodic winter injury, reduce late fall application to 220-280 g/acre.
- Maximum of 3 applications of SINBAR throughout the planting year.
- See other precautions for SINBAR above.

HARVESTING YEAR: SPRING AFTER MULCH REMOVAL

- PRE - Apply to weed-free soil just after mulch is removed to supplement or replace the late fall application.
- Plants that have had weak growth under the mulch are subject to serious injury, wait 5-7 days until plants recover before applying SINBAR.
- Use low rate where SINBAR was used in the fall.
- Use lower rate on sandy soils low in organic matter.
- Use lower rate on sensitive varieties such as Annapolis, Cavendish, Kent and Mira or varieties which have not been adequately tested for SINBAR sensitivity since they may be severely injured.
- **Do NOT** apply to weak or diseased plants of any variety.
- **Do NOT** overlap spray swaths. Calibrate sprayer accurately.

continued

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 280-340 g/acre Active Ingredient(s): terbacil (560-680 g/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: rainfall required for activation Max Applications: 3 - new planting; 2 - harvesting year.
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 280-340 g/acre Active Ingredient(s): terbacil (560-680 g/ha)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: rainfall required for activation Max Applications: 3 - new planting; 2 - harvesting year.
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.6-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 25 days Rainfast: 1 hour Max. Applications: not stated

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.

HARVESTING YEAR: RENOVATION

- PRE - Apply after mowing before weeds emerge or to very small weeds.
- Apply in at least 300 L/ha water (120 L/acre).
- If, 2,4-D was used prior to mowing, delay SINBAR application for at least 2 weeks.
- **Do NOT** apply within 14 days of VENTURE L.
- See other precautions above.

HARVESTING YEAR: LATE FALL

- PRE - Apply to a weed-free soil surface just before mulching.
- Apply in at least 300 L/ha water (120 L/acre).
- To extend weed control through harvest of the following year, apply this application (280-340 g/acre) just before mulching in the late fall. In areas of periodic winter injury, reduce this fall application to 220-280 g/acre.
- Use the low rate where it is planned to use SINBAR again in the spring.
- Make a maximum of 2 applications per year following rototilling or renovation.
- See other precautions above.

• Planting year **ONLY**.

- PPI - Apply to weed-free soil and incorporate immediately in two directions.
- May be applied and incorporated 1 day-3 weeks before planting.
- May delay establishment under stressful conditions.

POST-EMERGENCE GRASS HERBICIDES

- Planting year, 2-6 weeks after planting.
- Planting year, late summer/fall (around Labour Day).
- Harvesting year, spring after mulch removal.
- Harvesting year, renovation.
- Harvesting year, late summer/fall (around Labour Day).
- For annual grass, use 0.13 L/acre at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre at the 1-6-leaf stage.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage. Thorough preplant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days. Use the high rate of MERGE for quackgrass.
- **Do NOT** use flood jet or hollow cone nozzles.
- Wait at least 4 days after application before applying SINBAR.

continued

TABLE 3-3**Herbicide treatment rates for berry crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 30 days Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 0.47 L/acre, 0.38 L/acre, 0.34 L/acre Active Ingredient(s): 2,4-D (0.55 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: not stated Rainfast: 1 day Max. Applications: 1
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 0.88 L/acre, 0.68 L/acre, 0.63 L/acre Active Ingredient(s): 2,4-D (1.034 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: not stated Rainfast: 1 day Max. Applications: 1
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-46.8 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-28.1 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 1 day Rainfast: 8 hours Max. Applications: 1
Trade Name: BETAMIX B [(1:1) 206 g/L] Product Rate/acre: 0.47-0.71 L/acre Active Ingredient(s): phenmedipham/desmedipham (0.18-0.28 kg/ha)	Group #: 5 PCP #: 28650	REI: 24 hours PHI: planting year only Rainfast: 6 hours Max. Applications: 3

continued

TABLE 3-3
Herbicide treatment rates for berry crops *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Treat in the spring before bloom or after renovation. • Apply at 0.32 L/acre at 2-5 leaf stage of volunteer wheat and barley. • Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails). • Apply at 0.8 L/acre at 3-5 leaf stage of quackgrass and wirestem muhly. • Wait at least 14 days after application before applying SINBAR.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Planting year, 2-6 weeks after planting. • Use the amine formulation. • Use low pressure and a coarse spray to minimize risk of spray drift to susceptible crops. • Do NOT use while early runners are rooting. • Do NOT use between mid-August and fall dormancy when flower buds are developing for next year's crop. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Harvesting year, renovation. • Apply after harvest but before mowing to control dandelions and other broadleaf perennials. Delay mowing for a few days after application. • Use the amine formulation. • Do NOT apply 2,4-D between mid August and fall dormancy when strawberries are initiating flower buds. • Some cultivars like Veestar are more sensitive to 2,4-D. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Planting year, 2-4 weeks after planting. • Apply POST with a hooded sprayer between the rows or between the plastic mulch. • Apply to actively growing weeds up to 4 in. tall. • Injury may result if the spray is allowed to come in contact with the green stem, leaves, bloom or fruit.
<ul style="list-style-type: none"> • May be applied to June-bearing strawberry varieties ONLY in the year of planting as a post-transplant application. • The first application must be applied when the earliest weeds have reached the cotyledon stage. Repeat applications at 5-7-day intervals following the first application or when another flush of weeds germinates.

continued

TABLE 3-3
Herbicide treatment rates for berry crops

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. # APPLICATIONS
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.22-0.33 or 0.14-0.2 L/acre Active Ingredient(s): clopyralid (0.2-0.3 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 200 days Rainfast: 4 hours Max. Applications: 1
Trade Name: REFLEX (240 g/L) + AGRAL 90 Product Rate/acre: 0.4 L/acre + 1.0 L/1,000 L Active Ingredient(s): fomesafen (0.24 kg/ha) + adjuvant (0.1% v/v)	Group #: 14 PCP #: 24779	REI: 12 hours PHI: 77 days Rainfast: 4 hours Max. Applications: 1
NON-SELECTIVE HERBICIDES		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1 L/2 L, 0.75 L/2 L, 0.72 L/2 L, 0.67 L/2 L Active Ingredient(s): glyphosate (0.36 kg/2 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1-2 L/100 L, 0.75-1.50L/100 L, 0.72-1.44 L/100 L, 0.67-1.34 L/100 L Active Ingredient(s): glyphosate (0.36-0.72 kg/100 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1

TABLE 3-3
Herbicide treatment rates for berry crops

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Harvesting year ONLY, renovation. • To control tufted vetch, Canada thistle, sheep sorrel and ox-eye daisy. • Apply immediately after harvest at renovation, 7-10 days before mowing. • Do NOT apply LONTREL 360 or XC after mid-August because of its possible effects on runner development and flower bud formation. • Early cultivars like Veestar or Annapolis may be more susceptible to injury. • Certain environmental stresses such as drought, flooding or severe overwintering conditions may increase the risk of injury.
<ul style="list-style-type: none"> • Apply to perennial strawberries in the fall or early winter, prior to snowfall. • Not all varieties have been tested for tolerance. First use of REFLEX should be limited to a small area of each variety. • Apply with surfactant if weeds have emerged. • If growing on plastic mulch, application must be made prior to laying plastic. • Do NOT rotate to another crop in the same season. • Do NOT apply REFLEX to any field more often than once every 2 years.
NON-SELECTIVE HERBICIDES
<ul style="list-style-type: none"> • Planting year, 2-6 weeks after planting. • Planting year, late summer/fall (around Labour Day). • Harvesting year, spring after mulch removal. • Harvesting year, renovation. • Harvesting year, late summer/fall (around Labour Day). • Apply with a rope wick or other similar device when weeds are 6 in. above the crop. • Avoid contact with the strawberry plants. • Do NOT apply when weeds are wet. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Planting year, 2-6 weeks after planting. • Planting year, late summer/fall (around Labour Day). • Harvesting year, spring after mulch removal. • Harvesting year, renovation. • Harvesting year, late summer/fall (around Labour Day). • Use hand held sprayers as a spot treatment if wiper equipment is not available. • Avoid contact with strawberry plant, crop in the treated area will be killed. • Not all formulations are registered on all crops. See label for specific uses and rates.

4. Tree fruit, tree nuts and grapes

TABLE 4-1

Tree fruit, tree nut and grape herbicide weed control ratings

NOTES: Ratings are subjective values based on best available information and give general comparisons based on use as described in this guide. Under unfavourable conditions (e.g., too dry, too wet, too cold, or poor application) the herbicides may not be as effective as indicated. Ratings may vary with weed and crop stage and with the timing and rates of the product(s) being used. Please refer to product label for more information on registered weed species, product uses and precautions.

LEGEND: N = No Control P = Poor Control F = Fair Control G = Good Control E = Excellent Control
 ✓ = can be used on this crop X = not indicated for use on this crop
 - = insufficient information available to make a rating

NOTE: Not all herbicides registered for use on peaches are registered on nectarines. Make sure nectarine or crop group 12 is listed on the label before applying the product.

TRADE NAME	Crop Registrations							Annual Grasses						Annual Broadleaves						
	apples	apricots	cherries/plums	grapes	nectarines	peaches	pears	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	sandbur	chickweed, common	fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed
SOIL-APPLIED BROADLEAF HERBICIDES																				
SANDEA	✓	X	X	X	X	X	X	N	N	N	N	N	N	G	E	G	G	G	G	G ¹
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																				
ALION	✓	✓	✓	✓	✓	✓	✓	E	E	-	E	E	-	-	E	E	E	E	F	-
AUTHORITY 480	✓	X	X	✓	X	X	X	-	G	-	-	-	-	-	G	-	G	-	G	P
CASORON G-4	✓	X	✓	✓	✓	✓	✓	F	F	F	F	F	-	G	-	F	G	P	G	P
CHATEAU	✓	✓	✓	✓	✓	✓	✓	P	P	P	P	P	-	-	E	F	E	-	E	F
CHIKARA	X	X	X	✓	X	X	X	-	F	-	E	F	E	E	F	-	E	E	E	E
DEVIRNOL DF-XT	X	X	X	✓	X	X	X	G	E	G	G	G	G	F	-	F	G	P	G	F
DUAL II MAGNUM	✓	✓	✓	X	X	✓	✓	E	E	G	E	E	-	F	-	P	F	P	G	P

continued

¹ Registered for pre-emergent activity on common ragweed only.

² For cherries only.

³ Non-bearing trees only.

⁴ Hooded sprayer application only.

⁵ Weeds cannot be emerged at time of application to achieve this level of control.

⁶ Not all formulations are registered on all crops. See label for specific uses and rates.

⁷ Top growth only; regrowth can be expected.

⁸ Use higher rates when larger than 4 in. tall or across.

TABLE 4-1

Tree fruit, tree nut and grape herbicide weed control ratings *continued*

TRADE NAME	Perennial Weeds																	
	bindweed, field	chickweed, mouse-eared	dandelion	goldenrod	grape, wild	ground-ivy (creeping charlie)	mallow	milkweed	nightshade, climbing	nutsedge	plantains	poison-ivy	quackgrass	sow-thistle	stinging nettle	thistle, Canada	vetches	virginia creeper
SOIL-APPLIED BROADLEAF HERBICIDES																		
SANDEA	F	-	-	-	-	-	G	-	-	F	G	-	-	-	-	-	-	-
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																		
ALION	E	E	F	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUTHORITY 480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CASORON G-4	F	F	F	-	P	F	-	-	-	F	F	P	F	F	-	F	F	-
CHATEAU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHIKARA	-	E	E	-	-	-	E	-	-	G	-	-	-	F	-	-	-	-
DEVIRINOL DF-XT	-	-	P	-	-	-	-	P	-	P	P	P	P	P	-	P	P	-
DUAL II MAGNUM	N	-	P	-	-	-	-	N	-	G	P	-	N	N	N	N	N	N

continued

TABLE 4-1

Tree fruit, tree nut and grape herbicide weed control ratings *continued*

LEGEND: N = No Control P = Poor Control F = Fair Control G = Good Control E = Excellent Control
 ✓ = can be used on this crop X = not indicated for use on this crop
 - = insufficient information available to make a rating

TRADE NAME	Crop Registrations							Annual Grasses						Annual Broadleaves						
	apples	apricots	cherries/plums	grapes	nectarines	peaches	pears	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	sandbur	chickweed, common	fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed
FRONTIER MAX	X	X	X	✓	X	X	X	E	E	G	E	E	P	-	-	P	F	P	G	P
KARMEX	X	X	X	✓	X	X	X	E	P	P	P	G	-	E	-	E	E	E	G	E
KERB SC	✓	X	X	X	X	X	✓	G	F	G	G	E	G	E	-	F	E	G	E	F
LEXONE DF	✓	✓	✓ ²	X	X	✓	✓	G	G	E	E	E	-	E	-	E	E	E	G	G
LOROX L	✓	X	✓	X	X	✓	✓	F	F	P	G	E	-	E	-	F	E	F	G	G
PRINCEP NINE-T or SIMADEX or SIMAZINE 480	✓	✓	X	✓	X	✓	✓	G	G	F	G	G	-	G	-	E	E	E	E	G
SENCOR or SQUADRON	✓	✓	✓ ²	X	X	✓	✓	F	G	E	G	E	-	E	-	E	E	E	G	G
SINBAR WDG	✓	✓ ³	✓ ³	X	✓	✓	✓ ³	G	F	G	G	G	P	E	-	F	G	G	F	F
TREFLAN	✓ ³	✓ ³	✓ ³	X	X	✓ ³	✓ ³	E	E	G	G	G	-	F	-	F	G	P	G	P
SOIL-APPLIED GRASS AND BROADLEAF TANK-MIXES																				
DUAL II MAGNUM + LEXONE DF	✓	✓	✓	X	X	✓	✓	E	E	E	E	E	-	E	-	E	E	E	G	G
DUAL II MAGNUM + PRINCEP NINE-T	✓	✓	✓	X	X	✓	✓	E	E	E	E	E	-	E	-	E	E	E	G	G
SENCOR + TREFLAN	✓ ³	✓ ³	✓ ³	X	X	✓ ³	✓ ³	G	G	E	E	E	-	E	-	E	E	E	G	G
POST-EMERGENCE GRASS HERBICIDES																				
POAST ULTRA	✓	✓	✓	✓	X	✓	✓	G	G	E	G	E	-	N	N	N	N	N	N	N
VENTURE L	✓	✓	✓	✓	X	✓	✓	E	E	E	E	E	-	P	N	P	P	P	P	P
SELECT or CENTURION + AMIGO	X	X	✓ ²	X	X	X	X	E	G	E	G	E	-	-	N	N	N	N	N	N

*continued*¹ Registered for pre-emergent activity on common ragweed only.² For cherries only.³ Non-bearing trees only.⁴ Hooded sprayer application only.⁵ Weeds cannot be emerged at time of application to achieve this level of control.⁶ Not all formulations are registered on all crops. See label for specific uses and rates.⁷ Top growth only; regrowth can be expected.⁸ Use higher rates when larger than 4 in. tall or across.

TABLE 4-1**Tree fruit, tree nut and grape herbicide weed control ratings** *continued*

TRADE NAME	Perennial Weeds																	
	bindweed, field	chickweed, mouse-eared	dandelion	goldenrod	grape, wild	ground-ivy (creeping charlie)	mallow	milkweed	nightshade, climbing	nutsedge	plantains	poison-ivy	quackgrass	sow-thistle	stinging nettle	thistle, Canada	vetches	virginia creeper
FRONTIER MAX	N	-	-	-	-	-	-	N	-	G	-	-	N	N	N	N	N	N
KARMEX	-	-	P	-	-	-	-	P	-	P	-	-	P	P	-	P	-	-
KERB SC	-	-	-	-	-	-	-	F	-	F	-	-	F	F	-	-	-	-
LEXONE DF	-	G	F	P	P	P	P	F	P	F	G	P	F	P	P	F	P	N
LOROX L	P	G	-	-	-	-	-	P	-	G	-	-	F	G	-	F	-	-
PRINCEP NINE-T or SIMADEX or SIMAZINE 480	P	-	P	-	-	-	-	N	-	P	-	-	F	P	-	P	N	-
SENCOR or SQUADRON	P	-	-	-	-	-	-	P	P	P	-	-	P	P	-	P	P	N
SINBAR WDG	F	G	F	-	-	-	-	F	-	F	G	-	F	P	-	F	P	-
TREFLAN	P	-	P	P	P	P	N	P	P	-	P	N	P	P	P	P	P	N
SOIL-APPLIED GRASS AND BROADLEAF TANK-MIXES																		
DUAL II MAGNUM + LEXONE DF	P	-	P	-	-	-	-	P	P	G	-	-	P	P	P	P	P	N
DUAL II MAGNUM + PRINCEP NINE-T	P	-	P	-	-	-	-	N	-	G	-	-	F	P	-	P	N	-
SENCOR + TREFLAN	P	-	P	P	P	P	N	P	P	P	P	N	P	P	P	P	P	N
POST-EMERGENCE GRASS HERBICIDES																		
POAST ULTRA	N	N	N	N	N	N	N	N	N	N	N	N	F	N	N	N	N	N
VENTURE L	N	N	N	N	N	N	N	N	N	N	N	N	F	N	N	N	N	N
SELECT or CENTURION + AMIGO	N	-	-	-	-	-	-	N	-	N	-	-	F	N	-	N	-	-

continued

TABLE 4-1

Tree fruit, tree nut and grape herbicide weed control ratings

LEGEND: N = No Control P = Poor Control F = Fair Control G = Good Control E = Excellent Control
 ✓ = can be used on this crop X = not indicated for use on this crop
 - = insufficient information available to make a rating

TRADE NAME	Crop Registrations							Annual Grasses						Annual Broadleaves						
	apples	apricots	cherries/plums	grapes	nectarines	peaches	pears	barnyard grass	crabgrass	fall panicum	foxtails	witchgrass	sandbur	chickweed, common	fleabane, Canada	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed
POST-EMERGENCE BROADLEAF HERBICIDES																				
AIM EC (Hooded Sprayer)	✓ ⁴	✓ ⁴	✓ ⁴	✓ ⁴	✓ ⁴	✓ ⁴	✓ ⁴	-	-	-	-	-	-	-	-	-	G	G	G	-
BASAGRAN	✓ ³	✓ ³	✓ ³	X	✓ ³	✓ ³	✓ ³	N	N	N	N	N	N	G	-	E	F	G	G	G
LONTREL 360 or LONTREL XC	✓	✓	✓	X	✓	✓	✓	N	N	N	N	N	N	-	-	-	-	-	-	G
PRISM	X	✓	✓	X	✓	✓	X	E	G	E	G	E	E	-	-	F	F	E	E	P
SANDEA	✓	X	X	X	X	X	X	N	N	N	N	N	N	G	N	G ⁵	G ⁵	G	G	G
2,4-D ⁶	✓	✓	✓	X	X	✓	✓	N	N	N	N	N	-	F	-	P	G	E	E	G
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES																				
CHIKARA	X	X	X	✓	X	X	X	E	-	E	E	E	E	-	E	E	E	-	-	-
GLYPHOSATE ⁶	✓	✓	✓	✓	✓ ⁶	✓	✓	E	E	E	E	E	-	E	E ⁶	E	E	E	E	E
IGNITE	✓	✓	✓	✓	✓	✓	✓	E	E	E	E	E	-	E	G ⁷	E	E	G	E	E
OTHER TANK-MIX OPTIONS																				
ALION + GLYPHOSATE ⁶	✓	✓	✓	✓	X	✓	✓	E	E	E	E	E	-	E	E	E	E	E	E	E
ALION + IGNITE	✓	✓	✓	✓	X	✓	✓	E	E	-	E	E	-	-	E	E	E	E	F	-

¹ Registered for pre-emergent activity on common ragweed only.

² For cherries only.

³ Non-bearing trees only.

⁴ Hooded sprayer application only.

⁵ Weeds cannot be emerged at time of application to achieve this level of control.

⁶ Not all formulations are registered on all crops. See label for specific uses and rates.

⁷ Top growth only; regrowth can be expected.

⁸ Use higher rates when larger than 4 in. tall or across.

TABLE 4-1**Tree fruit, tree nut and grape herbicide weed control ratings**

TRADE NAME	Perennial Weeds																	
	bindweed, field	chickweed, mouse-eared	dandelion	goldenrod	grape, wild	ground-ivy (creeping charlie)	mallow	milkweed	nightshade, climbing	nutsedge	plantains	poison-ivy	quackgrass	sow-thistle	stinging nettle	thistle, Canada	vetches	virginia creeper
POST-EMERGENCE BROADLEAF HERBICIDES																		
AIM EC (Hooded Sprayer)	-	-	-	-	-	-	G	-	G	-	-	-	-	-	-	-	-	-
BASAGRAN	F	-	-	-	-	-	-	P	P	G ⁷	P	-	P	P	G ⁷	F	P	-
LONTREL 360 or LONTREL XC	-	-	-	-	-	-	-	-	-	-	-	-	-	G ⁷	-	G ⁷	E	-
PRISM	-	-	-	-	-	-	-	-	-	-	-	-	F	-	-	-	-	-
SANDEA	F	-	-	-	-	-	G	F	-	E	G	-	-	-	-	-	-	-
2,4-D ⁶	P	P	G	P	P	P	P	P	-	P	G	-	P	F	-	G	P	-
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES																		
CHIKARA	-	E	E	-	-	-	E	-	-	G	-	-	-	F	-	-	-	-
GLYPHOSATE ⁶	G	E	E ⁸	-	G	P	P	E	-	P	E	E	E	E	P	E	P ⁷	G ⁷
IGNITE	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	P	E	G ⁷	G ⁷	G ⁷	G ⁷
OTHER TANK-MIX OPTIONS																		
ALION + GLYPHOSATE ⁶	G	E	E ⁸	F	G	P	P	E	-	P	E	E	E	E	P	E	P ⁷	G ⁷
ALION + IGNITE	E	E	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	G ⁷	P	E	G ⁷	G ⁷	G ⁷	G ⁷

Cultural weed control in tree fruit, tree nuts and grapes

A successful weed control program must integrate cultural and chemical weed control practices. Growers cannot depend entirely on chemical weed control in fruit, vine crops, and tree nuts since there is a limited spectrum of herbicides registered for these crops.

PERENNIAL WEED CONTROL

It is important to identify and control perennial weeds in the pre-planting year. It is very difficult to control perennial weeds once a planting is established because of crop sensitivity to some herbicides and since it is not possible to clean cultivate in established orchards or vineyards. Quackgrass, bindweed, vetch, wild grape, perennial nightshade, thistles, ground-ivy (creeping charlie) and burdock are perennial weeds that present serious problems in these crops. Systemic herbicides such as glyphosate should be applied to perennial weeds in the preplanting year. Consult the product label and be sure to use the recommended rate for the weed in question. Apply the herbicide at the proper stage of growth of the weed, otherwise only temporary control will be achieved. Repeated cultivations of some perennial weeds such as bindweed will also provide control.

SITE PREPARATION

A green manure crop such as perennial rye-grass or Sudan grass should be established in the pre-planting year following or in conjunction with measures to control perennial weeds. This crop will provide competition to reduce weed growth as well as improving the soil structure. Non-selective herbicides can be applied before planting the green manure crop and before plowing it under. Short residual selective herbicides, such as 2,4-D, may be used with the green manure crop, but avoid using herbicides that leave a soil residue that will carry over into the planting year.

MULCHING

A biodegradable plastic mulch could be used for weed control in the planting strip. Mulch will also assist in weed control beneath the trees or vines in the planting strip if it is applied early in the season before the weed seeds germinate. Use mulch that is free of weed seeds and ensure that enough nitrogen is provided for the plants. The mulch should be pulled away from around the tree bases for winter rodent protection. Peastone gravel is another option that can be applied around the base of the trees. The gravel will provide weed control, as well as, improve drainage, encourage deeper rooting and discourage rodents.

REDUCING WEED PRESSURE

Cultivation can provide weed control between the rows. Alternatively, a vigorous sod between the rows will prevent weeds from becoming established. It is better to seed a fescue sod rather than rely on a natural sod composed of weed and grass species because the weeds will seed into the orchard or vine row. Prevent weeds from setting seed in adjacent uncropped areas by using cultural or chemical weed control measures. Mowing at regular intervals will prevent many weeds from flowering. Try to control weeds that escape before they set seed by cultural removal or chemical mowing. In some situations, tools such as a weed whip may be of use. Mowers are available which will cut close to the trees without injury. Mowing, however, will not eliminate weed competition.

