

EXTENSION AND ADVISORY TEAM

TREE FRUIT WEED MANAGEMENT GUIDE

A guide to weed management in new, young and mature tree fruit orchards, and apple tree nurseries in Nova Scotia



Discard old editions of the pesticide spray guide. Each year, the Perennia Tree Fruit Specialist updates the pesticides and information contained in this publication.

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Note: Perennia offers supplemental guides for disease and insect management in pome fruit, stone fruit, organic production, and for thinners and growth regulators on our website at www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit.

Emergency and First Aid Procedure for Pesticide Poisoning

- Become familiar with the chemicals you are using. Keep a list of common and active ingredient names in case of accidents or emergencies. This information can be found on product labels and cross-referenced in this publication.
- If poisoning from exposure to a pesticide by swallowing, inhalation or contact with skin or eyes is suspected, read the product label of the pesticide container and carry out first aid treatment as suggested.
- If a person is seriously injured, call **911** immediately.
- Emergency advice on pesticide poisoning is available 24 hours/day from the IWK Regional Poison Information Centre, Halifax, NS. Phone: 1-800-565-8161 (NS & PEI).

Sources of Information on Pesticides

Information Service of the Pest Management Regulatory Agency

Phone: 1-800-267-6315

Web Site: <http://www.hc-sc.gc.ca/cps-spc/pest/index-eng.php>

Pest Management Regulatory Agency –Electronic Labels: Search Tool

Web Site: <http://pr-rp.hc-sc.gc.ca/lr-re/index-eng.php>

Ontario Pesticides Classification Database

Web Site: <https://www.lrcsde.lrc.gov.on.ca/PCDWeb/showSearch.action>

National Pesticide Information Centre

Web Site: <http://npic.orst.edu/>

Environmental Emergencies – Nova Scotia

Pesticide and Chemical spills

Phone: 1-800-565-1633

Organic Agriculture Centre of Canada

Web Site: <http://www.organicagcentre.ca/>

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1. Pesticide Handling and Application

Registration of Pesticides

A pesticide that is used in Nova Scotia must be registered by the Pest Management Regulatory Agency (PMRA) of Health Canada, and be approved for use in the province of Nova Scotia. All registered pesticides may be re-evaluated and are subject to discontinuation if they do not meet current standards. The pesticide product label is a legal document, and all label directions must be followed.

- To search for product labels, visit the Health Canada website: <http://pr-rp.hc-sc.gc.ca/lr-re/index-eng.php>
- To download the smartphone application, search for the app “Pesticide Labels” by Health Canada.

Applicator Pesticide Certification

Applicators must hold a valid applicator certificate of qualification to apply a commercial class pesticide in Nova Scotia. The regional offices for Nova Scotia Environment offer certificates, approvals, exams and exam study materials.

- Central Region: Halifax and Hants Counties, (902) 424-7773
- Western Region: Kings, Annapolis, Digby, Yarmouth, Shelburne, Queens and Lunenburg, (902) 679-6086

Environmental Stewardship

Environmental stewardship and food safety programs are important components of best management practice for fruit production. Guidelines and fact sheets have been developed under the Nova Scotia Environmental Farm Program for the best means to store, handle, and apply pesticides. Factsheets on the NS Federation website (<http://www.nsfafane.ca/efp/resources/factsheets/>) include:

- On-farm Pesticide Use
- Pesticide Storage and Handling
- Air-Blast Sprayer Calibration for Orchard and Vineyards
- Tree-Row Volume: Concept, Calculations and Application

Food Safety

The CHC CanadaGap on-farm food safety manual provides procedures and guidelines with regard to the safe handling, storage and record keeping for tree fruit pesticides and fertilizers: <http://www.canadagap.ca/manuals/downloads/>

Buffer Zones

Most pesticide labels have a required distance between site of spray application and a buffer zone. A buffer zone is the distance between the point of direct pesticide application and the nearest downwind boundary of a sensitive habitat. A buffer zone is a no-spray area because the sensitive habitat contains organisms that are affected by the pesticide being applied. A sensitive area may be aquatic, terrestrial (shelterbelts and woodlots) or a combination (wetlands, marshes etc). It is the applicator’s responsibility to identify the sensitive areas within and adjacent to treated fields.