ROTATING HERBICIDE FAMILIES

(See Table 1-5. *Counties with confirmed resistant weed populations*).

In perennial crops, rotation of herbicide families is important to minimize the build up of seed from weed escapes, including triazine tolerant weeds. Rotation will also help avoid an accumulation of herbicide residues in the soil that may result in crop injury over a period of years and may hinder replanting.

Herbicide application timings

PRE-PLANT (PP) TREATMENTS

Preplant treatments are applied before the orchard or vineyard is planted. Some of these herbicides kill seedlings soon after germination while others also kill weed seeds. Most herbicides used for these treatments must be thoroughly incorporated into the soil by cultivation soon after application. Check the label.

PRE-PLANT (PP) WEED AND COVER CROP CONTROL

Control cover crops and emerged weeds before planting orchards or vineyards.

PRE-PLANT INCORPORATED (PPI)

Two incorporations at right angles operating at a depth of 4 in. using a double disk (7-10 km/h) or vibrating shank S-tine cultivator (10-13 km/h) are required unless otherwise stated. Cultivation-type equipment used for herbicide incorporation is known to spread perennial weeds to previously uninfested areas. Special attention should be directed toward machinery cleanliness and/or treating fields with perennial weeds last.

PRE-EMERGENCE (PRE)

Rainfall at 0.6–0.8 in. within 7–10 days after application is necessary to activate pre-emergence treatments. Shallow cultivation, rotary hoeing or harrowing will control weed escapes and improve herbicide activity in the absence of rainfall. These materials prevent emergence of many weed seedlings without reducing crop stand. Apply immediately after seeding or at least before the emergence of the crop. If these materials are applied after weeds have emerged, kill is usually poor. Best results are obtained with this method when conditions for weed seed germination are good.

POST-EMERGENCE (POST)

These chemicals are applied after the orchard or vineyard is planted. Applied as directed, the weeds can be killed without injury to the crop. Leaf stage of the weeds is critical for good weed control. Smaller weeds are generally easier to kill but there needs to be enough leaf surface to intercept the herbicide. Apply according to leaf stages specified on the pesticide label. Crop stage is important to optimize crop safety. Adjuvants will frequently improve the weed control when used as directed. Weather or other conditions may influence the optimum rate of adjuvant, see the product label for more details. Always use appropriate drift management technology.

INTER-ROW WEEDING

The herbicide is directed between the orchard and/or vineyard rows onto the emerged weeds. The herbicide is used as a rescue operation where other methods of weed control have failed. Use special low pressure (7–15 kPa) applicators such as dribble bars or vibra jets equipped with shields to prevent wetting the crop.

WIPER APPLICATORS FOR SELECTIVE WEED CONTROL

Wiper applicators (rope-wick, roller applicator or similar device) have been extensively used with glyphosate. Check product labels for use of this application technique with other herbicides.

WATER VOLUMES

All herbicide treatments should be applied in a minimum of 60–120 L/acre unless otherwise specified on the label.

CAUTION: SIMAZINE, KARMEK, DEVRINOL, and SINBAR residues high enough to harm many crops may persist for several years after removal of orchards and vineyards.

Rates per acre refer to area actually treated with herbicide.

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes

APPLES		
TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 14-28 g/acre + 2.5 L/1,000 L Active Ingredient(s): halosulfuron (25-51 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 14 days Rainfast: 4 hours Max. Applications: 2
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.152 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: ALION 200 SC (200 g/L) + SENCOR 480F (480 g/L) Product Rate/acre: 0.152 L/acre + 0.606 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + metribuzin (0.72 kg/ha)	Group #: 29 + 5 PCP #: 30451 + 26280	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: ALION 200 SC (200 g/L) + SENCOR 75 DF (75 %) Product Rate/acre: 0.152 L/acre + 0.404 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + metribuzin (0.72 kg/ha)	Group #: 29 + 5 PCP #: 30451 + 17242	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7.0 kg/ha)	Group #: 20 PCP #: 12533	REI: 24 hours PHI: not stated Rainfast: not stated Max. Applications: 1

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****APPLES****PRECAUTIONS - For more information, see the label.****SOIL-APPLIED BROADLEAF HERBICIDE**

- New, 1 year or more and established plantings.
- Allow a minimum of 21 days between applications.
- Do not apply more than 56 g/acre per season.
- Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
- **Do NOT** contact green tissue such as foliage, fruit or green bark.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Established plantings of at least three full growing seasons **ONLY**.
- PRE to weeds. Apply to soil before weeds germinate. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
- May be applied at anytime throughout the growing season when the ground is not frozen or snow covered.
- Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.

- Established plantings of at least 3 years **ONLY**.
- PRE - Weed control plus residual control of annual broadleaf weeds.

- Established plantings of at least 3 years **ONLY**.
- PRE - Weed control plus residual control of annual broadleaf weeds.

- Avoid spraying the green bark of trunks by wrapping the trunk with a nonporous wrap, grow tubes or wax containers. Also avoid spraying crop foliage and fruit.
- Best results obtained when the soil is moist at the time of application and followed by at least 0.5 in. of rainfall or sprinkler irrigation 2 weeks after application.
- **Do NOT** apply heavy irrigation immediately after application.
- **Do NOT** apply using airblast sprayers or by air or using a mechanically pressurized handgun.
- **Do NOT** tank mix with flumioxazin (CHATEAU) or other products containing sulfentrazone.

- Established plantings **ONLY**.
- PRE - Apply to cool, moist soil in spring before weeds emerge or after cultivation.
- **Do NOT** apply if air temperatures are above 10°C-15°C to avoid injury from volatilization.
- **Do NOT** apply until 4 weeks after transplanting.
- **Do NOT** use on light sandy soils.
- 70 g applied to an area 2 × 2 m is equivalent to 70 kg/acre.

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.17 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.7 L/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 0.5-0.7 L/acre + 0.44-2.0 kg/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha) + simazine (0.99-4.5 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + LEXONE DF (75 DF) or SENCOR 75 DF (75%) Product Rate/acre: 0.7 L/acre + 0.4 kg/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha) + metribuzin (0.75 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: KERB SC (400 g/L) Product Rate/acre: 2.24 kg/acre Active Ingredient(s): propyzamide (2.24 kg/ha)	Group #: 15 PCP #: 30264	REI: 24 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: LEXONE DF (75 DF) or SQUADRON (75%) Product Rate/acre: 0.2-0.4 kg/acre Active Ingredient(s): metribuzin (0.38-0.75 kg/ha)	Group #: 5 PCP #: 15959 or 32081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Established plantings **ONLY**.
- Apply the lower rate to coarse textured soil with less than 5% organic matter and apply the higher rate to medium textured soil with less than 5% organic matter.
- **Do NOT** apply within 100 m of non-dormant pears.
- **Do NOT** apply after bud break unless using hooded or shielded equipment.
- Please review label for more detailed instructions.

- New and established plantings.
- PRE – Apply once per year as a band treatment under the trees before weeds emerge.
- Avoid contact with trunk and leaves of trees.
- **Do NOT** use on sandy soil with less than 2% organic matter.

- New and established plantings.
- PRE – Apply post-planting, once per year as a band treatment before weeds emerge, preferably after rain has settled the soil around the trees.
- **Do NOT** use on sandy soils with less than 2% organic matter.
- Avoid contact with tree trunks and leaves.
- For established plantings use higher rates.

- Established plantings.
- PRE – Apply once per year as a band treatment under the trees before weeds emerge.
- Avoid contact with trunk and leaves of trees.
- **Do NOT** use on sandy soil with less than 3% organic matter.

- Established plantings **ONLY**.
- PRE – Apply from late September to early November when soil is cool and moist but not frozen.
- Use **ONLY** under apple trees established at least 1 year.
- 4.5 kg/ha is equivalent to 45 g/100 m².

- New and established plantings.
- PPI – Before planting trees.
- PRE – Apply once per year as a band treatment under the trees before weeds emerge.
- Avoid contact with tree trunks and leaves.
- Use high rate on established plantings.
- **Do NOT** use on soils that are coarser than sandy loams with less than 3% organic matter.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 0.44-0.88 kg/acre Active Ingredient(s): simazine (1.0-2.0 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 1.0-2.0 kg/acre Active Ingredient(s): simazine (1.0-2.0 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SENCOR 75 DF (75%) Product Rate/acre: 0.4 kg/acre Active Ingredient(s): metribuzin (0.75 kg/ha)	Group #: 5 PCP #: 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation. Max Applications: 1
Trade Name: SENCOR 75 DF (75 %) + TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.22-0.30 kg/acre + 0.50-0.96 L/acre Active Ingredient(s): metribuzin (0.41-0.56 kg/ha) + trifluralin (0.6-1.15 kg/ha)	Group #: 5 + 3 PCP #: 17242 + 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SIMADEX (500 g/L) Product Rate/acre: 1.8-3.6 kg/acre Active Ingredient(s): simazine (1.0-2.0 kg/ha)	Group #: 5 PCP #: 15902	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SIMAZINE (480 g/L) Product Rate/acre: 1.88-3.76 kg/acre Active Ingredient(s): simazine (1.0-2.0 kg/ha)	Group #: 5 PCP #: 23181	REI: 12 h PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.5 kg/acre Active Ingredient(s): terbacil (1 kg/acre)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.9-1.8 kg/acre Active Ingredient(s): terbacil (1.8-3.6 kg/acre)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Planting year. • PRE – Apply post planting, preemergent to weeds, preferably after rain has settled the soil around the trees. • Avoid contact with trunk and leaves of trees. • Do NOT use on sandy soils with less than 2% organic matter.
<ul style="list-style-type: none"> • Established plantings ONLY. • Use higher rate on perennial weeds such as quackgrass. • May be combined with glyphosate.
<ul style="list-style-type: none"> • Established (bearing) trees ONLY. • PRE – Apply as a band application under the trees in at least 60-120 L water/acre.
<ul style="list-style-type: none"> • PPI – Before planting trees as an orchard floor or planting row treatment. • Use higher rates on clay soils.
<ul style="list-style-type: none"> • Established plantings ONLY. • Use higher rate on perennial weeds such as quackgrass. • May be combined with glyphosate.
<ul style="list-style-type: none"> • Established plantings ONLY. • Use higher rate on perennial weeds such as quackgrass. • May be combined with glyphosate.
<ul style="list-style-type: none"> • Planting year. • PRE – Apply after planting trees, before weeds emerge. • Do NOT use on soils with less than 3% organic matter. • Avoid contact with tree trunks and leaves.
<ul style="list-style-type: none"> • PRE – Established plantings of at least three years ONLY. • Avoid contact with foliage. • Use 0.9 kg/acre on soils with < 2% organic matter. • Use 1.30-1.80 kg/acre on soils with > 2% organic matter.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: SINBAR WDG (80 WDG) + SENCOR 75 DF (75%) Product Rate/acre: 0.25 kg/acre + 0.4 kg/acre Active Ingredient(s): terbacil (0.5 kg/acre) + metribuzin (0.75 kg/ha)	Group #: 5 + 5 PCP #: 30082 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.60-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: REGLONE DESSICANT (240 g/L) Product Rate/acre: 1.8 L/acre Active Ingredient(s): diquat (1.1 kg/ha)	Group #: 22 PCP #: 26396	REI: 24 hours PHI: not stated Rainfast: 0-15 minutes Max Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: not stated Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 0.8 L/acre, 0.67 L/acre, 0.58 L/acre Active Ingredient(s): 2,4-D (0.95 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: 80 days Rainfast: 1 day Max. Applications: 1
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-60.0 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-36.0 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 3 days weeds; 30 days suckers Rainfast: 8 hours Max. Applications: 2

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Established plantings **ONLY**.
- PRE – Apply as a band under trees before weeds emerge.
- **Do NOT** use on soil coarser than sandy loam with less than 3% organic matter.
- **Treatment usually provides partial control of quackgrass, horsetail and yellow nutsedge.**
- Planting year **ONLY**.
- PPI – Apply and incorporate before planting trees.
- Use higher rates on clay soils.

POST-EMERGENCE GRASS HERBICIDES

- New and established plantings.
- For annual grass, use 0.13 L/ac at the 1-6-leaf stage.
- For volunteer grains, use 0.19 L/acre.
- For quackgrass, use 0.44 L/acre up to the 3-leaf stage.

- **For perennial grass suppression under apple trees.**

- New and established plantings.
- Apply post to actively growing grasses before tillering in a band under the trees.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.

POST-EMERGENCE BROADLEAF HERBICIDES

- Established plantings **ONLY**.
- For broadleaf weeds, including dandelion, seedling Canada thistle and sow-thistle.
- Apply in early spring after weeds emerge or postharvest to actively growing weeds.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- New and established plantings.
- Apply post at a rate of 14.6-46.8 mL/acre with a hooded sprayer between the rows.
- Apply to basal shoots (suckers) before they have hardened bark.
- Use the higher rate of 60 mL/acre for control of suckers.
- Apply to actively growing weeds up to 4 in. tall.
- Severe injury may result if the spray is allowed to come in contact with the green bark, leaves, bloom or fruit.

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: BASAGRAN or BROADLOOM (480 g/L) + ASSIST Product Rate/acre: 0.7-0.9 L/acre + 0.4-0.8 L/acre Active Ingredient(s): bentazon (0.84-1.08 kg/ha) + oil concentrate (1-2 L/ha)	Group #: 6 PCP #: 12221 or 32661	REI: 12 hours PHI: 25 days Rainfast: 8 hours Max. Applications: 2
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.22 or 0.14 L/acre Active Ingredient(s): clopyralid (0.20 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: 1
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 14-56 g/acre + 2.5 L/1,000 L Active Ingredient(s): halosulfuron (25-102 g/ha) + non-ionic surfactant (0.25% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 14 days Rainfast: 4 hours Max. Applications: 2
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDE		
Trade Name: LOROX L (480 g/L) Product Rate/acre: 3.6 L/acre Active Ingredient(s): linuron (4.3 kg/ha)	Group #: 7 PCP #: 16279	REI: 12 hours PHI: not stated Rainfast: 8 hours Max Applications: not stated
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: not stated

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***PRECAUTIONS - For more information, see the label.**

- New plantings.
- Directed spray **ONLY**. Do **NOT** overspray.
- Avoid tree leaves.
- Use lower rate of assist under hot, humid conditions.
- During the planting year, make a maximum of two applications per season, 10 days apart and at the low rate only.

- **Bearing and non-bearing trees. Non-bearing trees should be established and over 1 year or older.**
- **For best results apply in the spring as a spot treatment at a rate of 56 (360) or 34 (XC) mL/1000 m² in 200 L of water for control of perennial vetch species and labelled weeds.**
- **Avoid contact with tree limbs.**

- New, 1 year or more and established plantings.
- Apply as a single or sequential application of 14-28 g/acre, allow a minimum of 21 days between applications.
- Use a higher rate of 21-56 g/acre for nutsedge control when fully emerged. If applying twice, apply first application at 3-5-leaf stage.
- **Do NOT** apply more than 56 g/acre per season.
- Avoid spray contact with foliage and fruit.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDE

- **Established plantings of at least 10 years ONLY.**
- **Apply as a directed spray before weeds are 10 cm high.**
- **Apply in 160-240 L/acre water with a surfactant.**
- **Avoid contact with fruit, foliage or tree bark with spray or drift.**

NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS

- Established plantings **ONLY**.
- Apply as a directed spray before weeds are 12 in. high.
- **Do NOT** apply more than 2.7 L/acre in 1 year.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: IGNITE (150 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 1.08-2 L/acre + 0.152 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 10 + 29 PCP #: 28532 + 30451	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 1
Trade Name: IGNITE (150 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 1.08-2 L/acre + 1-2 kg/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + simazine (2.25-4.5 kg/ha)	Group #: 10 + 5 PCP #: 28532 + 16370	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 1
Trade Name: IGNITE (150 g/L) + SIMADDEX (500 g/L) Product Rate/acre: 1.08-2 L/acre + 1.8-3.6 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + simazine (2.25-4.5 kg/ha)	Group #: 10 + 5 PCP #: 28532 + 15902	REI: 12 hours Rainfast: 4 hours PHI: 40 days Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) + GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1-2 kg/acre + 0.9-4.8 L/acre, 0.67-3.56 L/acre, 0.64-3.41 L/acre, 0.59-3.16 L/acre Active Ingredient(s): simazine (2.25-4.5 kg/ha) + glyphosate (0.8-4.27 kg/ha)	Group #: 5 + 9 PCP #: 16370 + see label	REI: 12 hours PHI: not stated Rainfast: 1 hour Max. Applications: 1
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1 L/2 L water, 0.75 L/2 L water, 0.72 L/2 L water, 0.67 L/2 L water Active Ingredient(s): glyphosate (0.36 kg/2 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1-2 L/100 L water, 0.75-1.5 L/100 L water, 0.72-1.44 L/100 L water, 0.67-1.34 L/100 L water Active Ingredient(s): glyphosate (0.36-0.72 kg/100 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 2

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***PRECAUTIONS - For more information, see the label.**

- Established plantings of at least 3 years **ONLY**.
- Apply as a directed spray before weeds are 12 in. high, when the ground is not frozen or snow covered.
- Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.

- Established plantings **ONLY**.
- To control emerged weeds plus residual control of annual grasses and broadleaf weeds.
- Use as a directed spray around the bases of established trees.

- Established plantings **ONLY**.
- To control emerged weeds plus residual control of annual grasses and broadleaf weeds.
- Use as a directed spray around the bases of established trees.

- Established plantings **ONLY**.
- To control actively growing weeds, with residual control of germinating weeds.
- Remove all suckers from base of trunks two weeks before application.
- **Do NOT** apply to trees with green bark in the area of application.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings **ONLY**.
- For actively growing weeds.
- Remove all suckers from base of trunks two weeks before application.
- **Do NOT** apply to trees with green bark in the area of application.
- **Do NOT** mow or till weeds for at least 5-7 days after application. Wait longer if cool.
- Repeat application to regrowth may be necessary for complete control.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings **ONLY**.
- Apply with a rope wick or other similar device when weeds are at the optimum stage.
- Avoid contact with the leaves, trunks and suckers.
- **Do NOT** apply when weeds are wet.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings **ONLY**.
- Use hand held sprayers as a spot treatment if wiper equipment is not available.
- Avoid contact with leaves, trunks and suckers.
- Not all formulations are registered on all crops. See label for specific uses and rates.

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre + 0.152 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 9 + 29 PCP #: see label + 30451	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1
APRICOTS		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.152 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: ALION 200 SC (200 g/L) + SENCOR 480F (480 g/L) Product Rate/acre: 0.152 L/acre + 0.606 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + metribuzin (0.72 kg/ha)	Group #: 29 + 5 PCP #: 30451 + 26280	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: ALION 200 SC (200 g/L) + SENCOR 75 DF (75 %) Product Rate/acre: 0.152 L/acre + 0.404 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + metribuzin (0.72 kg/ha)	Group #: 29 + 5 PCP #: 30451 + 17242	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.17 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.7 L/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Established plantings of at least 3 years **ONLY**.
- **Do NOT** apply to trees with green bark in the area of application.
- Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.
- Not all formulations are registered on all crops. See label for specific uses and rates.

APRICOTS**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Established plantings of at least 3 years **ONLY**.
- PRE to weeds. Apply to soil before weeds germinate. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
- May be applied at anytime throughout the growing season when the ground is not frozen or snow covered.
- Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.

- Established plantings of at least 3 years **ONLY**.
- PRE – weed control plus residual control of annual broadleaf weeds.

- Established plantings of at least 3 years **ONLY**.
- PRE – weed control plus residual control of annual broadleaf weeds.

- Established plantings **ONLY**.
- **Do NOT** apply within 100 m of non-dormant pears.
- Apply the lower rate to coarse textured soils with less than 5% organic matter and apply the higher rate to medium textured soils with less than 5% organic matter.
- **Do NOT** apply during the period after flowering through leaf drop unless using hooded or shielded equipment.
- Please review label for more detailed instructions.

- New and established plantings.
- PRE – Apply as a band treatment under the trees before weeds emerge.
- Avoid contact with trunk and leaves of trees.
- **Do NOT** use on sandy soil with less than 2% organic matter.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: DUAL II MAGNUM (915 g/L) + LEXONE DF (75 DF) or SENCOR 75 DF (75%) Product Rate/acre: 0.7 L/acre + 0.4 kg/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha) + metribuzin (0.75 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 0.5-0.7 L/acre + 0.44-1.0 kg/acre Active Ingredient(s): s-metolachlor/benoxacor (1.14-1.60 kg/ ha) + simazine (1.0-2.25 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: LEXONE DF (75 DF) Product Rate/acre: 0.2-0.4 kg/acre Active Ingredient(s): metribuzin (0.38-0.75 kg/ha)	Group #: 5 PCP #: 15959	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 0.44-0.88 kg/acre Active Ingredient(s): simazine (1-2 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SENCOR 75 DF (75%) Product Rate/acre: 0.4 kg/acre Active Ingredient(s): metribuzin (0.75 kg/ha)	Group #: 5 PCP #: 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation. Max Applications: 1
Trade Name: SENCOR 75 DF (75 %) + TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.22-0.30 kg/acre + 0.50-0.92 L/acre Active Ingredient(s): metribuzin (0.41-0.56 kg/ha) + trifluralin (0.60-1.15 kg/ha)	Group #: 5 + 3 PCP #: 17242 + 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR WDG (80 WDG) + LEXONE DF (75 DF) Product Rate/acre: 0.25 kg/acre + 0.4 kg/acre Active Ingredient(s): terbacil (0.5 kg/ha) + metribuzin (0.75 kg/ha)	Group #: 5 + 5 PCP #: 30082 + 15959	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.5-0.96 L/acre Active Ingredient(s): trifluralin (0.6-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established plantings ONLY. • PRE – Apply once per year as a band treatment under the trees before weeds emerge. • Avoid contact with trunk and leaves of trees. • Do NOT use on sandy soil with less than 3% organic matter.
<ul style="list-style-type: none"> • New and established plantings. • PRE – Apply after planting, before weeds emerge, preferably after rain has settled the soil around the trees. • Do NOT use on sandy soils with less than 2% organic matter. • Avoid contact with tree trunks and leaves. • Apply high rate on established plantings.
<ul style="list-style-type: none"> • New and established plantings. • PPI – Apply before planting trees in the year of planting. • PRE – Apply as a band treatment under the trees before weeds emerge. • Avoid contact with tree trunks and leaves.
<ul style="list-style-type: none"> • Planting year ONLY. • PRE – Apply after planting, before weeds emerge, preferably after rain has settled the soil around the trees. • Avoid contact with trunk and leaves of trees. • Do NOT use on sandy soils with less than 2% organic matter.
<ul style="list-style-type: none"> • Established (bearing) trees ONLY. • PRE – Apply as a band application under the trees in at least 60-120 L water/acre.
<ul style="list-style-type: none"> • Planting year ONLY. • PPI – Apply and incorporate before planting trees. • Apply as an orchard floor or planting row treatment. • Apply higher rates to clay soils.
<ul style="list-style-type: none"> • Established plantings ONLY. • PRE – Apply as a band under trees before weeds emerge. • Do NOT use on soil coarser than sandy loam with less than 3% organic matter.
<ul style="list-style-type: none"> • Planting year ONLY. • PPI – Apply and incorporate before planting trees. • Apply higher rates on clay soils.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.5 kg/ha) + surfactant/solvent (0.25-2 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: not stated Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 0.8 L/acre, 0.67 L/acre, 0.58 L/acre Active Ingredient(s): 2,4-D (0.95 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: 80 days Rainfast: 1 day Max. Applications: 1
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.8-60 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-36.0 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 3 days weeds; 30 days suckers Rainfast: 8 hours Max. Applications: 2
Trade Name: BASAGRAN or BROADLOOM (480 g/L) + MERGE Product Rate/acre: 0.7-0.9 L/acre + 0.4-0.8 L/acre Active Ingredient(s): bentazon (0.84-1.08 kg/ha) + surfactant/solvent (1-2 L/ha)	Group #: 6 PCP #: 12221 or 32661	REI: 12 hours PHI: 25 days Rainfast: 8 hours Max. Applications: 2
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.17-0.34 or 0.1-0.2 L/acre Active Ingredient(s): clopyralid (0.15-0.30 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: not stated

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes** *continued*

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre. • For quackgrass, use 0.44 L/acre up to the 3-leaf stage.
<ul style="list-style-type: none"> • Established plantings ONLY. • Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley. • Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails). • Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Established plantings ONLY. • For broadleaf weeds, including dandelion, seedling Canada thistle and sow-thistle. • Apply in early spring after weeds emerge or postharvest to actively growing weeds. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • New and established plantings. • Apply post with a hooded sprayer between the rows. • Apply to actively growing weeds up to 4 in. tall. Apply to basal shoots (suckers) before they have a hardened bark. • Use a higher rate of 60 mL/acre for control of suckers. • Severe crop injury may result if the spray is allowed to come in contact with the green bark, leaves, bloom or fruit.
<ul style="list-style-type: none"> • Planting year ONLY. • Directed spray only. Do NOT overspray. • Use lower rate of MERGE under hot, humid conditions. • Apply 10 days apart at 0.7 L/acre.
<ul style="list-style-type: none"> • New and established plantings. • For control of broadleaf weeds including vetch at the early flowering stage. • For best results apply in the spring as a spot treatment when apricots are flowering. • Apply 42-83 (360) or 25-50 (XC) mL/1000 m² in 300 L of water when using a hand gun or back pack sprayer. • Avoid contact with tree limbs.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: PRISM (25 SG) + AGRAL 90 or AG-SURF Product Rate/acre: 24 g/acre + 2 L/1,000 L Active Ingredient(s): rimsulfuron (15 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 30057	REI: 12 hours PHI: 14 days Rainfast: 4 hours Max Applications: 1
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1 L/2 L water, 0.75 L/2 L water, 0.72 L/2 L water, 0.67 L/2 L water Active Ingredient(s): glyphosate (0.36 kg/2 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1-2 L/100 L water, 0.75-1.5 L/100 L water, 0.72-1.44 L/100 L water, 0.67-1.34 L/100 L water Active Ingredient(s): glyphosate (0.36-0.72 kg/100 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre + 0.152 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 9 + 29 PCP #: see label + 30451	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max Applications: not stated

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Use a directed spray application adjusted to provide complete coverage of the weeds under the crop canopy. • Do NOT apply more than 24 g/acre on a broadcast application basis per year. • Apply when quackgrass is at 3-6-leaf stage (less than 4 in. tall), annual grasses at 1-6-leaf stage and redroot pigweed is in the 4-6-leaf stage.
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS
<ul style="list-style-type: none"> • Established plantings ONLY. • For actively growing weeds. • Remove all suckers from base of trunks two weeks before application. • Do NOT apply to trees with green bark in the area of application. • Do NOT mow or till weeds for at least 5-7 days after application. Wait longer if cool. • Repeat application to regrowth may be necessary for complete control. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Established plantings ONLY. • Apply with a rope wick or other similar device when weeds are at the optimum stage. • Avoid contact with the leaves, trunks and suckers. • Do NOT apply when weeds are wet. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Established plantings ONLY. • Use hand held sprayers as a spot treatment if wiper equipment is not available. • Avoid contact with leaves, trunks and suckers. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Established plantings of at least 3 years ONLY. • Do NOT apply to trees with green bark in the area of application. • Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Established plantings ONLY. • Apply as a directed spray before weeds are 12 in. high. • Do NOT apply more than 2.7 L/acre in 1 year.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
CHERRIES AND PLUMS		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.152 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7.0 kg/ha)	Group #: 20 PCP #: 12533	REI: 24 hours PHI: not stated Rainfast: not stated Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.17 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.7 L/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 0.5-0.7 L/acre + 0.44-2.0 kg/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha) + simazine (0.99-4.5 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + LEXONE DF (75 DF) or SENCOR 75 DF (75%) Product Rate/acre: 0.7 L/acre + 0.4 kg/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha) + metribuzin (0.75 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

PRECAUTIONS - For more information, see the label.

CHERRIES AND PLUMS

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Established plantings of at least 3 years **ONLY**.
 - PRE to weeds. Apply to soil before weeds germinate. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
 - May be applied at anytime throughout the growing season when the ground is not frozen or snow covered.
 - Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.
- New and established plantings.
 - PRE – Apply to cool, moist soil in spring before weeds emerge or after cultivation.
 - **Do NOT** apply if air temperatures are above 10-15°C to avoid injury from volatilization.
 - **Do NOT** apply until 4 weeks after transplanting.
 - **Do NOT** use on light sandy soils.
 - 70 g applied to an area 2 × 2 m is equivalent to 70 kg/acre.
- Established plantings of at least 2 years **ONLY**.
 - Apply the lower rate to coarse textured soils with less than 5% organic matter and apply the higher rate to medium textured soils with less than 5% organic matter.
 - **Do NOT** apply within 100 m of non-dormant pears.
 - **Do NOT** apply during the period after flowering through leaf drop unless using hooded or shielded equipment.
 - Please review label for more detailed instructions.
- Established plantings **ONLY**.
 - PRE – Apply once per year as a band treatment under the trees before weeds emerge.
 - Avoid contact with trunk and leaves of trees.
 - **Do NOT** use on sandy soil with less than 3% organic matter.
- New and established non-bearing plantings.
 - PRE – Apply as a band treatment under the trees before weeds emerge, preferably after rain has settled the soil around the trees.
 - **Do NOT** use on sandy soils with less than 2% organic matter.
 - Avoid contact with tree trunks and leaves.
 - Use the high rate on established plantings.
- New plantings.
 - PRE – Apply after planting, before weeds emerge, preferably after rain has settled the soil around the trees.
 - **Do NOT** use on sandy soils with less than 2% organic matter.
 - Avoid contact with tree trunks and leaves.
 - Late-season crabgrass and fall panicum may escape this treatment.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: LEXONE DF (75 DF) or SQUADRON (75%) Product Rate/acre: 0.2-0.4 kg/acre Active Ingredient(s): metribuzin (0.38-0.75 kg/ha)	Group #: 5 PCP #: 15959 or 32081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SENCOR 75 DF (75%) Product Rate/acre: 0.4 kg/acre Active Ingredient(s): metribuzin (0.75 kg/ha)	Group #: 5 PCP #: 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation. Max Applications: 1
Trade Name: SENCOR 75 DF (75 %) + TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.22-0.30 kg/acre + 0.50-0.96 L/acre Active Ingredient(s): metribuzin (0.41-0.56 kg/ha) + trifluralin (0.6-1.15 kg/ha)	Group #: 5 + 3 PCP #: 17242 + 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.5 kg/acre Active Ingredient(s): terbacil (1 kg/acre)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR WDG (80 WDG) + LEXONE DF (75 DF) or SENCOR 75 DF (75%) Product Rate/acre: 0.25 kg/acre + 0.4 kg/acre Active Ingredient(s): terbacil (0.5 kg/acre) + metribuzin (0.75 kg/ha)	Group #: 5 + 5 PCP #: 30082 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.60-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • New and established plantings. • PPI – Before planting trees. • PRE – Apply as a band treatment under the trees before weeds emerge. • Avoid contact with tree trunks and leaves. • Use high rate on established plantings. • Do NOT use on soils that are coarser than sandy loams with less than 3% organic matter.
<ul style="list-style-type: none"> • Established (bearing) trees ONLY. • PRE – Apply as a band application under the trees in at least 60-120 L water/acre.
<ul style="list-style-type: none"> • Planting year ONLY. • PPI – Apply and incorporate before planting trees. • Apply higher rates to clay soils.
<ul style="list-style-type: none"> • Planting year. • PRE – Apply after planting trees, before weeds emerge. • Do NOT use on soils with less than 3% organic matter. • Avoid contact with tree trunks and leaves.
<ul style="list-style-type: none"> • Established plantings. • Registered on cherries ONLY. • PRE – Apply as a band under trees before weeds emerge. • Treatment usually provides partial control of quackgrass, horsenettle and yellow nutsedge. • Do NOT use on soil coarser than sandy loam with less than 3% organic matter.
<ul style="list-style-type: none"> • Planting year ONLY. • PPI – Apply and incorporate before planting trees. • Apply the higher rate on clay soils.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre. • For quackgrass, use 0.44 L/acre up to the 3-leaf stage.

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: SELECT (240 g/L) or CENTURION (240 g/L) Product Rate/acre: 0.08-0.15 L/acre Active Ingredient(s): clethodim (45.6-91.2 g/ha)	Group #: 1 PCP #: 22625 or 27598	REI: 12 hours PHI: 14 days Rainfast: 1 hour Max. Applications: 1
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: not stated Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 0.8 L/acre, 0.67 L/acre, 0.58 L/acre Active Ingredient(s): 2,4-D (0.95 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: 80 days Rainfast: 1 day Max. Applications: 1
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-60.0 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-36.0 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 3 days weeds; 30 days suckers Rainfast: 8 hours Max. Applications: 2
Trade Name: BASAGRAN or BROADLOOM (480 g/L) + ASSIST Product Rate/acre: 0.7-0.9 L/acre + 0.4-0.8 L/acre Active Ingredient(s): bentazon (0.84-1.08 kg/ha) + oil concentrate (1-2 L/ha)	Group #: 6 PCP #: 12221 or 32661	REI: 12 hours PHI: 25 days Rainfast: 8 hours Max. Applications: 2
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.17-0.34 or 0.1-0.2 L/acre Active Ingredient(s): clopyralid (0.15-0.30 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: not stated
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: LOROX L (480 g/L) Product Rate/acre: 3.6 L/acre Active Ingredient(s): linuron (4.3 kg/ha)	Group #: 7 PCP #: 16279	REI: 12 hours PHI: not stated Rainfast: 8 hours Max Applications: not stated

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established cherry ONLY spray directly at the base. • Do NOT apply directly over the top or crop injury can occur. • Use high rate with 1% v/v surfactant for quackgrass control at the 2-6-leaf stage. Use the low rate with 0.5% v/v surfactant for all other labelled grassy weeds at the 2-6-leaf stage.
<ul style="list-style-type: none"> • Established plantings ONLY. • Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley. • Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails). • Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Established plantings. • For broadleaf weeds, including dandelion, seedling Canada thistle and sow-thistle. • Apply in early spring after weeds emerge or postharvest to actively growing weeds. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • New and established plantings. • Apply POST at rates between 14.6-46.8 mL/acre with a hooded sprayer between the rows. • Apply to actively growing weeds up to 4 in. tall. • Apply to basal shoots (suckers) before they have a hardened bark. • Use a higher rate of 60 mL/acre for control of suckers. • Severe crop injury may result if the spray is allowed to come in contact with the green bark, leaves, bloom or fruit.
<ul style="list-style-type: none"> • Planting year ONLY on cherries. • Tolerant as a directed spray only. Do NOT overspray. • Avoid tree leaves. • Use lower rate of assist under hot, humid conditions. • During the planting year apply 10 days apart and at the low rate only.
<ul style="list-style-type: none"> • New and established plantings. • For control of broadleaf weeds including vetch at the early flowering stage. • For best results apply in the spring as a spot treatment when cherries and plums are flowering. • Apply 42-83 (360) or 25-50 (XC) mL/1,000 m² in 300 L of water when using a hand gun or back pack sprayer. • Avoid contact with tree limbs.
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Established plantings of at least 10 years ONLY. • Apply as a directed spray before weeds are 10 cm high. • Apply in 160-240 L/acre water with a surfactant. • Avoid contact with fruit, foliage or tree bark with spray or drift.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: PRISM (25 SG) + AGRAL 90 or AG-SURF Product Rate/acre: 24 g/acre + 2 L/1,000 L Active Ingredient(s): rimsulfuron (15 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 30057	REI: 12 hours PHI: 14 days Rainfast: 4 hours Max Applications: 1
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2
Trade Name: IGNITE (150 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 1.08-2 L/acre + 0.152 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 10 + 29 PCP #: 28532 + 30451	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 1
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1 L/2 L water, 0.75 L/2 L water, 0.72 L/2 L water, 0.67 L/2 L water Active Ingredient(s): glyphosate (0.36 kg/2 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1-2 L/100 L water, 0.75-1.5 L/100 L water, 0.72-1.44 L/100 L water, 0.67-1.34 L/100 L water Active Ingredient(s): glyphosate (0.36-0.72 kg/100 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre + 0.152 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 9 + 29 PCP #: see label + 30451	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Use a directed spray application adjusted to provide complete coverage of the weeds under the crop canopy.
- **Do NOT** apply more than 24 g/acre on a broadcast application basis per year.
- Apply when quackgrass is at 3-6-leaf stage (less than 4 in. tall), annual grasses at 1-6-leaf stage and redroot pigweed is in the 4-6-leaf stage.

NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS

- Established plantings of at least 1 year **ONLY**.
 - Apply as a directed spray before weeds are 12 in. high.
 - **Do NOT** apply more than 2.7 L/acre of IGNITE in a year.
-
- Established plantings of at least 3 years **ONLY**.
 - Apply as a directed spray before weeds are 12 in. high, when the ground is not frozen or snow covered.
 - Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.
-
- Established plantings **ONLY**.
 - Remove all suckers from base of trunks two weeks before application.
 - **Do NOT** apply to trees with green bark in the area of application.
 - **Do NOT** mow or till weeds for at least 5-7 days after application. Wait longer if cool.
 - Repeat application to regrowth may be necessary for complete control.
 - Not all formulations are registered on all crops. See label for specific uses and rates.
-
- Established plantings **ONLY**.
 - Apply with a rope wick or other similar device when weeds are at the optimum stage.
 - Avoid contact with leaves, trunks and suckers.
 - **Do NOT** apply when weeds are wet.
 - Not all formulations are registered on all crops. See label for specific uses and rates.
-
- Established plantings **ONLY**.
 - Use hand held sprayers as a spot treatment if wiper equipment is not available.
 - Avoid contact with leaves, trunks and suckers.
 - Not all formulations are registered on all crops. See label for specific uses and rates.
-
- Established plantings of at least 3 years **ONLY**.
 - **Do NOT** apply to trees with green bark in the area of application.
 - Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.
 - Not all formulations are registered on all crops. See label for specific uses and rates.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
GRAPES		
Hilling the vines at regular intervals throughout the year will aid in weed control. Be aware that this disruption of the soil will also disturb any residual herbicides. The use of cultivation, mulch or rye cover crops between the rows will provide better water penetration as well as aid in weed control.		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.152 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 3 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7.0 kg/ha)	Group #: 20 PCP #: 12533	REI: 24 hours PHI: not stated Rainfast: not stated Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.17 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: CHIKARA (25 WG) Product Rate/acre: 60-80 g/acre Active Ingredient(s): flazasulfuron (37.5-50 g/ha)	Group #: 2 PCP #: 33130	REI: 12 hours PHI: 75 days Rainfast: moisture required for activation Max Applications: 1

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

PRECAUTIONS - For more information, see the label.

GRAPES

Cultivation after planting is needed to level the soil, and early establishment on trellises or stakes will minimize damage from cultivation. Hilling for winter protection can be started in late summer, and will control late germinating weeds. Removing of hills each spring will also aid in weed control.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Established plantings of at least 5 years **ONLY**.
- **Do NOT** apply prior to any type of soil disturbance, including hilling/dehilling.
- Ensure that grapes have been planted at least 12 in. deep or that there is 12 in. of soil barrier between the soil surface and the major portion of the root system.
- Excessive crop or weed debris present on soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.

- Avoid spraying the green bark of young vines by wrapping them with a non-porous wrap, grow tubes or wax containers. Also avoid spraying crop foliage and fruit.
- Best results obtained when the soil is moist at the time of application and followed by at least 0.5 in. of rainfall or sprinkler irrigation 2 weeks after application.
- **Do NOT** apply heavy irrigation immediately after application.
- **Do NOT** apply using airblast sprayers or by air or using a mechanically pressurized handgun.
- **Do NOT** tank mix with flumioxazin (CHATEAU) or other products containing sulfentrazone.

- Established plantings of at least 2 years **ONLY**.
- PRE – Apply to cool moist but unfrozen soil in late fall or spring before weeds emerge.
- **Do NOT** apply if air temperatures are above 10°C-15°C to avoid injury from volatilization.
- Apply to dormant healthy vines only.
- For annual weeds, use 44-70 kg/acre.
- For quackgrass, and broadleaf perennial weeds, use 70-90 kg/acre.
- Use the higher rate of 90 kg/acre only every other year.

- Established plantings of at least 2 years **ONLY**.
- Apply the lower rate to coarse textured soils with less than 5% organic matter and apply the higher rate to medium textured soils with less than 5% organic matter.
- **Do NOT** apply within 100 m of non-dormant pears.
- **Do NOT** apply after bud break unless using hooded or shielded equipment.
- Please review label for more detailed instructions.

- Established plantings of at least 3 years **ONLY**.
- Make a uniform application to the soil surface in 150 to 450 L/ha of water.
- Soil surfaces should be clean from crop residue and weed-free at the time of application. If weeds, weed residue or crop residue is present, these should be removed by light mechanical incorporation or other means.
- **Do NOT** disturb the soil after application.
- If rainfall does not occur within 2 weeks after the preemergence application, then 0.2-0.5 in. of irrigation water should be applied. **Do NOT** apply more than 1 in. of irrigation water.

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 3.6 kg/acre Active Ingredient(s): napropamide (4.5 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 1
Trade Name: FRONTIER MAX (720 g/L) Product Rate/acre: 0.39 L/acre Active Ingredient(s): (dimethenamid 0.69 kg/ha)	Group #: 15 PCP #: 29194	REI: 24 hours PHI: 30 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: KARMEK (80 DF) Product Rate/acre: 0.9-2.68 kg/acre Active Ingredient(s): diuron (1.8-5.36 kg/ha)	Group #: 7 PCP #: 28543	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 2
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 1.6-2.0 kg/acre Active Ingredient(s): simazine (3.6-4.5 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 2
Trade Name: SIMADEK (500 g/L) Product Rate/acre: 2.9-3.6 kg/acre Active Ingredient(s): simazine (3.6-4.5 kg/ha)	Group #: 5 PCP #: 15902	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 2
Trade Name: SIMAZINE (480 g/L) Product Rate/acre: 3.0-3.76 kg/acre Active Ingredient(s): simazine (3.6-4.5 kg/ha)	Group #: 5 PCP #: 23181	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 2
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established plantings ONLY. • PRE – Apply ONLY once per season, either in the fall or spring, before weeds emerge. • Incorporation by rainfall or irrigation is essential • Do NOT apply to frozen ground. • Avoid contact with fruit or foliage.
<ul style="list-style-type: none"> • New and established plantings. • PRE – Rainfall is required within 7-10 days of application to achieve sufficient herbicide activation. • Single application directed under the vines. • Do NOT apply during bud swell, bud break or first flush of new growth.
<ul style="list-style-type: none"> • Established plantings of at least 3 years ONLY. • PRE – Apply as a directed spray to a 1 m strip under vines before weeds emerge. • On soils low in clay or organic matter (1-2%), use 0.9-1.3 kg/acre of area actually sprayed and on soil high in clay or organic matter use 1.30-2.70 kg/acre. • Apply just prior to germination and growth of annual weeds, usually in the spring. • It may be desirable to make a fall treatment or divide applications equally between fall and spring treatments. Do not exceed the above rates per year as injury may result. • When a second application is performed, observe a minimum interval of 90 days between the first application and retreatment.
<ul style="list-style-type: none"> • Established plantings of at least 3 years ONLY. • PRE – Apply after hills are removed, but before weeds emerge. • May be tank-mixed with IGNITE and glyphosate. • After harvest, a second application may be made.
<ul style="list-style-type: none"> • Established plantings of at least 3 years ONLY. • PRE – Apply after hills are removed, but before weeds emerge. • May be tank-mixed with IGNITE and glyphosate. • After harvest, a second application may be made.
<ul style="list-style-type: none"> • Established plantings of at least 3 years ONLY. • PRE – Apply after hills are removed, but before weeds emerge. • May be tank-mixed with IGNITE and glyphosate. • After harvest, a second application may be made.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre. • For quackgrass, use 0.44 L/acre up to the 3-leaf stage. • Apply as a banded application to the base of grape vines.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: 30 days Rainfast: 2 hours Max Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-60.0 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-36.0 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 3 days weeds; 30 days suckers Rainfast: 8 hours Max Applications: 2
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: CHIKARA (25 WG) + non-ionic surfactant Product Rate/acre: 60-80 g/acre + 2.5 L/1,000 L Active Ingredient(s): flazasulfuron (37.5-50 g/ha) + non-ionic surfactant (0.25% v/v)	Group #: 2 PCP #: 33130	REI: 12 hours PHI: 75 days Rainfast: not specified Max Applications: 1
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: ALION 200 SC (200 g/L) + IGNITE (150 g/L) Product Rate/acre: 0.152 L/acre + 1.08-2 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 29 + 10 PCP #: 30451 + 28532	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 1
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2
Trade Name: IGNITE (150 g/L) + PRINCEP NINE-T (90 WG) or SIMADDEX (500 g/L) Product Rate/acre: 1.08-2 L/acre + 1.6-2.0 kg/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + simazine (3.6-4.5 kg/ha)	Group #: 10 + 5 PCP #: 28532 + 16370 or 15902	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- New and established plantings.
- Apply as banded application to the base of the grape vine.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- **Do NOT** use this product on grapes for export to the U.S.

POST-EMERGENCE BROADLEAF HERBICIDES

- New and established plantings.
- Apply post at a rate of 14.6-46.8 mL/acre with a hooded sprayer between the rows.
- Apply to actively growing weeds up to 4 in. tall.
- Apply to basal shoots (suckers) before they have hardened bark.
- Apply the higher rate of 60 mL/acre to control suckers.
- Severe crop injury may result if the spray is allowed to come in contact with the green bark, leaves, bloom or fruit.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES

- Established plantings of at least 3 years **ONLY**.
- Apply only as a directed spray to the soil beneath the vines to prevent injury to the foliage and bark of young vines. Use of a protective sleeve is required for third year vines to minimize injury potential.
- **Do NOT** apply to areas where roots are exposed or suckers are actively growing and have not hardened off.
- **Do NOT** disturb the soil after application.
- Rates listed are for broadcast application. If making a banded application, see the product information section of the label.
- Higher rate is for larger weeds and heavier infestations.
- This product can be tank-mixed with contact burndown herbicides, as well as, triazine herbicides that are labelled for the same use pattern.

NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS

- Established plantings of at least 5 years **ONLY**.
- Ensure that grapes have been planted at least 12 in. deep or that there is 12 in. of soil barrier between the soil surface and the major portion of the root system.
- Excessive crop or weed debris present on soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.
- Established plantings of at least 3 years **ONLY**.
- Apply as a directed spray before annual weeds are 12 in. high.
- Avoid suckers and green bark.
- **Do NOT** apply more than 2.7 L/acre of product a year.
- Established plantings of at least 3 years **ONLY**.
- Use as a directed spray avoiding leaves, suckers and green bark on vines.
- To control emerged weeds with residual control of germinating annual weeds.
- See precautions for IGNITE and simazine.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre + 0.152 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 9 + 29 PCP #: see label + 30451	REI: 12 hours PHI: 14 days Rainfast: 1 hour Max Applications: 1
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 14 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1 L/2 L water, 0.75 L/2 L water, 0.72 L/2 L water, 0.67 L/2 L water Active Ingredient(s): glyphosate (0.36 kg/2 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 14 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1-2 L/100 L water, 0.75-1.5 L/100 L water, 0.72-1.44 L/100 L water, 0.67-1.34 L/100 L water Active Ingredient(s): glyphosate (0.36-0.72 kg/100 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 14 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.64 L/acre, 0.66-3.5 L/acre, 0.61-3.24 L/acre + 1-2 kg/acre Active Ingredient(s): glyphosate (0.81-4.32) + simazine (2.25-4.5 kg/ha)	Group #: 9 + 5 PCP #: see label + 16370	REI: 12 hours PHI: 40 days Rainfast: 1 hour Max. Applications: 1

PEACHES

Note: Not all herbicides registered for use on peaches are registered on nectarines. Make sure nectarine or crop group 12 is listed on the label before applying the product.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.152 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 1
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TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Established plantings of at least 5 years **ONLY**.
- **Do NOT** apply prior to any type of soil disturbance, including hilling/dehilling.
- Ensure that grapes have been planted at least 12 in. deep or that there is 12 in. of soil barrier between the soil surface and the major portion of the root system.
- Excessive crop or weed debris present on soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.