Pesticide Formulation Abbreviations

DF	dry flowable	SG	soluble granules
DP	dispersible powder	SN	solution
DU	dust	SP	soluble powder
EC	emulsifiable concentrate	SU	suspension
F or FLO	flowable solution	SURF	surfactant
GR or G	granular	W or WP	wettable powder
OD	oil dispersible	WSP	water soluble pouch
SC	spray concentrate	WDG or DG	water dispersible granules

Herbicide Control Ratings for Annual and Perennial Weeds

Visit OMAFRA Publication 75B for weed control ratings.

Warning

Please note that we make no warranty or guarantee of any kind, expressed or implied, concerning the use of products listed in this publication. The user assumes all risks, whether recommendations are followed or not. This publication is intended as a guide only.

For specific product information always refer to and follow directions on the label.

2. Weed Management Calendar: Year of Planting

A guide to weed management in new orchards in the year of planting or established less than one year.

Always read the label before using any pesticide. Where differences between the label and this guide occur, label information prevails. Fruit trees can be damaged by herbicides if not used properly. Injury can be local (affecting only the tissue directly hit by the spray), or it may be systemic. Systemic injury can produce symptoms some distance from the site of contact. Damage can also be related to the herbicide rate, tree vigour, and tree age as well as drought stress. Review label information to determine the potential for herbicide damage. Care should be taken not to apply herbicides to root suckers, foliage, bark or fruit, especially the green bark of young trees. Before mixing up the spray solution it is important to calculate the actual area of ground surface under the trees to be sprayed. For band applications, use proportionally less spray mixture based on the area actually sprayed so that a full rate is not concentrated into the band which may result in crop injury.

Weeds	Product	Rate	Group	REI (hours)	Crops	Notes
PRE-PLANT SITE PREPARATION						
Grass and Broadleaf	Roundup Transorb <i>Glyphosate (360 g/L)</i>	2.25 – 12 L/ha				This product may be used to control listed annual or perennial weeds for site preparation prior to transplanting tree crops. Treat area to be planted, and till soil 7 to 10 days later. Use postemergence at bud bloom growth stage to control most perennial weeds. Repeat treatments may be necessary to control weeds originating from underground parts of untreated weeds or from seeds. This product does not provide residual or pre-emergent weed control.
	▶ Roundup Transorb Max <i>Glyphosate (480 g/L)</i>	1.69 – 9 L/ha	9	12	Apple, cherry, peach, pear, plum	
PRE-PLANT INCORPORATED/PRE-EMERGENT						
Grass and Broadleaf	▶ Chateau WDG <i>Flumioxazin 51.1%</i>	280 g/ha	14	12	Apple, cherry, peach, pear, plum	Do not apply to apple or pear trees less than one year, unless protected from spray contact by non-porous wraps, grow tubes or waxed container. See label for more precautions.
	▶ Dual II Magnum s-metolachlor 915 g/L + Princep Nine – T Simazine 90%	1.25 – 1.75 L/ha 1.1 – 2.2 kg/ha	15 + 5	12	Apple, cherry, peach, pear, plum	Apply in new orchards following planting and prior to weed emergence and preferably after rain has settled the soil around the trees. One application per year. Do not apply to sandy soils with less than 2% organic matter. Avoid spray contact with the trees.
	▶ Lexone DF or Squadron or Tricor 75 DF Metribuzin 75%	0.5 – 1.0 kg/ha	5	12	Apple, cherry, peach	Apply as a preplant incorporated within the planting row or over the entire row. Do NOT use on soils that are coarser than sandy loams with less than 3% organic matter.
	▶ Princep Nine – T Simazine 90%	1.1 – 2.2 kg/ha	5	12	Apple, peach	In year of planting apply prior to weed germination in 300L of water per Ha. Do not use on sandy soil with less than 2% organic matter. Preferably apply after rain has settled the soil around trees. Avoid contact with bark and foliage.
	▶ Sencor 75 DF Metribuzin 75%	0.55 – 0.75 kg/ha	5	12	Apple, cherry, peach	Apply specified dosage as a preplant incorporated application in 150 - 300 L of water per hectare before transplanting fruit trees. Only apply once during the growing season. Use higher rates on clay soils.
	▶ Sencor 75 DF Metribuzin 75% + Treflan EC or Bonanza 480 Trifluralin 480 g/L	0.55 – 0.75 kg/ha 1.25 – 2.4 L/ha	5 + 3	12	Apple, cherry, peach, pear, plum	Apply specified dosage as a preplant incorporated application in 150 - 300 L of water per hectare before transplanting fruit trees. Only apply once during the growing season. Use higher rates on clay soils.
	▶ Sinbar WDG Terbacil 80%	1.25 kg/ha	5	12	Apple, cherry, peach, plum	In year of planting apply prior to weed germination in 150-300 L/ha of water. Do not use soil with less than 3% organic matter. Preferably apply after rain has settled the soil.
	▶ Treflan EC or Bonanza 480 Trifluralin 480 g/L	1.2 – 2.4 L/ha	3	12	Apple, cherry, peach, pear, plum	Apply and incorporate before planting. Use higher rates on clay soils. Apply with at least 100L/ha water. Do not apply more than once per year