- Established plantings of at least 3 years **ONLY**.
- Direct spray to avoid leaves and green stems of grapevines.
- **Do NOT** mow or till weeds for at least 5-7 days after application. Wait longer if the weather is cool.
- Repeat application to regrowth may be necessary for complete control.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings of at least 3 years **ONLY**.
- Apply with a rope wick or other similar device when weeds are at the optimum stage.
- Direct spray to avoid leaves and green stems of grapevines.
- **Do NOT** apply when weeds are wet.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings of at least 3 years **ONLY**.
- Use hand held sprayers as a spot treatment if wiper equipment is not available.
- Direct spray to avoid leaves and green stems of grapevines.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings of at least 3 years **ONLY**.
- Use as a directed spray avoiding leaves, suckers and green bark on vines.
- Use higher rates for perennial weeds and heavy weed infestations.
- To control emerged weeds with residual control of germinating annual weeds.
- See precautions for glyphosate and simazine.
- Not all formulations are registered on all crops. See label for specific uses and rates.

PEACHES**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Established plantings of at least 3 years **ONLY**.
- PRE to weeds. Apply to soil before weeds germinate. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
- May be applied at anytime throughout the growing season when the ground is not frozen or snow covered.
- Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: ALION 200 SC (200 g/L) + SENCOR 480F (480 g/L) Product Rate/acre: 0.152 L/acre + 0.606 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + metribuzin (0.72 kg/ha)	Group #: 29 + 5 PCP #: 30451 + 26280	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: ALION 200 SC (200 g/L) + SENCOR 75 DF (75 %) Product Rate/acre: 0.152 L/acre + 0.404 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + metribuzin (0.72 kg/ha)	Group #: 29 + 5 PCP #: 30451 + 17242	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7.0 kg/ha)	Group #: 20 PCP #: 12533	REI: 24 hours PHI: not stated Rainfast: not stated Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.17 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.7 L/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 0.5-0.7 L/acre + 0.44-1.0 kg/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha) + simazine (0.99-4.5 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + or SENCOR 75 DF (75%) Product Rate/acre: 0.7 L/acre + 0.4 kg/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha) + metribuzin (0.75 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Established plantings of at least 3 years **ONLY**.
 - Pre-emergence weeds control plus residual control of annual broadleaf weeds.
-
- Established plantings of at least 3 years **ONLY**.
 - Pre-emergence weeds control plus residual control of annual broadleaf weeds.
-
- New and established plantings.
 - PRE – Apply to cool, moist soil in spring before weeds emerge or after cultivation.
 - **Do NOT** apply if air temperatures are above 10-15°C to avoid injury from volatilization.
 - **Do NOT** apply until 4 weeks after transplanting.
 - **Do NOT** use on light sandy soils.
 - 70 g applied to an area 2 × 2 m is equivalent to 70 kg/acre.
-
- Established plantings of at least 2 years **ONLY**.
 - **Do NOT** apply within 100 m of non-dormant pears.
 - **Do NOT** apply during the period after flowering through leaf drop unless using hooded or shielded equipment.
 - Please review label for more detailed instructions.
-
- Established plantings **ONLY**.
 - PRE – Apply as a band treatment under the trees before weeds emerge.
 - Avoid contact with trunk and leaves of trees.
 - **Do NOT** use on sandy soil with less than 3% organic matter.
-
- New and established non-bearing plantings.
 - PRE – Apply as a band treatment under the trees before weeds emerge, preferably after rain has settled the soil around the trees.
 - **Do NOT** use on sandy soils with less than 2% organic matter.
 - Avoid contact with tree trunks and leaves.
 - Use the high rate on established plantings.
-
- New and established plantings.
 - PRE – Apply post planting, before weeds emerge, preferably after rain has settled the soil around the trees.
 - **Do NOT** use on sandy soils with less than 2% organic matter.
 - Avoid contact with tree trunks and leaves.
 - Use high rate on established plantings.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: LEXONE DF (75 DF) or SQUADRON (75%) Product Rate/acre: 0.2-0.4 kg/acre Active Ingredient(s): metribuzin (0.38-0.75 kg/ha)	Group #: 5 PCP #: 15959 or 32081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 0.44-0.88 kg/acre Active Ingredient(s): simazine (1.0-2.0 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SENCOR 75 DF (75%) Product Rate/acre: 0.4 kg/acre Active Ingredient(s): metribuzin (0.75 kg/ha)	Group #: 5 PCP #: 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation. Max Applications: 1
Trade Name: SENCOR 75 DF (75 %) + TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.22-0.30 kg/acre + 0.50-0.96 L/acre Active Ingredient(s): metribuzin (0.41-0.56 kg/ha) + trifluralin (0.6-1.15 kg/ha)	Group #: 5 + 3 PCP #: 17242 + 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.5 kg/acre Active Ingredient(s): terbacil (1 kg/acre)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.9-1.8 kg/acre Active Ingredient(s): terbacil (1.8-3.6 kg/acre)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SINBAR WDG (80 WDG) + LEXONE DF (75 DF) or SENCOR 75 DF (75%) Product Rate/acre: 0.25 kg/acre + 0.4 kg/acre Active Ingredient(s): terbacil (0.5 kg/acre) + metribuzin (0.75 kg/ha)	Group #: 5 + 5 PCP #: 30082 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***PRECAUTIONS - For more information, see the label.**

- New and established plantings.
- PPI – Apply and incorporate before planting trees. Make a single application as a broadcast treatment or within the planting row.
- PRE – Apply once per year as a band treatment under the trees before weeds emerge.
- Avoid contact with tree trunks and leaves.
- Use the higher rate on established plantings.

- Planting year **ONLY**.
- PRE – Apply post planting, before weeds emerge, preferably after rain has settled the soil around the trees.
- **Do NOT** use on sandy soils with less than 2% organic matter.
- Avoid contact with tree trunks and leaves.

- **Established (bearing) trees ONLY.**
- **PRE – Apply as a band application under the trees in at least 60-120 L water/acre.**

- Planting year **ONLY**.
- PRE – Apply and incorporate before planting trees.
- Apply as a broadcast treatment or within the planting row.
- Apply higher rates to clay soils.

- Planting year.
- PRE – Apply after planting trees, before weeds emerge.
- **Do NOT** use on soils with less than 3% organic matter.
- Avoid contact with tree trunks and leaves.

- Established plantings of at least 3 years **ONLY**.
- PRE – Apply as a band under the trees before weeds emerge.
- **Do NOT** use on soils with less than 3% organic matter.

- Established plantings.
- PRE – Apply as a band under trees before weeds emerge.
- **Treatment usually provides partial control of quackgrass, horsenettle and yellow nutsedge.**
- **Do NOT** use on soils with less than 3% organic matter.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.60-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: not stated Rainfast: 2 hours Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 0.8 L/acre, 0.67 L/acre, 0.58 L/acre Active Ingredient(s): 2,4-D (0.95 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: 80 days Rainfast: 1 day Max. Applications: 1
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-60.0 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-36.0 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 3 days weeds; 30 days suckers Rainfast: 8 hours Max. Applications: 2
Trade Name: BASAGRAN or BROADLOOM (480 g/L) + ASSIST Product Rate/acre: 0.7-0.9 L/acre + 0.4-0.8 L/acre Active Ingredient(s): bentazon (0.84-1.08 kg/ha) + oil concentrate (1-2 L/ha)	Group #: 6 PCP #: 12221 or 32661	REI: 12 hours PHI: 25 days Rainfast: 8 hours Max. Applications: 2
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.17-0.34 or 0.1-0.2 L/acre Active Ingredient(s): clopyralid (0.15-0.30 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max. Applications: not stated

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Planting year ONLY. • PPI - Apply and incorporate before planting trees. • Use at least 40 L/acre water. • Apply the higher rate to clay soils.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre. • For quackgrass, use 0.44 L/acre up to the 3-leaf stage.
<ul style="list-style-type: none"> • Established plantings ONLY. • Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses, 2-leaf for foxtails. • Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Established plantings ONLY. • For broadleaf weeds, including dandelion, seedling Canada thistle and sow-thistle. • Apply in early spring after weeds emerge or postharvest to actively growing weeds. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • New and established plantings. • Apply post at a rate of 14.6-46.8 mL/acre with a hooded sprayer between the rows. • Apply to actively growing weeds up to 4 in. tall. • Apply to basal shoots (suckers) before they have a hardened bark. • Use the higher rate of 60 mL/acre for control of suckers. • Severe crop injury may result if the spray is allowed to come in contact with the green bark, leaves, bloom or fruit.
<ul style="list-style-type: none"> • Planting year ONLY. • Directed spray ONLY. Do NOT overspray. • Avoid tree leaves. • Use lower rate of assist under hot, humid conditions. • During the planting year apply 10 days apart and at the low rate only.
<ul style="list-style-type: none"> • New and established plantings. • For control of broadleaf weeds including vetch at the early flowering stage. • For best results apply in the spring as a spot treatment when peaches are flowering. • Apply 42-83 (360) or 25-50 (XC) mL/1000 m² in 300 L of water when using a hand gun or back pack sprayer. • Avoid contact with tree limbs.

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: LOROX L (480 g/L) Product Rate/acre: 3.6 L/acre Active Ingredient(s): linuron (4.3 kg/ha)	Group #: 7 PCP #: 16279	REI: 12 hours PHI: not stated Rainfast: 8 hours Max Applications: not stated
Trade Name: PRISM (25 SG) + AGRAL 90 or AG-SURF Product Rate/acre: 24 g/acre + 2 L/1,000 L Active Ingredient(s): rimsulfuron (15 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 30057	REI: 12 hours PHI: 14 days Rainfast: 4 hours Max Applications: 1
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2
Trade Name: IGNITE (150 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 1.08-2 L/acre + 0.152 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 10 + 29 PCP #: 28532 + 30451	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 1
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1 L/2 L water, 0.75 L/2 L water, 0.72 L/2 L water, 0.67 L/2 L water Active Ingredient(s): glyphosate (0.36 kg/2 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1-2 L/100 L water, 0.75-1.5 L/100 L water, 0.72-1.44 L/100 L water, 0.67-1.34 L/100 L water Active Ingredient(s): glyphosate (0.36-0.72 kg/100 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

<p>PRECAUTIONS - For more information, see the label.</p>
<p>POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES</p>
<ul style="list-style-type: none"> • Established plantings of at least 1 year ONLY. • Apply as a directed spray before weeds are 10 cm high. • Apply in 160-240 L/acre water with a surfactant. • Avoid contact with fruit, foliage or tree bark with spray or drift.
<ul style="list-style-type: none"> • Use a directed spray application adjusted to provide complete coverage of the weeds under the crop canopy. • Do NOT apply more than 24 g/acre on a broadcast application basis per year. • Apply when quackgrass is at 3-6-leaf stage (less than 4 in. tall), annual grasses at 1-6-leaf stage and redroot pigweed is in the 4-6-leaf stage.
<p>NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS</p>
<ul style="list-style-type: none"> • Established plantings ONLY. • Apply as a directed spray before weeds are 12 in. high. • Do NOT apply more than 2.7 L/acre of product a year. • Avoid contact with foliage and green bark.
<ul style="list-style-type: none"> • Established plantings of at least 3 years ONLY. • Apply as a directed spray before weeds are 12 in. high, when the ground is not frozen or snow covered. • Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.
<ul style="list-style-type: none"> • Established plantings ONLY. • Remove all suckers from base of trunks two weeks before application. • Do NOT apply to trees with green bark in the area of application. • Do NOT mow or till weeds for at least 5-7 days after application. Wait longer if cool. • Repeat application to regrowth may be necessary for complete control. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Established plantings ONLY. • Apply with a rope wick or other similar device when weeds are at the optimum stage. • Avoid contact with the leaves, trunks and suckers. • Do NOT apply when weeds are wet. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • Established plantings ONLY. • Use hand held sprayers as a spot treatment if wiper equipment is not available. • Avoid contact with leaves, trunks and suckers. • Not all formulations are registered on all crops. See label for specific uses and rates.

continued

HORT CROPS

PEACHES, PEARS

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre + 0.152 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 9 + 29 PCP #: see label + 30451	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1
<h2>PEARS</h2>		
<h3>SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES</h3>		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.152 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: ALION 200 SC (200 g/L) + SENCOR 480F (480 g/L) Product Rate/acre: 0.152 L/acre + 0.606 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + metribuzin (0.72 kg/ha)	Group #: 29 + 5 PCP #: 30451 + 26280	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: ALION 200 SC (200 g/L) + SENCOR 75 DF (75 %) Product Rate/acre: 0.152 L/acre + 0.404 L/acre Active Ingredient(s): indaziflam (0.0758 kg/ha) + metribuzin (0.72 kg/ha)	Group #: 29 + 5 PCP #: 30451 + 17242	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7.0 kg/ha)	Group #: 20 PCP #: 12533	REI: 24 hours PHI: not stated Rainfast: not stated Max. Applications: 1
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.17 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 2

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Established plantings of at least 3 years **ONLY**.
- **Do NOT** apply to trees with green bark in the area of application.
- Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.
- Not all formulations are registered on all crops. See label for specific uses and rates.

PEARS**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Established plantings of at least 3 years **ONLY**.
- PRE to weeds. Apply to soil before weeds germinate. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
- May be applied at anytime throughout the growing season when the ground is not frozen or snow covered.
- Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and reduced weed control.

- Established plantings of at least 3 years **ONLY**.
- PRE weed control plus residual control of annual broadleaf weeds.

- Established plantings of at least 3 years **ONLY**.
- PRE weed control plus residual control of annual broadleaf weeds.

- New and established plantings.
- PRE – Apply to cool, moist soil in spring before weeds emerge or after cultivation.
- **Do NOT** apply if air temperatures are above 10-15°C to avoid injury from volatilization.
- **Do NOT** apply until 4 weeks after transplanting.
- **Do NOT** use on light sandy soils.
- 70 g applied to an area 2 × 2 m is equivalent to 70 kg/acre.

- Established plantings of at least 1 year **ONLY**.
- Apply to dormant pears **ONLY**.
- Please review label for more detailed instructions.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.7 L/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 0.5-0.7 L/acre + 0.44-2.0 kg/acre Active Ingredient(s): s-metolachlor (1.14-1.6 kg/ha) + simazine (0.99-4.5 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) + LEXONE DF (75 DF) or SENCOR 75 DF (75%) Product Rate/acre: 0.7 L/acre + 0.4 kg/acre Active Ingredient(s): s-metolachlor (1.6 kg/ha) + metribuzin (0.75 kg/ha)	Group #: 15 + 5 PCP #: 25729 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: KERB SC (400 g/L) Product Rate/acre: 2.24 kg/acre Active Ingredient(s): propyzamide (2.24 kg/ha)	Group #: 15 PCP #: 30264	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 1
Trade Name: LEXONE DF (75 DF) or SQUADRON (75%) Product Rate/acre: 0.2-0.4 kg/acre Active Ingredient(s): metribuzin (0.38-0.75 kg/ha)	Group #: 5 PCP #: 15959 or 32081	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 1.0-2.0 kg/acre Active Ingredient(s): simazine (1.0-2.0 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SENCOR 75 DF (75%) Product Rate/acre: 0.4 kg/acre Active Ingredient(s): metribuzin (0.75 kg/ha)	Group #: 5 PCP #: 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation. Max Applications: 1
Trade Name: SIMADDEX (500 g/L) Product Rate/acre: 1.8-3.6 kg/acre Active Ingredient(s): simazine (1.0-2.0 kg/ha)	Group #: 5 PCP #: 15902	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***PRECAUTIONS - For more information, see the label.**

- Established plantings **ONLY**.
 - PRE – Apply as a band treatment under the trees before weeds emerge.
 - Avoid contact with trunk and leaves of trees.
 - **Do NOT** use on sandy soil with less than 2% organic matter.
- New and established non-bearing plantings.
 - PRE – Apply as a band treatment under the trees before weeds emerge, preferably after rain has settled the soil around the trees.
 - **Do NOT** use on sandy soils with less than 2% organic matter.
 - Avoid contact with tree trunks and leaves.
 - Use the high rate on established plantings.
- Established plantings **ONLY**.
 - PRE – Apply as a band treatment under the trees before weeds emerge.
 - Avoid contact with trunk and leaves of trees.
 - **Do NOT** use on sandy soil with less than 3% organic matter.
- Established plantings of at least 1 year **ONLY**.
 - PRE – Apply from late September to early November when soil is cool and moist but not frozen.
 - 5.6 L/ha is equivalent to 56 mL/100 m².
- New and established plantings.
 - PPI – Before planting trees.
 - PRE – Apply as a band treatment under the trees before weeds emerge.
 - Avoid contact with tree trunks and leaves.
 - Use high rate on established plantings.
 - **Do NOT** use on soils that are coarser than sandy loams with less than 3% organic matter.
- Established plantings of at least 1 year **ONLY**.
 - Use the higher rate on perennial weeds such as quackgrass.
 - If weeds are emerged before application they can be controlled by either cultivating prior to application or combining simazine with glyphosate.
- **Established (bearing) trees ONLY.**
 - **PRE – Apply as a band application under the trees in at least 60-120 L water/acre.**
- Established plantings of at least 1 year **ONLY**.
 - Use the higher rate on perennial weeds such as quackgrass.
 - If weeds are emerged before application they can be controlled by either cultivating prior to application or combining simazine with glyphosate.

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: SIMAZINE (480 g/L) Product Rate/acre: 1.88-3.76 kg/acre Active Ingredient(s): simazine (1.0-2.0 kg/ha)	Group #: 5 PCP #: 23181	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SENCOR 75 DF (75 %) + TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.22-0.30 kg/acre + 0.50-0.96 L/acre Active Ingredient(s): metribuzin (0.41-0.56 kg/ha) + trifluralin (0.6-1.15 kg/ha)	Group #: 5 + 3 PCP #: 17242 + 23933 or 28289	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 1
Trade Name: SINBAR WDG (80 WDG) Product Rate/acre: 0.5 kg/acre Active Ingredient(s): terbacil (1 kg/acre)	Group #: 5 PCP #: 30082	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max Applications: 1
Trade Name: SINBAR WDG (80 WDG) + LEXONE DF (75 DF) or SENCOR 75 DF (75%) Product Rate/acre: 0.25 kg/acre + 0.4 kg/acre Active Ingredient(s): terbacil (0.5 kg/acre) + metribuzin (0.75 kg/ha)	Group #: 5 + 5 PCP #: 30082 + 15959 or 17242	REI: 12 hours PHI: not stated Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.60-1.15 kg/ha)	Group #: 3 PCP #: 23933 or 28289	REI: 12 hours Rainfast: not stated PHI: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: POAST ULTRA (450 g/L) + MERGE Product Rate/acre: 0.13-0.44 L/acre + 0.1-0.8 L/acre Active Ingredient(s): sethoxydim (0.14-0.50 kg/ha) + surfactant/solvent (0.25-2.0 L/ha)	Group #: 1 PCP #: 24835	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max Applications: not stated
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours PHI: not stated Rainfast: 2 hours Max. Applications: 1

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes** *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Established plantings of at least 1 year ONLY. • Use the higher rate on perennial weeds such as quackgrass. • If weeds are emerged before application they can be controlled by either cultivating prior to application or combining simazine with glyphosate.
<ul style="list-style-type: none"> • Planting year ONLY. • PPI – Before planting trees as an orchard floor or planting row treatment. • Apply higher rates to clay soils.
<ul style="list-style-type: none"> • Planting year. • PRE – Apply after planting trees, before weeds emerge. • Do NOT use on soils with less than 3% organic matter. • Avoid contact with tree trunks and leaves.
<ul style="list-style-type: none"> • Established plantings. • PRE – Apply as a band under trees before weeds emerge. • Treatment usually provides partial control of quackgrass, horsenettle and yellow nutsedge. • Do NOT use on soil coarser than sandy loam with less than 3% organic matter.
<ul style="list-style-type: none"> • Planting year ONLY. • PPI – Apply and incorporate before planting trees. • Apply as a broadcast treatment or within the planting row. • Apply higher rates to clay soils.
POST-EMERGENCE GRASS HERBICIDES
<ul style="list-style-type: none"> • New and established plantings. • For annual grass, use 0.13 L/acre at the 1-6-leaf stage. • For volunteer grains, use 0.19 L/acre. • For quackgrass, use 0.44 L/acre up to the 3-leaf stage.
<ul style="list-style-type: none"> • New and established plantings. • Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley. • Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses, 2-leaf for foxtails. • Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: 2,4-D (470 g/L), 2,4-D (564 g/L), 2,4-D (660 g/L) Product Rate/acre: 0.8 L/acre, 0.67 L/acre, 0.58 L/acre Active Ingredient(s): 2,4-D (0.95 kg/ha)	Group #: 4 PCP #: see label	REI: 12 hours PHI: 80 days Rainfast: 1 day Max. Applications: 1
Trade Name: AIM EC (240 g/L) + AGRAL 90 or AG-SURF or + MERGE Product Rate/acre: 14.6-60.0 mL/acre + 2.5 L/1,000 L or + 1 L/1,000 L Active Ingredient(s): carfentrazone-ethyl (8.8-36.0 g/ha) + non-ionic surfactant (0.25% v/v) or + surfactant/solvent (0.1% v/v)	Group #: 14 PCP #: 28573	REI: 12 hours PHI: 3 days weeds; 30 days suckers Rainfast: 8 hours Max. Applications: 2
Trade Name: BASAGRAN or BROADLOOM (480 g/L) + ASSIST Product Rate/acre: 0.7-0.9 L/acre + 0.4-0.8 L/acre Active Ingredient(s): bentazon (0.84-1.08 kg/ha) + oil concentrate (1-2 L/ha)	Group #: 6 PCP #: 12221 or 32661	REI: 12 hours PHI: 25 days Rainfast: 8 hours Max. Applications: 2
Trade Name: LONTREL 360 (360 g/L) Product Rate/acre: 0.22 L/acre Active Ingredient(s): clopyralid (0.20 kg/ha)	Group #: 4 PCP #: 23545	REI: 12 hours PHI: 30 days Rainfast: 4 hours Max Applications: 1
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDE		
Trade Name: LOROX L (480 g/L) Product Rate/acre: 3.6 L/acre Active Ingredient(s): linuron (4.3 kg/ha)	Group #: 7 PCP #: 16279	REI: 12 hours PHI: not stated Rainfast: 8 hours Max Applications: not stated
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

PRECAUTIONS - For more information, see the label.
POST-EMERGENCE BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • Established plantings ONLY. • For broadleaf weeds, including dandelion, seedling Canada thistle and sow-thistle. • Apply in early spring after weeds emerge or postharvest to actively growing weeds. • Not all formulations are registered on all crops. See label for specific uses and rates.
<ul style="list-style-type: none"> • New and established plantings. • Apply post at a rate of 14.6-46.8 mL/acre with a hooded sprayer between the rows. • Apply to actively growing weeds up to 4 in. tall. • Apply to basal shoots (suckers) before the bark hardens. • To control basal suckers apply at the higher label rate of 60 mL/acre. • Severe crop injury may result if the spray is allowed to come in contact with the green bark, leaves, bloom or fruit.
<ul style="list-style-type: none"> • Planting year ONLY. • Directed spray ONLY. Do NOT overspray. • Avoid tree leaves. • Use lower rate of assist under hot, humid conditions. • During the planting year, make a maximum of two applications per season, 10 days apart and at the low rate only.
<ul style="list-style-type: none"> • Bearing and non-bearing trees. Non-bearing trees should be established and over 1 year or older. • For best results apply in the spring as a spot treatment at a rate of 56 mL/1000 m² in 200 L of water for control of perennial vetch species and labelled weeds. • Avoid contact with tree limbs.
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDE
<ul style="list-style-type: none"> • Established plantings of at least 10 years ONLY. • Apply as a directed spray before weeds are 10 cm high. • Apply in 160-240 L/acre water with a surfactant. • Avoid contact with fruit, foliage or tree bark with spray or drift.
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS
<ul style="list-style-type: none"> • Established plantings of at least 1 year ONLY. • Apply as a directed spray before weeds are 12 in. high.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: IGNITE (150 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 1.08-2 L/acre + 0.152 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 10 + 29 PCP #: 28532 + 30451	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 1
Trade Name: IGNITE (150 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 1.08-2 L/acre + 1-2 kg/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + simazine (1.8-4.5 kg/ha)	Group #: 10 + 5 PCP #: 28532 + 16370	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2
Trade Name: IGNITE (150 g/L) + SIMADDEX (500 g/L) Product Rate/acre: 1.08-2 L/acre + 1.8-3.6 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + simazine (1.8-4.5 kg/ha)	Group #: 10 + 5 PCP #: 28532 + 15902	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1 L/2 L water, 0.75 L/2 L water, 0.72 L/2 L water, 0.67 L/2 L water Active Ingredient(s): glyphosate (0.36 kg/2 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 1-2 L/100 L water, 0.75-1.5 L/100 L water, 0.72-1.44 L/100 L water, 0.67-1.34 L/100 L water Active Ingredient(s): glyphosate (0.36-0.72 kg/100 L)	Group #: 9 PCP #: see label	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 3

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes** *continued***PRECAUTIONS - For more information, see the label.**

- Established plantings of at least 3 years **ONLY**.
- Apply as a directed spray before weeds are 12 in. high, when the ground is not frozen or snow covered.
- Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.