Weeds	Product	Rate	Group	REI (hours)	Crops	Notes
POST EMERGENT						
Grass	▶ Poast Ultra Sethoxydim 450 g/L + Merge Surfactant/solvent	0.32 – 1.1 L/ha 1 – 2 L/ha	1	12	Apple, peach, plum	Apply to emerged annual grasses at the two to six leaf stage during active growth. Use these rates for specific weeds: annual grasses 0.32 L/ha; volunteer grains 0.47 L/ha; quackgrass (up to 3rd leaf) 1.1 L/ha. Complete grass control will take 7 to 21 days.
	▶ Venture L Fluozifop-p-butyl 125 g/L	2 L/ha	1	12	Apple, pear	Apply at the 2-5 leaf stage of development at the following rates: 0.6 L/ha for volunteer corn; 0.8 L/ha for wheat & barley; 1 L/ha for annual grasses and 2L/ha for quackgrass. Do not apply more than once per season. Grasses emerging after the treatment will not be controlled.
Broadleaf	▶ *Aim EC Carfentrazone-ethrel (240 g/L) + Agral 90 or Ag-Surf Non-ionic surfactant or + Merge surfactant/solvent *No tree age specified	37 – 117 ml/ha 0.25% (v/v) 1.0% (v/v)	14	12	Apple, cherry, peach, pear, plum	Hooded sprayers must be designed and operated so as to totally enclose the spray nozzles and tips and spray pattern and prevent any spray deposition to the crop being treated. Apply in a minimum of 100 litres per hectare of spray solution. PRECAUTIONS: Crop injury will occur when spray is allowed to come in contact with the green stem tissue, leaves, blooms or fruit of the crop. Apply to actively growing weeds up to 4 in. tall. To avoid significant crop response, applications should not be made within 6 to 8 hours of either rain or irrigation or when heavy dew is present on the crop.
	▶ Basagran or Broadloom Bentazon 480 g/L + Assist Oil concentrate	1.75 – 2.25 L/ha 1 – 2 L/ha	6	12	Apple, cherry, peach, pear	Directed spray ONLY. Do NOT overspray. Apply with 100 to 400 L/ha of water. Use lower rate of ASSIST under hot humid conditions. Make only 2 applications, 10 days apart at the low rate during the planting year. Avoid contact with tree foliage.

3. Weed Management Calendar: Young Plantings

A guide to weed management in young plantings (established 1-3 years old/nonbearing)

Always read the label before using any pesticide. Where differences between the label and this guide occur, label information prevails. Fruit trees can be damaged by herbicides if not used properly. Injury can be local (affecting only the tissue directly hit by the spray), or it may be systemic. Systemic injury can produce symptoms some distance from the site of contact. Damage can also be related to the herbicide rate, tree vigour, and tree age as well as drought stress. Review label information to determine the potential for herbicide damage. Care should be taken not to apply herbicides to root suckers, foliage, bark or fruit, especially the green bark of young trees. Before mixing up the spray solution it is important to calculate the actual area of ground surface under the trees to be sprayed. For band applications, use proportionally less spray mixture based on the area actually sprayed so that a full rate is not concentrated into the band which may result in crop injury.