- Established plantings **ONLY**.
- To control emerged weeds plus residual control of annual grasses and broadleaf weeds.
- Use as a directed spray around the bases of trees established at least 1 year.

- Established plantings **ONLY**.
- To control emerged weeds plus residual control of annual grasses and broadleaf weeds.
- Use as a directed spray around the bases of trees established at least 1 year.

- Established plantings **ONLY**.
- Remove all suckers from base of trunks before application.
- **Do NOT** apply to trees with green bark in the area of application.
- **Do NOT** mow or till weeds for at least 5-7 days after application. Wait longer if cool.
- Repeat application to regrowth may be necessary for complete control.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings **ONLY**.
- Apply with a rope wick or other similar device when weeds are at the optimum stage.
- Avoid contact with the leaves, trunks and suckers.
- **Do NOT** apply when weeds are wet.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings **ONLY**.
- Use hand held sprayers as a spot treatment if wiper equipment is not available.
- Avoid contact with leaves, trunks and suckers.
- Not all formulations are registered on all crops. See label for specific uses and rates.

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + ALION 200 SC (200 g/L) Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre + 0.152 L/acre Active Ingredient(s): glyphosate (0.81-4.32 kg/ha) + indaziflam (0.075 kg/ha)	Group #: 9 + 29 PCP #: see label + 30451	REI: 12 hours PHI: 30 days Rainfast: 1 hour Max. Applications: 1
TREE NUTS (CHESTNUT, FILBERT, HAZELNUT, JAPANESE HEARTNUT, PECAN AND WALNUT)		
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: SANDEA (72.6 WG) Product Rate/acre: 19-38 g/acre Active Ingredient(s): halosulfuron (34-68 g/ha)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 1 day Rainfast: 4 hours Max. Applications: 2—minimum 21 days apart
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: ALION 200 SC (200 g/L) Product Rate/acre: 0.152 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 30451	REI: 12 hours PHI: 14 days Rainfast: moisture required for activation Max. Applications: 1
Trade Name: AUTHORITY 480 (480 g/L) Product Rate/acre: 87.6-116.8 mL/acre Active Ingredient(s): sulfentrazone (0.105-0.140 kg/ha)	Group #: 14 PCP #: 29012	REI: 12 hours PHI: 3 days Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Established plantings of at least 3 years **ONLY**.
- **Do NOT** apply to trees with green bark in the area of application.
- Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.
- Not all formulations are registered on all crops. See label for specific uses and rates.

TREE NUTS (CHESTNUT, FILBERT, HAZELNUT, JAPANESE HEARTNUT, PECAN AND WALNUT)**SOIL-APPLIED BROADLEAF HERBICIDES**

- Established plantings of 1 or more years **ONLY**.
- Use on chestnuts, filberts, hazelnuts, pecans, walnuts, beechnuts and butternuts **ONLY**.
- Use as a directed spray avoiding contact with trunk, stems, roots or foliage or severe damage or death may occur.
- **Do NOT** exceed 75 g/acre per season. On coarse textured soils classified as sand, loamy sand, and sandy loam with less than 18% clay and more than 65% sand, or on soils with less than 1% organic matter, **Do NOT** exceed 57 g/acre per season.
- Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
- **Do NOT** contact green tissue such as foliage, fruit or green bark.
- **Do NOT** apply to gravelly soils.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- Established plantings of at least 3 years **ONLY**.
 - PRE to weeds. Apply to soil before weeds germinate. If weeds have emerged, this product may be tank-mixed with a burndown herbicide (consult label for further instructions).
 - May be applied at anytime throughout the growing season when the ground is not frozen or snow covered.
 - Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and result in reduced weed control.
-
- Avoid spraying the green bark of trunks by wrapping the trunk with a nonporous wrap, grow tubes or wax containers. Also avoid spraying crop foliage and fruit.
 - Best results obtained when the soil is moist at the time of application and followed by at least 0.5 in. of rainfall or sprinkler irrigation 2 weeks after application.
 - **Do NOT** apply heavy irrigation immediately after application.
 - **Do NOT** apply using airblast sprayers or by air or using a mechanically pressurized handgun.
 - **Do NOT** tank mix with flumioxazin (CHATEAU) or other products containing sulfentrazone.

continued

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFEST/MAX. APPLICATIONS
Trade Name: CHATEAU WDG (51.1%) Product Rate/acre: 0.11-0.17 kg/acre Active Ingredient(s): flumioxazin (0.14-0.21 kg/ha)	Group #: 14 PCP #: 29231	REI: 12 hours PHI: 60 days Rainfast: moisture required for activation Max. Applications: 2
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 0.8-1.0 kg/acre Active Ingredient(s): simazine (1.80-2.25 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours Rainfast: moisture required for activation PHI: not stated Max. Applications: 1
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: SANDEA (72.6 WG) + non-ionic surfactant Product Rate/acre: 19-38 g/acre + 2.5 L/1,000 L Active Ingredient(s): halosulfuron (34-68 g/ha) + non-ionic surfactant (0.2% v/v)	Group #: 2 PCP #: 31209	REI: 12 hours PHI: 1 day Rainfast: 4 hours Max. Applications: 2
NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS		
Trade Name: IGNITE (150 g/L) Product Rate/acre: 1.08-2 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha)	Group #: 10 PCP #: 28532	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2
Trade Name: IGNITE (150 g/L) + PRINCEP NINE-T (90 WG) Product Rate/acre: 1.08-2 L/acre + 1-2 kg/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + simazine (1.8-4.5 kg/ha)	Group #: 10 + 5 PCP #: 28532 + 16370	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2
Trade Name: IGNITE (150 g/L) + SIMADDEX (500 g/L) Product Rate/acre: 1.08-2 L/acre + 1.8-3.6 L/acre Active Ingredient(s): glufosinate ammonium (0.405-0.75 kg/ha) + simazine (1.8-4.5 kg/ha)	Group #: 10 + 5 PCP #: 28532 + 15902	REI: 12 hours PHI: 40 days Rainfast: 4 hours Max. Applications: 2

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes *continued*****PRECAUTIONS - For more information, see the label.**

- Established plantings of at least 1 year **ONLY**.
- Apply the lower rate to coarse textured soil with less than 5% organic matter and apply the higher rate to medium textured soil with less than 5% organic matter.
- **Do NOT** apply within 100 m of non-dormant pears.
- Apply using ground application only.
- **Do NOT** apply after bud break unless using hooded or shielded equipment.
- Please review label for more detailed instructions.

- PRE - 1 application per year in the spring prior to weed emergence.
- Use **ONLY** on established trees of 2 years or more.
- Limited overhead irrigation to 1/2 inch after application.
- Use the low rate on sandy soil and the high rate on loam or clay soil or where grass weeds dominate.

POST-EMERGENCE BROADLEAF HERBICIDES

- Established plantings of at least 1 year **ONLY**.
- Apply as a single or sequential application, allow a minimum of 21 days between applications.
- **Do NOT** apply more than 56 g/acre per season.
- Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
- **Do NOT** contact green tissue such as foliage, fruit or green bark.

NON-SELECTIVE HERBICIDES AND TANK-MIX OPTIONS

- Established plantings **ONLY**.
- **Do NOT** apply more than 2.7 L/acre in one season.
- Avoid contact of IGNITE with green bark, stems or foliage as injury may occur to trees.
- Only trunks with callused, mature brown bark should be sprayed unless protected from spray contact by nonporous wraps, tree/bark guards, grow tubes or waxed containers.
- Apply before weeds reach a height of 12 in.

- Established plantings of filberts, hazelnuts and walnuts **ONLY**.
- To control emerged weeds plus residual control of annual grasses and broadleaf weeds.
- Use as a directed spray around the bases of established trees once a year.

- Established plantings of filberts, hazelnuts and walnuts **ONLY**.
- To control emerged weeds plus residual control of annual grasses and broadleaf weeds.
- Use as a directed spray around the bases of established trees once a year.

TABLE 4-2

Herbicide treatment rates for tree fruit, tree nuts and grapes

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/PHI/RAINFAST/MAX. APPLICATIONS
<p>Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L)</p> <p>Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre</p> <p>Active Ingredient(s): glyphosate (0.81-4.32 kg/ha)</p>	<p>Group #: 9</p> <p>PCP #: see label</p>	<p>REI: 12 hours</p> <p>PHI: 14 days</p> <p>Rainfast: 1 hour</p> <p>Max. Applications: not stated for filberts and hazelnuts / 2 for walnut, chestnut, Japanese chestnut</p>
<p>Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L)</p> <p>Product Rate/acre: 1 L/2 L water, 0.75 L/2 L water, 0.72 L/2 L water, 0.67 L/2 L water</p> <p>Active Ingredient(s): glyphosate (0.36 kg/2 L)</p>	<p>Group #: 9</p> <p>PCP #: see label</p>	<p>REI: 12 hours</p> <p>PHI: 14 days</p> <p>Rainfast: 1 hour</p> <p>Max. Applications: not stated for filberts and hazelnuts / 2 for walnut, chestnut, Japanese chestnut</p>
<p>Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L)</p> <p>Product Rate/acre: 1-2 L/100 L water, 0.75-1.5 L/100 L water, 0.72-1.44 L/100 L water, 0.67-1.34 L/100 L water</p> <p>Active Ingredient(s): glyphosate (0.36-0.72 kg/100 L)</p>	<p>Group #: 9</p> <p>PCP #: see label</p>	<p>REI: 12 hours</p> <p>PHI: 14 days</p> <p>Rainfast: 1 hour</p> <p>Max. Applications: not stated for filberts and hazelnuts / 2 for walnut, chestnut, Japanese chestnut</p>
<p>Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + ALION 200 SC (200 g/L)</p> <p>Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre + 0.152 L/acre</p> <p>Active Ingredient(s): glyphosate (0.81-4.32 kg/ha) + indaziflam (0.075 kg/ha)</p>	<p>Group #: 9 + 29</p> <p>PCP #: see label + 30451</p>	<p>REI: 12 hours</p> <p>PHI: 30 days</p> <p>Rainfast: 1 hour</p> <p>Max. Applications: 1</p>
<p>Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) + SANDEA (72.6 WG) + non-ionic surfactant</p> <p>Product Rate/acre: 0.9-4.8 L/acre, 0.68-3.6 L/acre, 0.65-3.5 L/acre, 0.6-3.2 L/acre + 19-38 g/acre + 2.5 L/1,000 L</p> <p>Active Ingredient(s): glyphosate (0.81-4.32 kg/ha)+ halosulfuron (34-68 g/ha) + non-ionic surfactant (0.25% v/v)</p>	<p>Group #: 9 + 2</p> <p>PCP #: see label + 31209</p>	<p>REI: 12 hours</p> <p>PHI: 14 days</p> <p>Rainfast: 4 hours</p> <p>Max. Applications: 1</p>

TABLE 4-2**Herbicide treatment rates for tree fruit, tree nuts and grapes****PRECAUTIONS - For more information, see the label.**

- Established plantings **ONLY**. See labels for registered nut trees.
- Use on actively growing weeds.
- Remove all suckers from base of trunks two weeks before application.
- **Do NOT** apply to trees with green bark in the area of application.
- **Do NOT** mow or till weeds for at least 5-7 days after application. Wait longer if cool.
- Repeat application to regrowth may be necessary for complete control.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings **ONLY**. See labels for registered nut trees.
- Apply with a rope wick or other similar device when weeds are at the optimum stage.
- Avoid contact with the leaves, trunks and suckers.
- **Do NOT** apply when weeds are wet.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings **ONLY**. See labels for registered nut trees.
- Use hand held sprayers as a spot treatment if wiper equipment is not available.
- Avoid contact with leaves, trunks and suckers.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings of at least 3 years **ONLY**.
- Apply **ONLY** to crops of filberts, hazelnuts, chestnuts, walnuts and Japanese heartnuts.
- **Do NOT** apply to trees with green bark in the area of application.
- Consult the label of the tank mix partner(s) for further instructions regarding product rates, directions for use, restrictions, personal protective equipment and precautions.
- Not all formulations are registered on all crops. See label for specific uses and rates.

- Established plantings **ONLY**.
- Use on chestnuts, filberts, hazelnuts, pecans, walnuts, beechnuts and butternuts **ONLY**.
- Use as a directed spray avoiding contact with trunk, stems, roots or foliage or severe damage or death may occur.
- Rains greater than 1 in. within 5-7 days of application may cause temporary yellowing and delay development of crop.
- **Do NOT** contact green tissue such as foliage, fruit or green bark.
- **Do NOT** mow or till weeds for at least 5-7 days after application.
- **Do NOT** apply to gravelly soils.
- Not all formulations are registered on all crops. See label for specific uses, rates, and further details.

5. Nursery and ornamental crops

TABLE 5-1

Nursery and ornamental herbicide weed control ratings

NOTES: Ratings are subjective values based on best available information and give general comparisons based on use as described in this guide. Under unfavourable conditions (e.g., too dry, too wet, too cold, or poor application) the herbicides may not be as effective as indicated. Ratings may vary with weed and crop stage and with the timing and rates of the product(s) being used. Please refer to product label for more information on registered weed species, product uses and precautions.

LEGEND: N = No Control P = Poor Control F = Fair Control G = Good Control E = Excellent Control
- = insufficient information available to make a rating

TRADE NAME	Annual Grasses					Annual Broadleaves							
	barnyard grass	crabgrass	fall panicum	foxtail	witchgrass	chickweed, common	fleabane, Canada	groundsel	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed
SOIL-APPLIED BROADLEAF HERBICIDES													
BROADSTAR	P	P	P	P	P	G	-	G	F	E	-	E	F
GALLERY	-	-	-	-	-	-	-	-	-	G	-	-	-
SUREGUARD	P	P	P	P	P	G	E	G	F	E	-	E	F
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES													
CASORON G-4	F	F	F	F	F	G	-	G	G	G	G	G	G
DACTHAL W-75	G	G	G	G	G	G	-	N	N	G	P	F	P
DEVRIKOL DF-XT	G	E	G	G	G	F	-	F	F	G	P	G	F
DUAL II MAGNUM	E	E	E	E	E	-	-	-	P	F	P	G ¹	P
ECOCLEAR	-	E	-	E	-	E	-	-	-	E	E	-	G
FRONTIER MAX	E	E	G	E	E	-	-	-	P	F	P	G ¹	-
KATANA 25WG	-	F	-	E	F	E	F	E	-	E	E	E	E
KERB SC	G	F	G	G	G	F	-	-	F	G	G	F	F
RONSTAR 2G	F	G	-	G	-	P	-	G	-	G	G	F	-
SIMADIX or SIMAZINE 480 or PRINCEP NINE-T	G	F	F	G	G	G	-	G	E	E	E	E	G
SPECTICLE FLO or SPECTICLE G	E	E	E	E	E	-	-	E	E	E	E	F	-
TREFLAN or BONANZA or RIVAL	E	E	G	G	G	F	-	P	P	G	P	G	P

continued

¹ Use the high rate of herbicide for optimum control.

² Not all formulations registered on all crops. See label for specific uses and rates.

³ Use higher rates for weeds larger than 6 in. tall or across.

TABLE 5-1**Nursery and ornamental herbicide weed control ratings** *continued*

TRADE NAME	Perennial Weeds																		
	bindweeds	brome grass	chickweed, mouse-eared	dandelion	grape, wild	ground-ivy (creeping charlie)	horsetail	mallow	milkweed	nutsedge	plantains	poison-ivy	quackgrass	sow-thistle	stinging nettle	thistle, Canada	toadflax, yellow	vetches	virginia creeper
SOIL-APPLIED BROADLEAF HERBICIDES																			
BROADSTAR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GALLERY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUREGUARD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES																			
CASORON G-4	F	P	F	F	P	F	G	-	-	F	F	-	F	F	-	F	-	F	-
DACTHAL W-75	-	-	G	F	-	-	-	-	-	N	N	-	N	-	-	-	-	-	-
DEVRIKOL DF-XT	P	G	-	P	-	-	P	-	P	F	-	-	P	P	-	P	-	P	-
DUAL II MAGNUM	-	N	-	-	-	-	-	-	-	G ¹	-	-	N	-	-	-	-	-	-
ECOCLEAR	-	-	E	F	-	-	-	-	-	F	-	F	-	-	-	F	F	-	-
FRONTIER MAX	N	N	-	-	-	-	-	-	-	G ¹	-	-	N	-	-	-	-	-	-
KATANA 25WG	-	-	E	E	-	-	-	E	-	G	-	-	-	F	-	-	-	-	-
KERB SC	-	G	-	-	-	-	P	-	F	F	-	-	F	-	-	F	-	-	-
RONSTAR 2G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SIMADEX or SIMAZINE 480 or PRINCEP NINE-T	P	G	-	P	-	-	P	-	N	F	-	-	F	P	-	P	-	N	-
SPECTICLE FLO or SPECTICLE G	E	-	E	F	-	-	-	-	-	-	-	-	-	-	-	-	-	G	-
TREFLAN or BONANZA or RIVAL	P	-	F	-	-	-	P	-	P	P	-	-	P	P	-	P	-	P	-

continued

TABLE 5-1**Nursery and ornamental herbicide weed control ratings**

LEGEND: **N** = No Control **P** = Poor Control **F** = Fair Control **G** = Good Control **E** = Excellent Control
 - = insufficient information available to make a rating

TRADE NAME	Annual Grasses					Annual Broadleaves							
	barnyard grass	crabgrass	fall panicum	foxtail	witchgrass	chickweed, common	fleabane, Canada	groundsel	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed
POST-EMERGENCE GRASS HERBICIDES													
VENTURE L	G	G	G	G	E	N	N	N	N	N	N	N	N
POST-EMERGENCE BROADLEAF HERBICIDES													
LONTREL 360 or LONTREL XC	-	-	-	-	-	P	-	-	P	P	P	P	G
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES													
GLYPHOSATE ²	E	E	E	E	E	E	E ²	E	E	E	E	E	E
KATANA 25WG	-	F	-	E	F	E	E	E	-	E	E	E	E

¹ Use the high rate of herbicide for optimum control.

² Not all formulations registered on all crops. See label for specific uses and rates.

³ Use higher rates for weeds larger than 6 in. tall or across.

TABLE 5-1**Nursery and ornamental herbicide weed control ratings**

TRADE NAME	Perennial Weeds																		
	bindweeds	brome grass	chickweed, mouse-eared	dandelion	grape, wild	ground-ivy (creeping charlie)	horsetail	mallow	milkweed	nutsedge	plantains	poison-ivy	quackgrass	sow-thistle	stinging nettle	thistle, Canada	toadflax, yellow	vetches	virginia creeper
POST-EMERGENCE GRASS HERBICIDES																			
VENTURE L	-	G	P	P	P	P	-	P	-	-	P	P	G	-	P	-	P	P	P
POST-EMERGENCE BROADLEAF HERBICIDES																			
LONTREL 360 or LONTREL XC	-	-	-	P	-	-	-	-	-	-	-	-	-	G	-	G		E	-
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES																			
GLYPHOSATE ²	G	G	E	G ³	G	P	P	P	E	G ³	E	E	E	E	P	E	-	P ³	G
KATANA 25WG	-	-	E	E	-	-	-	E	-	G	-	-	-	F	-	-	-	-	-

To convert kg/ha or L/ha to g/100 m² or mL/100 m² - Multiply by 10 and change units.

To convert kg/acre or L/acre to kg/ha or L/ha - Multiply by 2.5 and change units.

For example:

- 11 kg/ha becomes 110 g/100 m²
- 28.4 L/ha becomes 284 mL/100 m²

Cultural weed control in nursery and ornamental crops

PRE-PLANT INCORPORATED (PPI)

Two incorporations at right angles operating at a depth of 4 in. using a double disk (7-10 km/h) or vibrating shank S-tine cultivator (10-13 km/h) are required unless otherwise stated. Cultivation-type equipment used for herbicide incorporation is known to spread perennial weeds to previously uninfested areas. Special attention should be directed toward machinery cleanliness, and/or treating fields with perennial weeds last.

PRE-EMERGENCE (PRE)

Rainfall of 0.6-0.8 in. within 7-10 days after application is necessary to activate pre-emergence treatments. Shallow cultivation, rotary hoeing or harrowing will control weed escapes and improve herbicide activity in the absence of rainfall.

POST-EMERGENCE

Leaf stage of the weeds is critical for good weed control. Smaller weeds are generally easier to kill but there needs to be enough leaf surface to intercept the herbicide. Apply according to leaf stages specified on pesticide label. Crop stage is important to optimize crop safety. Adjuvants will frequently improve the weed control when used as directed. Weather or other conditions may influence the optimum rate of adjuvant, see the product label for more details. Always use appropriate drift management technology.

WATER VOLUMES

All herbicide treatments should be applied in a minimum of 60-120 L/acre unless otherwise specified on the label.

Warning - Refer to manufacturer's instructions for waiting period required after planting.

Warning - Certain species may be injured by the herbicides mentioned in this Chapter. Check manufacturer's directions for labeled species before use.

The ONnurserycrops blog provides the latest information on nursery and ornamental crops. Visit ONnurserycrops at www.onnurserycrops.wordpress.com.

TABLE 5-2

Herbicide treatment rates for nursery and ornamental crops

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFEST/MAX. APPLICATIONS
DRIVEWAYS, PATIOS AND PATHS		
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: ECOCLEAR (25%) Product Rate/acre: 1 L/3.0-2.25 L Active Ingredient(s): acetic acid (33-40% solution)	Group #: N/A PCP #: 25528	REI: 12 hours Rainfast: 1 hour Max. Applications: 2 or more
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (450 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.3-4.8 L/acre, 0.24-3.84 L/acre, 0.22-3.6 L/acre, 0.22-3.5 L/acre, 0.27-3.2 L/acre Active Ingredient(s): glyphosate (0.27-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours Rainfast: 1 hour Max Applications: not stated
Trade Name: KONA + surfactant (XA OIL CONCENTRATE or KORIL CONCENTRATE or ASSIST OIL) Product Rate/acre: Broadcast: 25% KONA, 3% surfactant, 72% water Active Ingredient(s): citric acid (19.71 g/L) or lactic acid (17.69 g/L) + surfactant	Group #: N/A PCP #: 29603	REI: 12 hours Rainfast: not stated Max Applications: 5 or more
Trade Name: KONA + surfactant (XA OIL CONCENTRATE or KORIL CONCENTRATE or ASSIST OIL) Product Rate/acre: Spot: 50% KONA, 3% surfactant, 47% water Active Ingredient(s): citric acid (19.71 g/L) or lactic acid (17.69 g/L) + surfactant	Group #: N/A PCP #: 29603	REI: 12 hours Rainfast: not stated Max. Applications: 5 or more
Trade Name: MUNGER HORTICULTURAL VINEGAR PLUS Product Rate/acre: 1 L of product in 3 L of water Active Ingredient(s): citric acid (20%)	Group #: N/A PCP #: 29405	REI: 12 hours Rainfast: 1 hour Max. Applications: 2 or more

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued***PRECAUTIONS** - For more information, see the label.**DRIVEWAYS, PATIOS AND PATHS****POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES**

- Apply to young, actively growing weeds when temperature is above 15°C.
- Complete coverage is necessary to achieve control.
- Use the low rate for annual weeds that are small (3-5-leaf).
- Use the high rate for larger annual weeds and perennial weeds.
- Weeds that are near maturity, flowering, dormant or hardened due to drought or temperature stress are more tolerant to ECOCLEAR treatments and may not be adequately controlled with a single application.
- A repeat application is effective for extended control of perennial weeds following initial burn down.