Weeds	Product	Rate	Group	REI (hours)	PHI (days)	Crops	Notes
PRE-EMERGENCE							
Grass	▶ Dual II Magnum s-metolachlor 915 g/L	1.75 L/ha	15	12	Not stated	Apple, cherry, peach, pear, plum	Apply once per year prior to grass emergence as a band under the trees. Avoid drift on to the tree. Do not use on sandy soil with less than 2% organic matter.
	▶ Kerb 50 WSP Propyzamide 50%	4.5 kg/ha	15	24	Not stated	Apple, pear	Apply from late September to early November to trees established for one year or more. Best results obtained when soil temperatures are low but above freezing and soil moisture is high.
Broadleaf	▶ Lexone DF or Squadron or Tricor 75 DF Metribuzin 75%	1.0 kg/ha	5	12	Not stated	Apple, cherry, peach, pear, plum	Apply once per year as a band treatment prior to weed emergence. Apply in 150 to 300 L/ha water. Avoid contact with bark and foliage.
	▶ Sandea WG Halosulfuron 72.6% + non-ionic surfactant	35-70 g/ha	2	12	14	Apple	Do not apply to plants established less than one year or plants under stress. Allow a minimum of 21 days between applications. Do not apply more than 140 g/ha 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.
Grass and Broadleaf	▶ Authority 480 Sulfentrazone 480 g/L	219 – 292 mL/ha	14	12	14	Apple	Avoid spraying the green bark of trunks. 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 tank mix with flumioxazin (CHATEAU) or other products containing sulfentrazone.
	▶ Casoron G-4 Dichlobenil 4%	110 – 175 kg/ha	20	24	Not stated	Apple, cherry, peach, pear, plum	Do not use on light sandy soil. A rate of 70 grams applied to an area of 2x2 m is equivalent to 175 kg/ha. Apply late fall or early spring. Do not apply if temperatures are above 10-15 C to avoid injury from volatilization.
	▶ Chateau WDG Flumioxazin 51.1%	280 – 420 g/ha	14	12	60	Apple, cherry, peach, pear, plum	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. All applications to pears, or within 100 metres of pears, must be made after final harvest in the fall or prior to 2 months before budbreak in the spring. Do NOT apply after bud break unless using hooded or shielded equipment. Please review label for more detailed instructions.
	▶ Dual II Magnum s-metolachlor 915 g/L + Lexone DF or Sencor 75 DF or Tricor 75 DF Metribuzin 75%	1.75 L/ha 1 kg/ha	15 + 5	12	30	Apple, cherry, peach, pear, plum	One application per year to establish trees as a band treatment under the trees before weeds emerge. Do not use on sandy soil with less than 3% organic matter. Avoid drift onto trees.
	▶ Dual II Magnum s-metolachlor 915 g/L + Princep Nine – T Simazine 90%	1.75 L/ha 1.1 – 2.2 kg/ha	15 + 5	12	30	Apple, cherry, peach, pear, plum	One application per year. Do not apply to sandy with less than 2% organic matter. Avoid spray contact with the trees. Late season crabgrass and fall witchgrass may escape this treatment.
	▶ Princep Nine-T Simazine 90% Or Simadex Simazine 500 g/L	2.5 – 5.0 kg/ha 4.5 – 9.0 L/ha	5	12	None stated	Apple, pear	Apply to trees planted one year or longer in 300 L of water per Ha. User higher rate for perennial weeds such as quackgrass. Avoid contact with the bark and foliage.