- **Do NOT** spray to the point of run-off.
- **Do NOT** allow spray drift to contact desirable vegetation as severe injury or destruction may occur.
- **ONLY** weeds emerged and actively growing at application will be controlled. Additional weed control programs will be necessary to control weeds germinating later.
- Repeat application to regrowth may be necessary for complete control.
- Not all formulations are registered. See label for specific uses and rates.

- **Do NOT** apply to newly seeded grasses as severe injury may result.
- Application can start in May or later. To provide consistent partial suppression of weeds repeat application every 14 days for at least 5 applications in a season.
- Chlorosis to turf may be observed following application, but turf normally recovers in 3 weeks.
- Avoid spraying over desirable plants, fruits and vegetables.

- **Do NOT** apply to newly seeded grasses as severe injury may result.
- Application can start in May or later. To provide consistent partial suppression of weeds repeat application every 14 days for at least 5 applications in a season.
- Chlorosis to turf may be observed following application, but turf normally recovers in 3 weeks.
- Avoid spraying over desirable plants, fruits and vegetables.

- Best results are achieved from spring and early summer applications to actively growing weeds.
- Degree of control depends on several factors, including size and stage of weeds.
- Apply on a mostly sunny day with temperatures at or above 21°C.
- Small annual weeds may be completely controlled with a single application. Use 1 L of product in 3 L of water when weeds are small (3-5-leaf) and actively growing. Control of larger, more established weeds, not completely desiccated with 1 application may be short-term and require re-treatment. Use 1 L of product in 2.25 L of water for larger annual weeds and suppression of perennials.
- Complete coverage of undesirable vegetation is necessary to achieve control. **ONLY** contacted vegetation will be affected.
- Rainfall within 1 hour of application will reduce degree of control.
- Avoid spraying over desirable plants, fruits and vegetables.

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

HERBACEOUS ORNAMENTALS		
TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFEST/MAX. APPLICATIONS
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 6.8 kg/acre Active Ingredient(s): chlorthal dimethyl (12.75 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: FRONTIER MAX (720 g/L) Product Rate/acre: 305-390 mL/acre Active Ingredient(s): dimethenamid-p (544-693 g/ha)	Group #: 15 PCP #: 29194	REI: 24 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PROWL H2O (455 g/L) Product Rate/acre: 1.5 L/acre Active Ingredient(s): pendimethalin (1.68 kg/ha)	Group #: 3 PCP #: 29542	REI: 24 hours Rainfast: moisture required for activation Max. Applications: not stated

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued***HERBACEOUS ORNAMENTALS****PRECAUTIONS - For more information, see the label.****SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- Apply at lining out, late fall or early spring.
 - Applications should be made to soil recently cultivated to a uniform texture.
 - Rain or irrigation (0.4 in.) is needed to activate this herbicide.
 - **Do NOT** use on germander, telanthera, *Ajuga*, *Mesembryanthemum*, *Dianthus*, *Viola*, *Phlox* and *Vinca minor*.
-
- Apply PRE or early POST.
 - To avoid plant injury, **Do NOT** apply DUAL II MAGNUM to seedbeds, cutting beds, or uprooted cuttings before transplanting or to plants until the soil is settled around their roots.
 - After applying onto foliage, irrigate plant to wash off DUAL II MAGNUM and reduce plant injury.
 - **Do NOT** apply to crop that will bear harvestable fruit within 1 year to avoid residues.
 - **Do NOT** apply in residential areas.
-
- **Do NOT** apply during spring growth of conifers or injury to terminals may occur.
 - **Do NOT** treat plants grown for food or feed.
 - **Do NOT** make over the top applications.
 - **Do NOT** apply during bud swell, bud break or at time of first flush of new growth. If newly budded or grafted rootstock, make an application using a shielded sprayer. Care must be taken to ensure there are no cracks in the soil where FRONTIER MAX could come in contact with the roots.
-
- **Do NOT** apply to newly-transplanted ornamentals and conifers until plants have been watered and soil has been thoroughly packed and settled around roots.
 - **Do NOT** make over-the-top applications.
 - **Do NOT** treat plants grown for food or feed.
 - Rainfall or irrigation required within 7 days of application.
 - Unusually cold, excessively wet, or hot and dry conditions that delay weed germination or extend weed germination over a long period of time can reduce weed control.
 - Avoid unintentional contact of spray solution with stone, wood, or other porous surfaces as staining may occur. Rinse surfaces immediately using a heavy spray of water to avoid staining.
 - See label for tolerant species.

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFEST/MAX. APPLICATIONS
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.92 L/acre Active Ingredient(s): trifluralin (0.6-1.155 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 3 PCP #: 21209	REI: 12 hours Rainfast: 2 hours Max. Applications: not stated
SEEDBEDS AND POTTING SOIL		
SOIL-APPLIED FUMIGANTS		
Trade Name: BASAMID (97% Granular) Product Rate/acre: 130-204 kg/acre Active Ingredient(s): dazomet (319-500 kg/ha)	Group #: 27 PCP #: 15032	REI: see label Rainfast: not stated Max. Applications: 1
Trade Name: VAPAM (380 g/L) Product Rate/acre: 10 L/100 m ² in 800 L water Active Ingredient(s): metam sodium (3.8 kg/100 m ²)	Group #: 27 PCP #: 29128	REI: see label Rainfast: not stated Max. Applications: 1
SHELTERBELTS (WINDBREAKS) ESTABLISHED		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7.0 kg/ha)	Group #: 20 PCP #: 12533	REI: 24 hours Rainfast: not stated Max. Applications: 1

continued

TABLE 5-2

Herbicide treatment rates for nursery and ornamental crops *continued***PRECAUTIONS - For more information, see the label.**

- PPI - Must be incorporated before transplanting.
- **Do NOT** use for seeded annuals.
- Check the label for list of tolerant species.
- Check the label for application rate as it varies with soil type.
- Incorporate immediately after application and before planting.
- Application and incorporation can be made 3 weeks prior to and up until planting.

POST-EMERGENCE GRASS HERBICIDES

- For *Campanula* and *Sedum*- direct spray **ONLY** to avoid contact with crop.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Many species are tolerant in field production only. Consult the label for list of tolerant species.

SEEDBEDS AND POTTING SOIL**SOIL-APPLIED FUMIGANTS**

- **Do NOT** use below 6°C.
- Incorporate to a depth of 6-8 in.
- Refer to manufacturer's directions for specific details as well as direction on sealing soil, evacuating gases and performing the safety germination test.
- Apply as a drench to soil that should be wet to a depth of at least 3 in.
- **Do NOT** plant for 10-14 days or longer if the weather is cool.
- Cultivate soil 1 week before application.
- After cultivating, keep soil moist until application and for 24 hours after application.

SHELTERBELTS (WINDBREAKS) ESTABLISHED**SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- PRE - Apply in early spring or late fall.
- Use the lower rate for spring application.
- Use the high rate of 70 kg/acre **ONLY** every other year.
- Tolerant species include cedar, linden, maple, willow, *Caragana* and ash. Reduce rates on lighter soils.

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFAST/MAX. APPLICATIONS
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 6.8 kg/acre Active Ingredient(s): chlorthal dimethyl (12.75 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 1.79 kg/acre Active Ingredient(s): simazine (4.0-6.72 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SIMAZINE 480 (480 g/L) Product Rate/acre: 3.76-5.6 L/acre Active Ingredient(s): simazine (4.0-6.72 kg/ha)	Group #: 5 PCP #: 23181	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: TREFLAN EC (480 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.5-0.96 L/acre Active Ingredient(s): trifluralin (0.6-1.155 kg/ha)	Group #: 3 PCP #: 23933 or 28289	REI: 12 hours Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours Rainfast: 2 hours Max. Applications: not stated
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (450 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.3-4.8 L/acre, 0.24-3.84 L/acre, 0.22-3.6 L/acre, 0.22-3.5 L/acre, 0.27-3.2 L/acre Active Ingredient(s): glyphosate (0.27-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours Rainfast: 1 hour Max. Applications: not stated

TABLE 5-2

Herbicide treatment rates for nursery and ornamental crops *continued***PRECAUTIONS - For more information, see the label.**

- Apply at lining out, late fall or early spring.
 - Applications should be made to soil recently cultivated to a uniform texture.
 - Rain or irrigation (0.4 in.) is needed to activate this herbicide.
- PRE - Apply in the fall or spring prior to weed emergence or after emerged weeds have been removed.
 - Windbreak species must be established for at least 1 year. Tolerant species include cedar, spruce, black walnut, white ash, green ash, elm, boxelder, maple and *Caragana*.
 - Check label for species which will tolerate higher rates of simazine. Apply before bud break in spring.
 - Use the low rate for sandy soils or low organic matter soils.
 - Injury may occur with trees grown in saline soils.
- PPI - Apply as a directed spray to the soil surface around the trees or shrubs.
 - Incorporate as closely as possible to the trees and shrubs without causing damage to their roots.
 - Apply highest rate (5.6 L/acre) to clay soils.
- PPI - Apply as a directed spray to the soil surface around the trees or shrubs.
 - Incorporate as closely as possible to the trees and shrubs without causing damage to their roots.
 - Apply highest rate (0.96 L/acre) to clay soils.

POST-EMERGENCE GRASS HERBICIDES

- Apply POST to actively growing grasses before tillering.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES

- For actively growing weeds in the fall, or spring prior to emergence of any crop.
- Allow 5-7 days translocation time after application before doing any tillage when conditions are good. If cool temperatures follow application, allow additional time for translocation to be completed before disturbing treated weeds.
- **ONLY** weeds emerged at application time will be controlled. Additional weed control programs will be necessary to control weeds germinating later.
- Repeat application to regrowth may be necessary for complete control.
- Not all formulations are registered on all crops. See label for specific uses and rates.

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops *continued***

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFEST/MAX. APPLICATIONS
SHELTERBELTS (WINDBREAKS) TRANSPLANTED		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) or BONANZA 480 (480 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.6-1.155 kg/ha)	Group #: 3 PCP #: 23933 or 18612 or 28289	REI: 12 hours Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours Rainfast: 2 hours Max. Applications: not stated
WOODY NURSERY STOCK - FIELD GROWN		
Mechanical weed control such as cultivation and hand hoeing will provide weed control in sensitive species as well as provide control of weed escapes. Cultivators are available which will work in between trees and in the row.		
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: SUREGUARD (51.1%) Product Rate/acre: 112-168 g/acre Active Ingredient(s): flumioxazin (143-214 g/ha)	Group #: 14 PCP #: 29236	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 2
Trade Name: GALLERY (75 DF) Product Rate/acre: 0.4 kg/acre Active Ingredient(s): isoxaben (0.75 kg/ha)	Group #: 21 PCP #: 24110	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued***PRECAUTIONS - For more information, see the label.****SHELTERBELTS (WINDBREAKS) TRANSPLANTED****SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES**

- PPI – Apply after cultivation, and incorporate after application.
- Transplant the trees or shrubs so that most of their root system is placed below the treated layer of soil.
- Apply highest rate (0.96 L/acre) to clay soils.
- Apply and incorporate from 3 weeks prior to planting up until planting.

POST-EMERGENCE GRASS HERBICIDES

- Apply to actively growing grasses prior to tillering.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.

WOODY NURSERY STOCK – FIELD GROWN**SOIL-APPLIED BROADLEAF HERBICIDES**

- For control in field-grown ornamental deciduous and coniferous trees, including Christmas trees and trees produced for reforestation.
- Tolerant species include: *Abies balsamea*, *Abies fraseri*, *Acer ginnala*, *Fraxinus pennsylvanica*, *Picea pungens*, *Pseudotsuga menziesii*, *Syringa reticulata* and *Thuja occidentalis*.
- For post-emergence, apply the higher rate. Consult the product label.
- **Do NOT** apply to fine-textured soils.
- Application should be made to tilled, weed-free deciduous tree plantings.
- **ONLY** apply to healthy established trees.
- **Do NOT** incorporate into soil after application.
- **Do NOT** apply to moist or wet plant foliage.
- May be used to maintain bare-ground non-crop areas in and around ornamental nurseries and field-grown ornamentals.
- Wait a minimum of 8 weeks before reapplying.

- PRE – For use in bareroot and container conifer seedlings.
- Apply prior to weed emergence in conifers, four or more weeks after crop germination and emergence.
- Rainfall or irrigation is needed to activate the herbicide.

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFEST/MAX. APPLICATIONS
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7.0 kg/ha)	Group #: 20 PCP #: 12533	REI: 24 hours Rainfast: not stated Max. Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 6.8 kg/acre Active Ingredient(s): chlorthal dimethyl (12.75 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DEVRINOL DF-XT (50 DF-XT) Product Rate/acre: 3.6 kg/acre Active Ingredient(s): napropamide (4.5 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DUAL II MAGNUM (915 g/L) Product Rate/acre: 0.5-0.7 L/acre Active Ingredient(s): s-metolachlor (1.14-1.60 kg/ha)	Group #: 15 PCP #: 25729	REI: 12 hours Rainfast: moisture required for activation Max Applications: 1
Trade Name: FRONTIER MAX (720 g/L) Product Rate/acre: 305-390 mL/acre Active Ingredient(s): dimethenamid-p (544-693 g/ha)	Group #: 15 PCP #: 29194	REI: 24 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: KATANA (25 WG) Product Rate/acre: 60-80 g/acre Active Ingredient(s): flazasulfuron (37.5-50 g/ha)	Group #: 2 PCP #: 33129	REI: 12 hours Rainfast: moisture required for activation Max Applications: 1

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

PRECAUTIONS - For more information, see the label.
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • PRE – Apply in late fall or early spring. • Use lower rate for spring application. • Do NOT apply until 4 weeks after transplanting second year stock. • Reduce rate on lighter soil.
<ul style="list-style-type: none"> • Apply at lining out, late fall or early spring. • Applications should be made to soil recently cultivated to a uniform texture. • Rain or Irrigation (0.4 in.) is needed to activate this herbicide.
<ul style="list-style-type: none"> • PPI – Apply any time of the year to a clean cultivated soil surface or before weeds germinate. • This herbicide must reach the zone of weed germination, either by mechanical incorporation or by adequate irrigation or precipitation. • Shallow incorporation to a chemical depth of 1-2 in. or an irrigation with sufficient water to wet the soil to depth of 2-4 in. should occur within 7 days of a spring or fall application and within 2 days of a summer application. • Fall applications will control weeds the following spring and summer. • Caution - Residues high enough to harm many crops may persist after repeated applications in perennial crops.
<ul style="list-style-type: none"> • PRE – Apply to soil prior to bud break of nursery stock. • Do NOT apply within 4 weeks of bud burst or until the needles have hardened. • For use on poplar stoolbeds, white spruce, Norway spruce, black spruce, white pine, jack pine and red pine seedlings in their second year or older. • May have postemergent properties if applied to weeds before they reach the 2-leaf stage.
<ul style="list-style-type: none"> • Do NOT apply during spring growth of conifers or injury to terminals may occur. • Do NOT treat plants grown for food or feed. • Do NOT make over the top applications. • Do NOT apply during bud swell, bud break or at time of first flush of new growth. If newly budded or grafted rootstock, make an application using a shielded sprayer. Care must be taken to ensure there are no cracks in the soil where FRONTIER MAX could come in contact with the roots.
<ul style="list-style-type: none"> • Do NOT apply to conifer trees within 1 year of seeding. • Make a uniform application to the soil surface in 150-450 L/ha of water. • Soil surfaces should be clean from crop residue and weed-free at the time of application. If weeds, weed residue or crop residue is present, these should be removed by light mechanical incorporation or other means. • Do NOT disturb the soil after application. • If rainfall does not occur within 2 weeks after the preemergence application, then 0.2-0.5 in. of irrigation water should be applied. Do NOT apply more than 1 in. of irrigation water.

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFAST/MAX. APPLICATIONS
Trade Name: KERB SC (400 g/L) Product Rate/acre: 1.48 L/acre Active Ingredient(s): propyzamide (1.48 kg/ha)	Group #: 15 PCP #: 30264	REI: 24 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 1.0-1.5 kg/acre Active Ingredient(s): simazine (2.25-6.75 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: SIMADEX (500 g/L) Product Rate/acre: 1.44-5.4 kg/acre Active Ingredient(s): simazine (2.25-6.75 kg/ha)	Group #: 5 PCP #: 15902	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PROWL H2O (455 g/L) Product Rate/acre: 1.5 L/acre Active Ingredient(s): pendimethalin (1.68 kg/ha)	Group #: 3 PCP #: 29542	REI: 24 hours Rainfast: moisture required for activation Max. Applications: not stated
Trade Name: SPECTICLE FLO (75 g/L) Product Rate/acre: 0.4 L/acre Active Ingredient(s): indaziflam (0.075 kg/ha)	Group #: 29 PCP #: 32803	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued***PRECAUTIONS - For more information, see the label.**

- PRE – Apply in the late fall when the soil temperature is low but above freezing.
 - Soil moisture should be high.
 - This herbicide is absorbed through the roots.
 - Apply KERB SC at a rate of 37 mL/100 m².
 - **Do NOT** allow treated areas to drain onto turf grass (except for removal).
- PRE – Apply before weeds emerge in established plantings only.
 - **Do NOT** replant nursery stock into treated soil after stock is removed.
 - **Do NOT** use around ornamental shrubs if ground cover or bedding plants will be planted.
 - Caution – Residues high enough to harm many crops may persist after repeated applications.
 - Use the low application rate of simazine on sandy or low organic matter soils.
- PRE – Apply before weeds emerge in established plantings only.
 - **Do NOT** replant nursery stock into treated soil after stock is removed.
 - **Do NOT** use around ornamental shrubs if ground cover or bedding plants will be planted.
 - Caution – Residues high enough to harm many crops may persist after repeated applications.
 - Use the low application rate of simazine on sandy or low organic matter soils.
- **Do NOT** apply to newly-transplanted ornamentals and conifers until plants have been watered and soil has been thoroughly packed and settled around roots.
 - **Do NOT** make over-the-top applications.
 - **Do NOT** treat plants grown for food or feed.
 - Rainfall or irrigation is required within 7 days of application.
 - Unusually cold, excessively wet, or hot and dry conditions that delay weed germination or extend weed germination over a long period of time can reduce weed control.
 - Avoid unintentional contact of spray solution with stone, wood, or other porous surfaces as staining may occur. Rinse surfaces immediately using a heavy spray of water to avoid staining.
 - See label for tolerant species.
- PRE – Apply as a directed spray only to established (rooted) plants and not to newly rooted cuttings or seedlings.
 - Make applications prior to mulching for best weed control. Herbicide efficacy may be reduced if soil is disturbed after application.
 - Herbaceous annuals and perennials are sensitive to SPECTICLE FLO. **ONLY** apply to ornamentals listed on the label.
 - **Do NOT** exceed a single application rate of 0.4 L/acre in a 12-month period.
 - **Do NOT** allow spray to contact foliage. SPECTICLE FLO may cause localized injury to the foliage, especially young leaf tissue. Remove affected foliage or wash off immediately.
 - **Do NOT** use around bearing fruit and nut trees.
 - **Do NOT** use on soils exceeding 80% sand or 20% gravel which may allow for downward movement of SPECTICLE FLO into the root zone and cause significant root damage and phytotoxicity.
 - See label for further use restrictions.

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFAST/MAX. APPLICATIONS
Trade Name: TREFLAN EC (480 g/L) or RIVAL EC (500 g/L) Product Rate/acre: 0.48-0.96 L/acre Active Ingredient(s): trifluralin (0.60-1.155 kg/ha)	Group #: 3 PCP #: 23933 or 18612	REI: 12 hours Rainfast: not stated Max. Applications: 1
POST-EMERGENCE GRASS HERBICIDES		
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours Rainfast: 2 hours Max. Applications: not stated
POST-EMERGENCE BROADLEAF HERBICIDES		
Trade Name: GOAL 2XL (240 g/L) Product Rate/acre: 0.2-0.4 L/acre Active Ingredient(s): oxyfluorfen (0.12-0.24 kg/ha)	Group #: 14 PCP #: 24913	REI: 48 hours Rainfast: 3 hours Max. Applications: 2 at the high rate
POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: 2,4-D AMINE (470 g/L) + GLYFOS (360 g/L) Product Rate/acre: 0.4 L/acre + 0.4 L/acre Active Ingredient(s): 2,4-D (0.470 kg/ha) + glyphosate (0.360 kg/ha)	Group #: 4, 9 PCP #: 28271 + 24359	REI: 12 hours Rainfast: 24 hours Max. Applications: 1

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued***PRECAUTIONS - For more information, see the label.**

- PPI – Apply after cultivation, and incorporate after application.
- Transplant the trees or shrubs so that most of their root system is placed below the treated layer of soil.
- Apply highest rate (0.96 L/acre) to clay soils.
- Apply and incorporate from 3 weeks prior to planting up until planting.

POST-EMERGENCE GRASS HERBICIDES

- Apply POST to actively growing grasses before tillering.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Thorough preplant tillage, fragmenting quackgrass rhizomes improves control.
- **Do NOT** cultivate between rows until 5 days after application.
- Consult the label for list of tolerant and sensitive species. Use as a directed application in sensitive species to avoid contact with leaves and green tissue. Some blue junipers (e.g., Bar Harbour, Blue Acres and Blue Rug) can be injured by over-the-top applications.
- Caution – There are differences between cultivars in sensitivity to VENTURE L (e.g., *Juniperus horizontalis* Blue Acres is sensitive while *Juniperus horizontalis* Plumosa Compacta is tolerant).
- Test on samples of each cultivar not specifically listed on the label before using the herbicide or use as a directed application.

POST-EMERGENCE BROADLEAF HERBICIDES

- GOAL 2XL has been tested on balsam fir, Fraser fir, white pine and white spruce. GOAL 2XL may be applied to other non-listed conifer species, however, non-listed conifer species may vary in tolerance. First use of GOAL 2XL to any non-listed conifer species should be limited to a small area of each variety to confirm tolerance prior to adoption as a general field practice.
- Repeat applications if necessary.
- **Do NOT** apply to trees under stress.
- Some temporary needle burn may occur.
- **Do NOT** apply more than 0.8 L/acre a year.

POST-EMERGENCE GRASS AND BROADLEAF HERBICIDES

- Ground directed spray to balsam fir and Fraser fir **ONLY**.
- Trees must be at least 1.2 m high and spray should not touch the branches.
- Not all formulations are registered on all crops. See label for specific uses and rates.

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFAST/MAX. APPLICATIONS
Trade Name: AMITROL 240 (231 g/L) Product Rate/acre: 0.68-1.2 L/acre Active Ingredient(s): amitrole (0.39-0.69 kg/ha)	Group #: 11 PCP #: 25684	REI: 12 hours field entry, 4 days post application activities Rainfast: not stated Max. Applications: 2
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (450 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.30-4.80 L/acre, 0.24-3.84 L/acre, 0.22-3.60 L/acre, 0.22-3.50 L/acre, 0.27-3.20 L/acre Active Ingredient(s): glyphosate (0.27-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours Rainfast: 1 hour Max. Applications: not stated
Trade Name: KATANA (25 WG) + non-ionic surfactant Product Rate/acre: 60-80 g/acre + 2.5 L/1,000 L Active Ingredient(s): flazasulfuron (37.5-50 g/ha) + non-ionic surfactant (0.25% v/v)	Group #: 2 PCP #: 33129	REI: 12 hours Rainfast: not specified Max Applications: 1
Trade Name: LONTREL 360 (360 g/L) or LONTREL XC (600 g/L) Product Rate/acre: 0.17-0.23 or 0.1-0.14 L/acre Active Ingredient(s): clopyralid (0.15-0.2 kg/ha)	Group #: 4 PCP #: 23545 or 32795	REI: 12 hours Rainfast: 4 hours Max. Applications: 1

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued***PRECAUTIONS - For more information, see the label.**

- To be applied **ONLY** on spruce (*Picea spp.*).
 - Apply postemergence to actively growing plants, good coverage is essential.
 - If weeds are mature, it is advisable to cut them and then spray the re-growth.
 - **Do NOT** disturb treated plants for 2 weeks after application.
 - **Do NOT** make postharvest applications after October 1.
 - To control quackgrass and Canada thistle, apply in the spring or fall to actively growing plants that are 6-8 in. tall. Wait 10-14 days and then plough or disk.
 - Avoid application to the crop during periods of rapid shoot elongation in the spring.
 - Applications can be made in the first year (0.68 L/acre) in either seedbed or transplants, but only after the seedlings have set bud.
 - The rate may be increased to 1.2 L/acre for actively growing seedlings or transplant bareroot spruce beyond the first year.
-
- For actively growing weeds in the fall, or spring prior to emergence of any crop.
 - Allow 5-7 days translocation time after application before doing any tillage when conditions are good. If cool temperatures follow application, allow additional time for translocation to be completed before disturbing treated weeds.
 - **ONLY** weeds emerged at application will be controlled. Additional weed control programs will be necessary to control weeds germinating later.
 - Repeat application to regrowth may be necessary for complete control.
 - Not all formulations are registered on all crops. See label for specific uses and rates.
-
- **Do NOT** apply to conifer trees within 1 year of seeding.
 - KATANA may be applied over-the-top to conifers prior to spring bud break or when conifers are sufficiently hardened off. Some needle burn may be seen on a new flush if plants are actively growing at the time of application but typically there is no effect on subsequent growth. Directed applications are preferred and recommended to reduce phytotoxicity potential.
 - **Do NOT** disturb the soil after application.
 - Rates listed are for broadcast application. If making a banded application, see the banded application section of the label for calculating appropriate use rate.
 - Higher rate is for larger weeds and heavier infestations.
 - This product can be tank-mixed with glyphosate, as well as, residual herbicides that are labelled for use in conifer trees.
-
- For control of vetch. For best results, apply when vetch stems are 4-6 in. long and before vetch climbs into the tree crown.
 - Apply as a direct foliar application.
 - Apply the lower rate for balsam fir Christmas trees.
 - Avoid contacting the upper two thirds of the tree crown.
 - **Do NOT** use on seedbeds or transplants.

continued

TABLE 5-2

Herbicide treatment rates for nursery and ornamental crops *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFEST/MAX. APPLICATIONS
WOODY NURSERY STOCK - CONTAINER BEDS		
CULTURAL WEED CONTROL - A successful weed control program must integrate cultural and chemical weed control practices. Prepare the container bed area with a gravel layer and/or ground covers such as black plastic or opaque woven material. It is important that these surface covers exclude light in order to be effective in preventing weed seed germination. These ground covers can be used for a number of years before being replaced. Keep the container beds and roadways free of weeds by physical removal or chemical mowing. Prevent weeds from setting seed in adjacent uncropped areas by using cultural or chemical weed control measures. Mowing at regular intervals will prevent many weeds from flowering. Try to control weed escapes before they set seed by cultural removal or chemical mowing. In some situations, such as along fences, tools such as a weed whip may be useful. Look for the source of weeds that disseminate into container areas such as poplars, willows, willowherb and Canada fleabane. Control weeds around irrigation ponds so that small seeded weeds are not being sown into container stock with each watering. A vigorous grassed bank will help reduce weed infestations as well as providing bank stabilization. A filtering system in the irrigation line will remove weed seeds.		
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CASORON G-4 (4%) Product Rate/acre: 44-70 kg/acre Active Ingredient(s): dichlobenil (4.4-7.0 kg/ha)	Group #: 20 PCP #: 12533	REI: 24 hours Rainfast: not stated Max. Applications: 1
Trade Name: KATANA (25 WG) Product Rate/acre: 60-80 g/acre Active Ingredient(s): flazasulfuron (37.5-50 g/ha)	Group #: 2 PCP #: 33129	REI: 12 hours Rainfast: moisture required for activation Max Applications: 1
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 6.8 kg/acre Active Ingredient(s): chlorthal dimethyl (12.75 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 5-2

Herbicide treatment rates for nursery and ornamental crops *continued*

PRECAUTIONS - For more information, see the label.

WOODY NURSERY STOCK - CONTAINER BEDS

Removal of existing weeds from container stock before they flower must be a priority job. Once a weed flowers it can disseminate hundreds of seeds by wind or by catapulting seeds. Many container weed species have several generations per year because their seeds do not need to overwinter before germinating. Remove and discard all pulled weeds well away from the growing area so that seeds are not disseminated into nearby containers. Since many species of container weeds overwinter in the protected environment of a polyhouse, it is important to thoroughly weed container stock in the fall. Be sure to remove the rosettes of winter annuals such as shepherd's-purse and Canada fleabane and established plants and seedlings of common and mouse-eared chickweed. If not removed, these plants will be flowering by May or earlier.

WARNING: Refer to manufacturer's instructions for waiting period required after planting.

WARNING: Certain types of woody nursery stock may be injured by the following herbicides. Check manufacturer's directions for labeled species/cultivars before use.

SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES

- PRE – Apply to bare soil before putting container pots on beds.
 - Apply in spring when temperatures are cool and incorporate immediately with irrigation or mechanical incorporation.
 - For the best results, apply to soil with more than 2% organic matter content.
 - Use on gravel or sandy soils may result in inconsistent weed control.
 - **Do NOT** cover polyhouses with plastic within 1 month after application.
 - **Do NOT** apply within plastic covered polyhouses or within greenhouse structures.
 - Refer to label for tolerant species.
 - **Do NOT** transplant into treated soil for 1 year.
-
- **Do NOT** apply to conifer trees within 1 year of seeding
 - Make a uniform application to the soil surface in 150-450 L/ha of water
 - Soil surfaces should be clean from crop residue and weed-free at the time of application. If weeds, weed residue or crop residue is present, these should be removed by light mechanical incorporation or other means.
 - **Do NOT** disturb the soil after application.
 - If rainfall does not occur within 2 weeks after the preemergence application, then 0.2-0.5 in. of irrigation water should be applied. **Do NOT** apply more than 1 in. of irrigation water.
-
- Apply at lining out, late fall or early spring.
 - Applications should be made to soil recently cultivated to a uniform texture.
 - Rain or irrigation (0.4 in.) is needed to activate this herbicide.

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFAST/MAX. APPLICATIONS
Trade Name: PROWL H20 (455 g/L) Product Rate/acre: 1.5 L/acre Active Ingredient(s): pendimethalin (1.68 kg/ha)	Group #: 3 PCP #: 29542	REI: 24 hours Rainfast: moisture required for activation Max. Applications: not stated
GRASS AND BROADLEAF HERBICIDES		
Trade Name: GLYPHOSATE (360 g/L), GLYPHOSATE (450 g/L), GLYPHOSATE (480 g/L), GLYPHOSATE (500 g/L), GLYPHOSATE (540 g/L) Product Rate/acre: 0.30-4.80 L/acre, 0.24-3.84 L/acre, 0.22-3.60 L/acre, 0.22-3.50 L/acre, 0.27-3.20 L/acre Active Ingredient(s): glyphosate (0.27-4.32 kg/ha)	Group #: 9 PCP #: see label	REI: 12 hours Rainfast: 1 hour Max. Applications: not stated
SOIL-APPLIED BROADLEAF HERBICIDES		
Trade Name: BROADSTAR (0.25%) Product Rate/acre: 33.6-67.2 kg/acre Active Ingredient(s): flumioxazin (21-42 kg/ha)	Group #: 14 PCP #: 29229	REI: 48 hours Rainfast: moisture required for activation Max. Applications: 2
Trade Name: GALLERY (75 DF) Product Rate/acre: 0.4 kg/acre Active Ingredient(s): isoxaben (0.75 kg/ha)	Group #: 21 PCP #: 24110	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES		
Trade Name: CASORON G-4 (4%) Product Rate/acre: 40 kg/acre Active Ingredient(s): dichlobenil (4 kg/ha)	Group #: 20 PCP #: 12533	REI: 48 hours Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

PRECAUTIONS - For more information, see the label.
<ul style="list-style-type: none"> • Do NOT apply to newly-transplanted ornamentals and conifers until plants have been watered and soil has been thoroughly packed and settled around roots. • Do NOT make over-the-top applications. • Do NOT treat plants grown for food or feed. • Rainfall or irrigation is required within 7 days of application. • Unusually cold, excessively wet, or hot and dry conditions that delay weed germination or extend weed germination over a long period of time can reduce weed control. • Avoid unintentional contact of spray solution with stone, wood, or other porous surfaces as staining may occur. Rinse surfaces immediately using a heavy spray of water to avoid staining. • See label for tolerant species.
GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • For actively growing weeds in the fall, or spring prior to emergence of any crop. • Allow 5-7 days translocation time after application before doing any tillage when conditions are good. If cool temperatures follow application, allow additional time for translocation to be completed before disturbing treated weeds. • ONLY weeds emerged at application time will be controlled. Additional weed control programs will be necessary to control weeds germinating later. • Repeat application to re-growth may be necessary for complete control. • Not all formulations are registered on all crops. See label for specific uses and rates.
SOIL-APPLIED BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • For pre-emergent weed control on outdoor container-grown woody ornamentals. • For use on: <i>Acer ginnala</i>, <i>Acer palmatum</i>, <i>Buxus sempervirens</i>, <i>Juniperus horizontalis</i>, <i>Juniperus Sabina</i>, <i>Picea pungens</i>, <i>Picea glauca</i>, <i>Quercus rubra</i>, <i>Taxus x media</i>, <i>Thuja occidentalis</i>. • Apply before germination of target weeds or immediately after disturbing the soil surface. • This herbicide can be safely applied over the top of many species of woody ornamental shrubs and trees providing the user follows the label directions. • Apply to dry foliage ONLY. • 0.4-0.8 in. of rainfall/irrigation is needed for activation. • See product label for more information.
<ul style="list-style-type: none"> • Registered for use by members of the Canadian Forest Nursery Weed Management Association ONLY. • PRE – for use in bareroot and container conifer seedlings. • Apply prior to weed emergence in conifers, four or more weeks after crop germination and emergence. • Rainfall or irrigation is needed to activate the herbicide.
SOIL-APPLIED GRASS AND BROADLEAF HERBICIDES
<ul style="list-style-type: none"> • PRE – Apply at least 4 weeks after planting into containers to a weed-free soil surface. • Do NOT use after September 15 or within 30 days of covering treated stock in overwintering structures. • Water immediately after application. • Use ONLY on containers growing outside. • For use on these species – <i>Juniperus chinensis</i>, <i>J. horizontalis</i> and <i>Thuja occidentalis</i>.

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFEST/MAX. APPLICATIONS
Trade Name: DACTHAL W-75 (75 WP) Product Rate/acre: 6.8 kg/acre Active Ingredient(s): chlorthal dimethyl (12.75 kg/ha)	Group #: 3 PCP #: 8963	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: DEVRINOL DF-XT (50 Df-XT) Product Rate/acre: 3.6 kg/acre Active Ingredient(s): napropamide (4.5 kg/ha)	Group #: 15 PCP #: 31081	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: PRINCEP NINE-T (90 WG) Product Rate/acre: 1 kg/acre Active Ingredient(s): simazine (2.25 kg/ha)	Group #: 5 PCP #: 16370	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1
Trade Name: RONSTAR 2G (2 Gr) Product Rate/acre: 40-90 kg/acre Active Ingredient(s): oxadiazon (2.0-4.5 kg/ha)	Group #: 14 PCP #: 23600	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 2
Trade Name: SPECTICLE G (0.0224%) Product Rate/acre: 136 kg/acre or 1.36 kg/100 m ² Active Ingredient(s): indaziflam (7.53 kg/ha)	Group #: 29 PCP #: 32804	REI: 12 hours Rainfast: moisture required for activation Max. Applications: 1

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued***PRECAUTIONS - For more information, see the label.**

- Apply at lining out, late fall or early spring.
 - Applications should be made to soil recently cultivated to a uniform texture.
 - Rain or irrigation (0.4 in.) is needed to activate this herbicide.
-
- PPI – Apply at any time of the year to a weed-free soil surface.
 - May be applied to newly planted container stock after the potting media has settled from first watering.
 - Incorporate by watering within 7 days of a spring or fall application and within 2 days of a summer application.
 - Will not control bittercress.
-
- PRE – For use on juniper, white cedar and yew **ONLY**.
 - Apply **ONLY** once per season, 1 month after planting.
 - Apply before weeds emerge or after removing weeds from the containers.
-
- PRE – Apply any time during the year, prior to weed seed germination.
 - Can be applied to both newly transplanted and established ornamentals and trees.
 - **Do NOT** apply to wet foliage or under conditions in which granules will collect on leaves.
 - If a second application is needed, apply 60-120 days after first application.
 - Consult the label for list of tolerant species.
 - Apply at least 4 weeks before covering polyhouses in fall.
-
- PRE – Apply as a single over-the-top application for preemergence weed control in container-grown ornamentals, trees and shrubs with an established root system. Ornamentals should be established in the container at least a week prior to application. Spread 0.5 g into a 6 in. pot.
 - Herbaceous annuals and perennials are sensitive to SPECTICLE G. **ONLY** apply to ornamentals listed on the label.
 - **Do NOT** exceed a single application rate of 136 kg/acre in a 12-month period.
 - **Do NOT** apply SPECTICLE G to wet foliage to avoid damage. Wet foliage will allow the granules to adhere to the foliage and cause localized injury to the foliage.
 - **Do NOT** use around bearing fruit and nut trees.
 - **Do NOT** mix SPECTICLE G into the soil. Cultivating or disturbing the soil surface after application may reduce weed control activity.
 - **Always consult product label for species and variety.**

continued

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued*

TRADE NAME/PRODUCT RATE/ACTIVE INGREDIENT(S)	GROUP/PCP #	REI/RAINFEST/MAX. APPLICATIONS
WOODY NURSERY STOCK (CONTAINER GROWN) - POST-EMERGENCE GRASS HERBICIDES		
Trade Name: VENTURE L (125 g/L) Product Rate/acre: 0.80 L/acre Active Ingredient(s): fluazifop-p-butyl (0.25 kg/ha)	Group #: 1 PCP #: 21209	REI: 12 hours Rainfast: 2 hours Max. Applications: 2
WOODY NURSERY STOCK (CONTAINER GROWN) - POST EMERGENCE GRASS AND BROADLEAF HERBICIDES		
Trade Name: KATANA (25 WG) + non-ionic surfactant Product Rate/acre: 60-80 g/acre + 2.5 L/1,000 L Active Ingredient(s): flazasulfuron (37.5-50 g/ha) + non-ionic surfactant (0.25% v/v)	Group #: 2 PCP #: 33129	REI: 12 hours Rainfast: not specified Max Applications: 1

TABLE 5-2**Herbicide treatment rates for nursery and ornamental crops** *continued***PRECAUTIONS - For more information, see the label.****WOODY NURSERY STOCK (CONTAINER GROWN) - POST-EMERGENCE GRASS HERBICIDES**

- Apply to actively growing grasses prior to tillering.
- Apply at 0.32 L/acre at 2-5-leaf stage of volunteer wheat and barley.
- Apply at 0.4 L/acre at 2-5-leaf stage of annual grasses (2-4-leaf for foxtails).
- Apply at 0.8 L/acre at 3-5-leaf stage of quackgrass and wirestem muhly.
- Consult the label for list of tolerant species. Use as a directed application in sensitive species to avoid contact with leaves and green tissue. Some blue junipers (e.g., Bar Harbour, Blue Acres and Blue Rug) can be injured by over-the-top applications.
- Caution—There are differences between cultivars in sensitivity. For example—*Juniperus horizontalis* Blue Acres is sensitive while cv Plumosa Compacta is tolerant.
- Test on samples of each cultivar not specifically listed on the label before using the herbicide or use as a directed application.

WOODY NURSERY STOCK (CONTAINER GROWN) - POST EMERGENCE GRASS AND BROADLEAF HERBICIDES

- **Do NOT** apply to conifer trees within 1 year of seeding.
- KATANA may be applied over-the-top to conifers prior to spring bud break or when conifers are sufficiently hardened off. Some needle burn may be seen on a new flush if plants are actively growing at the time of application but typically there is no effect on subsequent growth. Directed applications are preferred and recommended to reduce phytotoxicity potential.
- **Do NOT** disturb the soil after application.
- Rates listed are for broadcast application. If making a banded application, see the banded application section of the label for calculating appropriate use rate.
- Higher rate is for larger weeds and heavier infestations.
- This product can be tank-mixed with glyphosate, as well as, residual herbicides that are labelled for use in conifer trees.

6. Using Pesticides in Ontario

Using Pesticides in Ontario

The information in this chapter is up to date as of October 31, 2019. At that point in time, amendments were being proposed on the Environmental Registry of Ontario to the *Pesticides Act* and O.Reg. 63/09 to reduce the complexity and modernize pesticide management in Ontario while ensuring protection of human health and the environment. Please visit the Environmental Registry for further information related to the proposal, or the Ministry of Environment, Conservation and Parks' Pesticides webpage at ontario.ca/pesticides for the most up to date information on pesticide management in Ontario, including licences, permits, training and certification requirements.

For the most up to date version of this chapter, visit ontario.ca/usingpesticides. Some of the information in this generic chapter may not apply to all crops.

Read the label before use. Product labels may change.

Review the Grower Pesticide Safety Course Manual.

www.oep.ca/certification/

Keep detailed spray records.

FEDERAL REGISTRATION OF PESTICIDES

Before a pesticide (pest control product) can be sold or used in Ontario, it must be registered under the federal Pest Control Products Act (PCP Act) and be classified under the provincial Pesticides Act. The Pest Management Regulatory Agency (PMRA) of Health Canada registers pesticides for use in Canada following an evaluation of scientific data to ensure that any human health and environmental risks associated with its proposed uses are acceptable, and that the products have value.

The PMRA re-evaluates registered pesticides to determine whether today's health and environmental protection standards are still met when the pesticide is used according to the label. The PMRA also assesses whether the pesticide still has value. Re-evaluations are initiated every 15 years. Outcomes of a re-evaluation can be:

- no change to the registration
- amendments to the label (e.g., changes to personal protective equipment requirements, restricted entry intervals, buffer zones)
- modifications to existing Maximum Residue Limits (MRLs)
- elimination or phasing-out of certain uses or formulations
- discontinuation of the registration

A special review of a registered pesticide can be initiated at any time by the PMRA if the PMRA has reason to believe its use may pose unacceptable risk to human health or the environment or the pesticide no longer has value. Special reviews focus on a specific concern (e.g., pollinator health).

The pesticide label is a legal document. Follow all label directions. Labels for all registered pesticides are under "Search Pesticide Labels" on the PMRA website at www.healthcanada.gc.ca/pmra. Ensure you have the most current label and are aware of any re-evaluation decisions. Emergency registrations are temporary registrations (1 year or less) for pesticides needed by growers to manage a new invasive pest or pest outbreak. Know the expiration date for pesticides you are using under an emergency registration.

REGULATION OF PESTICIDES IN ONTARIO

The Ontario Ministry of the Environment, Conservation and Parks (MECP) is responsible for regulating the sale, use, transportation, storage and disposal of pesticides in Ontario. Ontario regulates pesticides by placing appropriate education, licensing and/or permit requirements on their use, under the *Pesticides Act* and Regulation 63/09. All pesticides must be used in accordance with requirements under the *Pesticides Act* and Regulation 63/09, which are available on the e-laws website at ontario.ca/laws or by calling ServiceOntario at 1-800-668-9938 or 416-326-5300.

CLASSIFICATION OF PESTICIDES

Before a federally registered pesticide can be sold or used in Ontario, it must be classified under the provincial Pesticides Act. The Ontario pesticide classification system consists of 12 classes. Ontario's Pesticides Advisory Committee (OPAC) is responsible for assessing new pesticide products and recommending to the MECP the classification of these products. Pesticide products are classified on the basis of their toxicity, environmental and health hazard, persistence of the active ingredient or its metabolites, concentration, usage, federal class designation (e.g., domestic, commercial, restricted) and registration status. The provincial classification system provides the basis for regulating the distribution, availability and use of pesticide products in Ontario. Once approved by the MECP, classified products are posted on the MECP website at ontario.ca/pesticides.

CERTIFICATION AND LICENSING

CERTIFIED FARMERS AND THEIR ASSISTANTS

Growers must be certified through the Grower Pesticide Safety Course in order to buy and use Class 2 and 3 pesticides on their farms. They do not require this certification to buy and use Class 4, 5, 6 or 7 pesticides, however, a grower needs to provide his/her Farm Business Registration Number or a signed "Farmer Self Declaration to Enable Purchase of a Class 4 Pesticide" form to the vendor when buying Class 4 pesticides. For information about certification for growers and training for assistants to growers, visit the Ontario Pesticide Education Program website at www.o pep.ca or call 1-800-652-8573.

CLASS 12 REQUIREMENTS FOR GROWERS

There are regulatory requirements in place for growers who plan to purchase or plant neonicotinoid-treated corn (silage or grain) or soybean seed in Ontario. For more information on the training and reporting requirements for growers, visit the MECP website at ontario.ca/pesticides, then click on "Neonicotinoid regulations."

COMMERCIAL APPLICATORS (EXTERMINATORS) AND THEIR ASSISTING TECHNICIANS

For more information about exterminator licensing and technician training, visit:

- the Ontario Pesticide Training and Certification website at www.ontariopesticide.com or call 1-888-620-9999 or 519-674-1575
- the Pesticide Industry Council's Pesticide Technician Program website at www.horttrades.com/pesticide-technician or call 1-800-265-5656 or e-mail pic@hort-trades.com
- the Pesticide Industry Regulatory Council (PIRC) at www.oipma.ca

EXCEPTION USES UNDER THE COSMETIC PESTICIDE BAN

Pesticides listed in this publication are meant for Exception Uses (e.g., agriculture) under the Cosmetic Pesticide Ban unless the active ingredient is listed under Class 11 pesticides in Ontario Regulation 63/09.

For information about requirements under the *Pesticides Act* and Regulation 63/09, for golf courses and other excepted uses for turfgrass, including mandatory golf course IPM accreditation, go to ontario.ca and search for:

- Pesticides and Golf Courses
- Specialty Turf and Specified Sports Fields

For more information about requirements in the *Pesticides Act* and Regulation 63/09 for the exception regarding the use of pesticides to maintain the health of trees, go to ontario.ca and search for:

- Tree Care Specialists

For more information about pesticide regulations, certification and licensing, see:

- Inside front cover of this publication
- Pest Management Regulatory Agency (PMRA) website: www.healthcanada.gc.ca/pmra
- PMRA Pest Management Information Service: 1-800-267-6315 or TTY 1-800-465-7735 (from within Canada) or 1-613-736-3799 (from outside Canada)
- Ontario Ministry of the Environment, Conservation and Parks (MECP) website: ontario.ca/pesticides
- Regional MECP Pesticides Specialists Directory [info.gov.on.ca/infogo/home.html#orgProfile/-270/en](http://info.gov.on.ca/info.gov.on.ca/infogo/home.html#orgProfile/-270/en)
- Ontario Pesticide Education Program (University of Guelph, Ridgetown Campus) website: www.opep.ca
- Ontario Pesticide Training & Certification website: www.ontariopesticide.com
- Pesticide Industry Council's Pesticide Technician Program website at www.horttrades.com/pesticide-technician
- IPM Council of Canada website: www.ontarioipm.com or www.ipmcouncilcanada.org
- Pesticide Industry Regulatory Council (PIRC) at www.oipma.ca

PESTICIDE APPLICATION INFORMATION

When you decide to use a pesticide, choose the most appropriate formulation and application method for your situation. Use only properly calibrated sprayer equipment. Choose less toxic and less volatile alternatives when possible. Take all possible precautions to prevent the exposure of people and non-target organisms to the pesticide. Read the most current pesticide label thoroughly before application. The label provides important information, such as:

- directions for use (e.g., rates of application, crops/ sites it can be used on, target pests, crop rotation restrictions, total number of applications, droplet size/nozzle type, application equipment, timing, appropriate weather conditions)
- required personal protective equipment (PPE)
- hazard symbols and warnings
- restricted entry intervals
- pre-harvest intervals
- buffer zones
- precautionary statements
- steps to be taken in case of an accident
- disposal

For more information on hazards, consult the Safety Data Sheet (SDS) or contact the manufacturer.