Weeds	Product	Rate	Group	REI (hours)	PHI (days)	Crops	Notes
	▶ Simazine 480 Simazine 480 g/L	4.7 – 9.4 L/ha	5	12	None stated	Apple, pear	Bearing and non-bearing: Trees established one year or more. Apply 4.7-9.4 L in 300 L of water/ha prior to weed emergence in the spring. If weeds have emerged, hoe or cultivate prior to treatment.
	▶ Sinbar WDG Terbacil 80% + Lexone DF or Tricor 75 or Sencor 75 DF Metribuzin 75%	0.63 kg/ha 1.0 kg/ha	5 + 5	12	80	Apple, cherry, peach	Apply once per year in 150 to 300 L/ha water in a band treatment. Do not use on soils coarser than sandy loam and less than 3% organic matter.
POST-EMERGENCE							
Grass	▶ Poast Ultra Sethoxydim 450 g/L + Merge Surfactant/solvent	0.32 – 1.1 L/ha 0.25 – 2 L/ha	1	12	30	Apple, peach, plum	Apply to emerged annual grasses at the two to six leaf stage during active growth. Use these rates for specific weeds: annual grasses 0.32 L/ha; volunteer grains 0.47 L/ha; quackgrass (up to 3rd leaf) 1.1 L/ha. Complete grass control will take 7 to 21 days.
	▶ Reglone Dessicant Diquat 240 g/L	4.6 L/ha	22	24	None stated	Apple	Perennial grass suppression under apple trees.
	▶ Venture L Fluazifop-p-butyl 125 g/L	0.6 – 2.0 L/ha	1	12	None stated	Apple, cherry, peach, pear, plum	Apply at the 2-5 leaf stage of development at the following rates: 0.6 L/ha for volunteer corn; 0.8 L/ha. Grasses emerging after the treatment will not be controlled. One application per year applied in a band under the trees.
	▶ *Select Or Centurion Clethodim 240 g/L *No tree age specified	0.19 – 0.38 L/ha	1	12	14	Cherry	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.
Broadleaf	▶ Aim EC Carfentrazone-ethrel (240 + Agral 90 or Ag-Surf Non-ionic surfactant or + Merge surfactant/solvent	37 – 117 mL/ha 0.25% (v/v) 1.0% (v/v)	14	12	30 (suckers), 3 (weeds)	Apple, cherry, peach, pear, plum	Hooded sprayers must be designed and operated so as to totally enclose the spray nozzles and tips and spray pattern and prevent any spray deposition to the crop being treated. PRECAUTIONS: Crop injury will occur when spray is allowed to come in contact with the green stem tissue, leaves, blooms or fruit of the crop. Apply to basal shoots (suckers) before they have hardened bark. Use the higher rate of 150 mL/ha for control of suckers. Apply to actively growing weeds up to 4 in. tall.
	▶ Lontrel 360 Clopyralid 360 g/L Or Lontrel XC Clopyralid 600 g/L	0.56 L/ha 0.34 L/ha	4	12	30	Apple, pear	For control of vetch at early flower stage and other labelled weeds. Apply as spot treatment. Avoid contact with tree limbs.
	▶ Sandea WG Halosulfuron 72.6%	35 – 140 g/ha	2	12	14	Apple	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 52.5 – 140 g/ha for nutsedge control when fully emerged. If applying twice, apply first application at 3–5-leaf stage. Do NOT apply more than 140 g/ha per season. Avoid spray contact with foliage and fruit.
Grass and Broadleaf	▶ Gramoxone 200 SL Paraquat 200 g/L (pending commercial availability)	5.5 L/ha	22	24	None specified	Apple, cherry, peach, pear, plum	Apply to trees that have been established for at least one year. Apply with 1100 L/ha of water to wet weed foliage. DO NOT APPLY using hand-held equipment.
	▶ Gramoxone 200 SL Paraquat 200 g/L (pending commercial availability) + Princep Nine-T Simazine 90%	5.5 L/ha 2.5 – 5 kg/ha	22 + 5	24	None specified	Apple, pear	Apply with 1100 L/ha of water. Use on trees that have been established for more than a year. Provides residual control. Avoid contact with green bark and leaves.