For more information on pesticide application, see:

- Sprayers 101 at www.sprayers101.com
- OMAFRA Factsheet Pesticide Drift from Ground Applications
- Ontario Pesticide Education Program (University of Guelph, Ridgetown Campus) videos at www.opep.ca/resources/
- OMAFRA Agriculture and Agri-Food Canada booklet Best Management Practices – *Pesticide Storage, Handling and Application*, Order No. BMP13
- OMAFRA Factsheet *Pesticide Contamination of Farm Water Supplies*

RESTRICTED ENTRY INTERVALS

Restricted Entry Interval (REI) is the period of time after a pesticide has been applied that agricultural workers or anyone else must not do hand labour tasks in treated areas. The REI allows the pesticide residues and vapours to dissipate to safe levels for work to be done.

An REI can range from 0 hours to several days. A pesticide label may state different REIs that are specific to a crop and post-application task (e.g., scouting, harvesting). If the REI is not stated on a label for agricultural crops, use a 12-hr REI. For golf courses and residential turf applications, the spray solution must be dry before re-entry can occur.

Hand labour tasks involve substantial worker contact with treated surfaces such as plants, plant parts or soil. Examples of these activities include planting, harvesting, pruning, detasseling, thinning, weeding, scouting, topping, sucker removal, mowing, roguing and packing produce into containers in the field or greenhouse. You can only do these tasks after the REI has passed. Hand labour generally does not include operating, moving or repairing irrigation or water equipment, except for hand-set irrigation.

A Certified Farmer or Licensed Commercial Applicator (i.e., a holder of the appropriate Exterminator License, such as an Agriculture Exterminator Licence or a Greenhouse/Interior Plant Exterminator Licence) may need to enter a treated area early to do short-term tasks before the end of the REI. In these cases, the Certified Farmer or Licensed Commercial Applicator may enter between 4-12 hr after the application wearing a NIOSH-approved respirator and any other protective clothing (PC) and the personal protective equipment stated on the label for mixing and loading. This Certified Farmer or Licensed Commercial Applicator (exterminator) must not be in the treated area during the REI for more than a total of 1 hr in any 24-hr period.

See Figure 6-1 for an example of a 24-hr REI on a pesticide label.

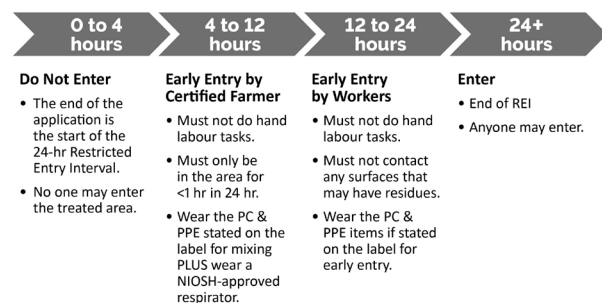


Figure 6-1. Example of a 24-hr REI on a pesticide label.

Certified Farmers and Licensed Commercial Applicators should plan pesticide applications around work tasks so that no one needs to enter treated areas before the restricted entry interval has passed.

DAYS TO HARVEST INTERVALS FOR FOOD CROPS (PRE-HARVEST, PRE-GRAZING AND FEEDING INTERVALS)

These intervals state the minimum time that must pass between the last pesticide application and the harvesting of the crop or the grazing and cutting of the crop for livestock feed. If you harvest a crop before the pre-harvest interval (PHI) has ended, there may be pesticide residues in excess of the maximum residue limits (MRLs) set by PMRA.

“Up to the day of harvest” means the same as 0 days PHI; however, the REI may be more restrictive (e.g., a 12-hr restricted entry interval) and must be observed for harvesting that occurs on the day of pesticide application.

To avoid exceeding the maximum residue limits, always follow the directions on the label.

SPRAY BUFFER ZONES

Spray buffer zones are no-spray areas required at the time of application between the area being treated and the closest downwind edge of a sensitive aquatic or terrestrial habitat. Spray buffer zones reduce the amount of spray drift that enters non-target areas.

Sensitive terrestrial habitats include hedgerows, grasslands, shelterbelts, windbreaks, forested areas and woodlots.

Sensitive freshwater habitats include lakes, rivers, streams, creeks, reservoirs, marshes, wetlands and ponds.

The pesticide label indicates the size of the spray buffer zone, which depends on the product used, the method of application, and the crop being sprayed.

Unless forbidden by the pesticide label, Health Canada’s online Buffer Zone Calculator may allow applicators to reduce the spray buffer zones based on weather conditions, the category of the spray equipment and the droplet size. For more information, search for “Buffer Zone Calculator” at www.canada.ca.

For soil fumigation, a buffer zone is an area established around the perimeter of each application block.

VEGETATIVE FILTER STRIPS

A vegetative filter strip is:

- a permanently vegetated strip of land.
- sits between an agricultural field and downslope surface waters.
- must be at least 10 m wide from edge of field to the surface water body.
- must be composed of grasses, but may also contain other vegetation (shrubs, trees, etc.).

Vegetative filter strips reduce the amount of pesticide entering surface waters from runoff by slowing runoff water and filtering out pesticides carried with the runoff. Certain pesticide labels will require a vegetative filter strip; and, other labels will recommend a vegetative filter strip as a best management practice.

PROTECT THE ENVIRONMENT

PROTECT WATER SOURCES

According to the British Crop Protection Council (BCPC), 40%-70% of surface water pesticide contamination comes from mixing and filling areas.

Where possible, load or mix pesticides on impermeable surfaces located safely away from watercourses or environmentally sensitive areas. Collect drainage and run-off and dispose of it safely (*Your Guide to Using Pesticides*, BCPC 2007).

Clean your spray equipment away from wells, ponds, streams and ditches. Apply the diluted rinse water (usually at a ratio of 10:1) to the treatment area (crop), but do not exceed the pesticide rate recommended on the label.

Do not make a direct connection between any water supply (e.g., public supply, wells, watercourse or pond) and a spray tank. Use an anti-backflow device or intermediate system to prevent back-siphoning that could contaminate the water supply.

Immediately contain and clean up any spills to prevent contamination to water sources.

Check the pesticide label for specific instructions on protection of water sources.

For more information on protecting water sources, see ontario.ca/crops:

- OMAFRA Factsheet Pesticide Contamination of Farm Water Supplies
- OMAFRA Factsheet Groundwater – *An Important Rural Resource: Protecting the Quality of Groundwater Supplies*
- OMAFRA Agriculture and Agri-Food Canada booklet *Best Management Practices – Pesticide Storage, Handling and Application*, Order No. BMP13

BEE POISONING

Honeybees, native bee species (e.g., bumble bees, squash bees) and other pollinating insects are important pollinators for many Ontario crops. Insecticides, some of which may negatively affect bees, require careful management to achieve both pollination and insect control. Growers and licensed commercial applicators can protect bees by following these suggestions:

- Time insecticide applications to minimize bee exposure (e.g., apply post bloom). Daytime treatments, when bees are foraging, are most hazardous. Insecticide applications in the evening are the safest, unless there is evidence of a strong temperature inversion or high humidity. Under normal circumstances, spraying after 8 p.m. allows the spray to dry before the bees are exposed to it the next day. Spraying during early morning is the next best time, when fewer bees are foraging, but pesticide residues may still be present. Spraying should be completed well before 7 a.m. While honeybees and most other pollinating insects do not usually forage at temperatures below 13°C, bumblebees do. If you plan to spray in the morning, contact beekeepers who have bees within 5 km of your crop and spray site. The beekeepers may then have the option of taking any possible protective action.
- Do not apply insecticides while fruit trees are in bloom. The Bees Act makes it an offence to do so in Ontario. Do not spray any flowering crop on which bees are foraging.
- To prevent drift toward nearby hives, do not apply insecticides on windy days or when there is evidence of a strong temperature inversion.

- Bees and other pollinators may be poisoned by visiting flowering weeds, trees and cover crops that have come into contact with an insecticide via spray drift or drift of insecticide-contaminated dust during planting. Avoid spray drift to flowering weeds that are adjacent to or within the target field. Where possible, mow down flowering cover crops or flowering weeds in and bordering target fields prior to spraying to help safeguard the bees. Control dandelions and other flowering weeds within fields before spraying or planting seeds treated with an insecticide. Take measures to reduce movement of dust from insecticide seed treatments to flowering trees, weeds and water sources that are in or adjacent to the target field. For more information on reducing dust movement, search for “Pollinator Protection and Responsible Use of Treated Seed – Best Management Practices” at www.canada.ca.
- Systemic insecticides may also pose a high risk to bees and other insect pollinators. Bees can be exposed to insecticide residues in or on flowers, leaves, pollen, nectar and/or surface water. Do not apply insecticide or allow it to drift onto blooming crops or off-site habitat if bees are foraging in or adjacent to the treatment area.
- In crop settings where pesticide use is highly likely, beekeepers should remove honeybee colonies as soon as pollination and bloom are complete in the crop and before any insecticides are applied post bloom. In emergency situations, if the colonies cannot be removed in time, beekeepers can place burlap or cloth soaked in water at the entrance of the hive to disrupt the flight of the bees for up to 12 hr and provide more time for spray to dry. To help prevent overheating of the hive during this time, keep an opening of 2.5 cm on each side of the hive entrance so bees can still get out and ventilate the hive. Also, the water on the burlap or cloth will help cool the colony.
- Not all pesticides are equally toxic to bees. If there is a risk of honeybee poisoning, try to choose an insecticide that is not highly toxic to bees. When there is a choice, choose a product formulation that is less hazardous to bees.
- Always read the most current pesticide label for guidance. Some pesticides cannot be used when bees are active in the crop.

For more information on ways to reduce bee poisoning, see:

- *Practices to Reduce Bee Poisoning from Agricultural Pesticides in Canada*, available at honeycouncil.ca. Select “Bee Health Roundtable”.

MANAGE DRIFT

Pesticide drift is the aerial movement and unintentional deposit of pesticide outside the target area. Drift results in wasted product and may compromise crop protection and also may adversely affect nearby sensitive environmental areas, crops and wildlife. The following strategies can help reduce the risk of pesticide drift:

- Do not spray when wind direction is changeable, or wind speeds are high or gusty. These conditions increase the potential for off-target drift. While most pesticide labels indicate allowable wind speeds, some do not.
- Regularly monitor wind conditions during spraying, preferably in the field with a handheld wind meter at nozzle height. Record the wind speed and direction. As conditions change, make adjustments to manage drift potential. Adjustments may include a coarser droplet size, minimizing nozzle-to-target distance, slowing travel speed, changing nozzle technology, using a drift reducing spray additive or discontinuing spraying until conditions improve.
- Do not spray during periods of dead calm. Periods of dead calm may occur between late evening and early morning and can result in the vapor or fine spray droplets remaining aloft, like fog. Spray-filled air can move unpredictably over great distances several hours after the spray event is completed.

Temperature inversions create problems for spray applicators because pesticide spray can:

- remain suspended and active in the air above the target for long periods of time
- move with light breezes in changeable and unpredictable directions
- move down slopes and concentrate in low-lying regions

Field air temperatures are often very different from local or regional forecasts, so the most reliable method of detecting inversion conditions is to measure temperatures at, and several metres above, the ground. Commercial hand-held inversion detectors are now available. Spray applicators can also recognize a temperature inversion from environmental cues, such as when:

- there is a big drop from daytime to nighttime temperature
- wind dies down by early evening and night
- far away sounds can be heard clearly
- odours seem more intense
- daytime cumulus clouds collapse toward evening
- overnight cloud cover is 25% or less
- smoke or dust hangs in the air and/or moves laterally in a sheet

Temperature inversions start to form about 3 hr prior to sunset, become stronger as the sun sets and continue until sunrise when the surface warms and air mixing begins. **If you suspect there's an inversion, don't spray. Often, warnings for the risk of inversions are stated right on the product label.**

- Use the sprayer output specified on the pesticide label.
- Use a nozzle that will produce the droplet size specified on the pesticide label or delivers droplets appropriate for the job.
- Where practical, use air induction nozzles, which significantly reduce drift compared to conventional nozzles.
- Minimize the distance between nozzle and target as much as possible while still maintaining spray uniformity.
- Establish buffer zones for the protection of adjacent sensitive areas. Some pesticide labels will state buffer zone setbacks; follow these carefully.
- Use drift reduction technology, such as hoods, shrouds, screens or air curtains.
- If appropriate, use drift-reducing adjuvants in the spray tank. The intense agitation in airblast sprayers has been shown to reduce the effectiveness of drift-reducing adjuvants. Certain combinations of drift-reducing adjuvants and air- induction nozzles have been shown to increase the incidence of fine droplets.
- When possible, use non-volatile pesticide formulations or products.

For more information about spray drift, see:

- Sprayers 101: www.sprayers101.com
- OMAFRA website: ontario.ca/spraydrift
- OMAFRA Factsheet *Pesticide Drift from Ground Applications*
- OMAFRA Agriculture and Agri-Food Canada booklet *Best Management Practices – Pesticide Storage, Handling and Application*, Order No. BMP13
- Ontario Pesticide Education Program (University of Guelph, Ridgetown Campus) Drift of Pesticides video series, available at www.opep.ca/resources (click the YouTube icon)

WASTE MANAGEMENT (CONTAINER DISPOSAL)

EMPTY PESTICIDE AND FERTILIZER CONTAINERS UP TO 23 L

Never re-use empty pesticide containers.

The Ontario Empty Pesticide and Fertilizer Container Recycling Program, an industry-led program, is available free of charge to growers and commercial applicators. Through this program, you can return triple-rinsed or pressure-rinsed plastic pesticide and fertilizer containers up to 23 L to container collection depots located throughout the province. Remove the cap and booklet from the pesticide container and metal handle from the fertilizer pail before recycling. To locate the closest container collection depot, visit www.cleanfarms.ca, call your local dealer or contact Cleanfarms at 416-622-4460 (toll-free at 877-622-4460) or info@cleanfarms.ca.

EMPTY PESTICIDE CONTAINERS GREATER THAN 23 L (TOTES AND DRUMS)

Growers and commercial applicators should return pesticide containers that are greater than 23 L in size to the point of sale or local collection site for disposal. Contact your local dealer for details on disposal of these containers, or contact Cleanfarms at 416-622-4460 (toll-free at 877-622-4460) or info@cleanfarms.ca.

EMPTY SEED AND PESTICIDE BAGS

Growers can return their empty seed and pesticide bags to select retail locations. Contact your local dealer for details on disposal of these empty seed and pesticide bags, or contact Cleanfarms at 416-622-4460 (toll-free at 877-622-4460) or info@cleanfarms.ca.

SURPLUS SPRAY MIX

The best approach is to plan the spray job accurately to avoid creating a surplus.

When this is unavoidable, dispose of excess spray mix by spraying it on other crops that require an application of this pesticide. Before spraying, check the label to make sure the pesticide is registered for use on that other crop.

If you cannot find another allowable crop to spray, then dilute the remaining spray mix by adding 10 parts of water for each 1 part of spray mix.

The diluted solution can be safely applied to the original treated area as long as you do not exceed the pesticide rate recommended on the label. Be sure to check the label for any restrictions about crop rotation, days to harvest or disposal of surplus spray mix.

Never re-spray the treated field with undiluted spray mix. Spraying an area twice at the same pesticide rate will double the labeled pesticide rate. This may cause illegal pesticide residues in the harvested crop or harmful residues in the soil that can cause crop damage.

SURPLUS PESTICIDE DISPOSAL

Be sure to safely dispose of pesticides that you do not need or cannot use. Options for proper disposal include:

- Contact the supplier. It is sometimes possible to return unused pesticide if it is still in its original, unopened container.
- Hire a licensed waste hauler who is licensed under Part V of the *Environmental Protection Act* to carry hazardous wastes.
- Cleanfarms operates a free Obsolete Pesticide and Animal Health Product Collection Program throughout the province every 3 years. To locate the closest collection point and date, visit the Cleanfarms website (www.cleanfarms.ca), contact Cleanfarms at 416-622-4460 (toll-free at 877-622-4460) or info@cleanfarms.ca or contact your local dealer for program details.
- Contact your municipality to see if any hazardous waste collection days are scheduled and verify whether quantities of agricultural pesticides will be accepted.

STORING PESTICIDES

Ontario's Pesticides Act and Regulation 63/09 provide details on storage requirements for pesticide storage facilities. As shown in Table 6-1, the storage requirements that must be followed are dependent on which classes of pesticides you store.

TABLE 6-1.
Requirements for Pesticide Storage Facilities

STORAGE REQUIREMENTS	PESTICIDE CLASSES		
	CLASS 2	CLASS 3	CLASS 4, 5, 6 & 7
No contact with food or drink	YES	YES	YES
Not an impairment to health and safety	YES	YES	YES
Clean and orderly	YES	YES	YES
Warning sign G posted*	YES	YES	YES
Emergency telephone numbers posted**	YES	YES	YES
Vented to outside	YES	YES	NO
Limited access (locked)	YES	YES	NO
No floor drain	YES	YES	NO
Respiratory protection and protective clothing kept readily available	YES	YES	NO
Area used primarily for pesticides	YES	NO	NO

Note: Sufficient precautions are needed in your storage area to prevent the pesticide from entering the natural environment. Ensure your floor drain does not enter the natural environment.

* See ontario.ca for requirements for warning sign G (Search for sample warning signs for pesticide use). These signs can be purchased from your pesticide dealer/vendor.

** Emergency contact numbers must include telephone numbers for the local fire department, hospital and poison control centre. The number for the MECP Spills Action Centre (1-800-268-6060) should also be readily available.

For more information about storing pesticides, see:

- OMAFRA Factsheet *Farm Pesticide Storage Facility*
- OMAFRA Agriculture and Agri-Food Canada booklet *Best Management Practices – Pesticide Storage, Handling and Application*, Order No. BMP13
- Ontario Pesticide Education Program (University of Guelph, Ridgetown Campus) *Grower Pesticide Safety Course Manual*, available at www.opep.ca. Select "Learning."

PESTICIDE SPILLS

If a pesticide spill causes, or is likely to cause, an adverse effect that is greater than that which would result from the proper use of the pesticide, you must notify the Ontario Ministry of the Environment, Conservation and Parks Spills Action Centre at 1-800-268-6060 (24 hr a day, 7 days a week) and your municipality.

A spill is defined as a discharge of pollutant that is abnormal in quality or quantity, from or out of a structure, vehicle or other container into the environment. An incident such as an overturned pesticide sprayer that results in the loss of the spray solution to the environment is an example of a spill. A pesticide container that ruptures and leaks its contents is another example of a spill. The discharge or spraying of a pesticide in an unapproved area is also considered a spill.

Before you begin to clean up a spill of any nature, remember to protect yourself against pesticide exposure. Wear the proper protective clothing and personal protective equipment. If the spill occurs inside an enclosed area (e.g., a pesticide storage area or a vehicle during transport), ventilate the area first. Once you have protected yourself and removed other persons or animals from the spill site, take additional measures to stop the spill at the source and prevent it from spreading and/or contaminating watercourses. Specific precautions, emergency contact information and first aid procedures may be found on the label.

For minor spills, it may be possible to rectify the problem:

- For a liquid spill – Cover the spill with a thick layer of absorbent material such as kitty litter, vermiculite or dry soil. Sweep or shovel the material into a waste drum and dispose of the contents as you would a hazardous waste.
- For a dust, granular or powder spill – Sweep or shovel the material into a waste drum and dispose of the contents as you would a hazardous waste.

For major spills, it is essential to stop the spill from spreading.

The clean-up guidelines above may not be appropriate for all spill situations. Once you have contained the spill, follow directions from the manufacturer and regulatory authorities on cleaning the contaminated area.

Some of the information contained in this chapter is not authoritative. It is derived from the *Pesticides Act*, Ontario Regulation 63/09, and the federal *Pest Control Products Act*, *Fisheries Act* and *Species at Risk Act* and is for informational purposes only. Efforts have been made to make it as accurate as possible, but in the event of a conflict, inconsistency or error, the requirements set out in the referenced legislation take precedence. For specific legal details, please visit ontario.ca/laws (for Ontario legislation) and laws.justice.gc.ca (for federal legislation) and consult your lawyer if you have questions about your legal obligations.

For information on preventing spills, see:

- OMAFRA Factsheet *Ways to Avoid Pesticide Spills*
- OMAFRA Agriculture and Agri-Food Canada booklet *Best Management Practices – Pesticide Storage, Handling and Application*, Order No. BMP13
- Ontario Pesticide Education Program (University of Guelph, Ridgetown Campus) *Grower Pesticide Safety Course Manual*, available at www.opep.ca. Select "Learning."

For pesticide poisonings and pesticide injuries, call:

Ontario Poison Centre: 1-800-268-9017 (TTY) 1-877-750-2233

For more information, see Emergency and First Aid Procedures for Pesticide Poisoning on inside back cover.

Emergency and First-Aid Procedures for Pesticide Poisoning

For pesticide poisonings and pesticide injuries, call the Ontario Poison Centre: Toronto 1-800-268-9017

PREVENT ACCIDENTS

- **Read the label.** Follow all the precautions the label recommends. Read the First Aid section of the label BEFORE you begin to handle any pesticide.
- **Make sure that someone knows** what pesticides you are working with and where you are.
- **Keep a file of labels and product Safety Data Sheets (SDS) for the pesticides you use.** Make sure everyone knows where to find this in case of an emergency.
- **Post emergency numbers near all telephones.**
- **Keep clean water, paper towels, extra gloves and clean coveralls close by** in case you spill pesticide on yourself.

If someone has been working with pesticides and you see any possible symptoms of pesticide poisoning or injury, take emergency action immediately.

IF AN ACCIDENT OR POISONING HAPPENS

- protect yourself from injury first.
- Stop the exposure to the pesticide. Move the victim away from the contaminated area.
- Check the four basic facts — identify the pesticide, the quantity, the route of entry and time of exposure.
- Call an ambulance or the Ontario Poison Centre.

- Start first aid. This is not a substitute for professional medical help.
- **Provide the label, SDS sheet, container or a clear photo of the container to emergency personnel** at the scene — or take it with you to the hospital. Do not transport pesticide containers in the passenger compartment of the vehicle.

FIRST AID

If a pesticide comes in contact with skin:

- remove all contaminated clothing; wash skin thoroughly with lots of soap and warm water.
- dry skin well and cover with clean clothing or other clean material.

If pesticide comes in contact with eyes:

- hold eyelids open; wash the eyes with clean running water for 15 minutes or more.

If pesticide was inhaled:

- move the victim to fresh air and loosen tight clothing.
- give artificial respiration if the victim is not breathing.

Do not breathe in the exhaled air from the victim — you could also be poisoned.

If a pesticide was swallowed:

- call the Ontario Poison Centre IMMEDIATELY.

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To obtain print copies of this or any other OMAFRA publication, please order:

- online at ontario.ca/publications
- by phone through the ServiceOntario Contact Centre, Monday to Friday, 8:30 a.m. to 5:00 p.m. ET
 - 416-326-5300
 - 1-800-668-9938, toll-free across Canada
 - 1-800-268-7095 TTY, toll-free across Ontario

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Agricultural Information Contact Centre

1-877-424-1300
1-855-696-2811 (TTY)
email: ag.info.omafra@ontario.ca
ontario.ca/omafra

For a major spill, a theft or a fire involving a pesticide:

Call the Ontario Ministry of the Environment, Conservation and Parks **Spills Action Centre** at **1-800-268-6060** (24 hr a day, 7 days a week).
Notify your municipality.

Agricultural Information Contact Centre

1-877-424-1300

1-855-696-2811 (TTY)

E-mail: ag.info.omafra@ontario.ca

ontario.ca/omafra