Weeds	Product	Rate	Group	REI (hours)	PHI (days)	Crops	Notes
	▶ Ignite SN Glufosinate ammonium 150 g/L	2.7 – 5 L/ha	10	12	40	Apple, cherry, peach, pear, plum	Apply before weed growth reaches 30 cm in height. Do not make more than 2 applications per year. Do not apply more than 6.7 L/ha total product in one season. Apply to trees that have been established for at least one year. Only trunks with callused, mature brown bark should be sprayed unless protected from spray contact by nonpourous wraps, tree/bark guards, grow tubes or waxed containers.
	▶ Ignite SN Glufosinate ammonium 150 g/L	2.7 – 5 L/ha	10 + 5	12	40	Apple, pear	Apply before weed growth reaches 30 cm in height. Apply to trees that have been established for at least one year. To control emerged weeds and provide residual weed control.
	▶ + Princep Nine-T Simazine 90%	2 – 5 kg/ha					
	▶ Ignite SN Glufosinate ammonium 150 g/L	2.7 – 5 L/ha	10 + 5	12	40	Apple, pear	Apply before weed growth reaches 30 cm in height. Apply to trees that have been established for at least one year. To control emerged weeds and provide residual weed control.
	+ Simadex Simazine 500 g/L	4.5 – 9 L/ha					

4. Weed Management Calendar: Mature Orchards

A guide to weed management in mature orchards (3+ years old/bearing)

Please note: Red text is new to this guide in 2021

Always read the label before using any pesticide. Where differences between the label and this guide occur, label information prevails. Fruit trees can be damaged by herbicides if not used properly. Injury can be local (affecting only the tissue directly hit by the spray), or it may be systemic. Systemic injury can produce symptoms some distance from the site of contact. Damage can also be related to the herbicide rate, tree vigour, and tree age as well as drought stress. Review label information to determine the potential for herbicide damage. Care should be taken not to apply herbicides to root suckers, foliage, bark or fruit, especially the green bark of young trees. Before mixing up the spray solution it is important to calculate the actual area of ground surface under the trees to be sprayed. For band applications, use proportionally less spray mixture based on the area actually sprayed so that a full rate is not concentrated into the band which may result in crop injury.

NOTE: Products listed for 'Young Plantings' can be used in addition to the products listed below.**

Weeds	Product	Rate	Group	REI (hours)	PHI (days)	Crops	Notes
PRE-EMERGENCE							
Broadleaf	▶ Sencor 75 DF Metribuzin 75%	1.0 kg/ha	5	12	Not stated	Apple, cherry, peach, pear, plum	Established (bearing) trees only. Apply specified dosage as a pre-emergence band application under the trees in at least 150 L to 300 L of water per hectare. Do not apply more than once per crop season.
Grass and Broadleaf	▶ Alion Indaziflam 200 g/L	0.375 L/ha	29	12	14	Apple, cherry, peach, pear, plum	Apply only to trees that have been established for at least 3 growing seasons. Apply prior to weed germination and any time throughout the growing season when the ground is not frozen. If weeds have germinated tank mix with a burn down herbicide (consult label for further instructions). Excessive crop or weed debris may prevent uniform product distribution reaching the soil and reduced weed control. Only one application per year.
	▶ Alion Indaziflam 200 g/L + Sencor 480F Metribuzin 480 g/L	375 mL/ha 1.5 L/ha	29 + 5	12	60	Apple, cherry, peach, pear, plum	Apply only to trees that have been established for at least 3 growing seasons. Weed control plus residual control of annual broadleaf weeds.
	▶ Alion Indaziflam 200 g/L + Sencor 75 DF Metribuzin 75%	375 mL/ha 1.0 kg/ha	29 + 5	12	60	Apple, cherry, peach, pear, plum	Apply only to trees that have been established for at least 3 growing seasons. Weed control plus residual control of annual broadleaf weeds.
	▶ Sinbar WDG Terbacil 80%	2.25 – 4.5 kg/ha	5	12	80	Apple, peach	Apply to trees that have been established for at least 3 years. Apply as a band or broadcast treatment to ground beneath and/or between trees. On soils with 1 – 2% organic matter use 2.25 kg/ha on sandy loams and 3.25 kg/ha on silt loams. Where organic matter is over 2% use 3.25 – 4.25 kg/ha. Avoid contact with foliage.
POST-EMERGENCE							
Grass	▶ Poast Ultra Sethoxydim 450 g/L + Merge Surfactant/solvent	0.32 – 1.1 L/ha 0.25 – 2 L/ha	1	12	30	Apple, cherry, peach, pear, plum	Apply to emerged annual grasses at the two to six leaf stage during active growth. Use these rates for specific weeds: annual grasses 0.32 L/ha; volunteer grains 0.47 L/ha; quackgrass (up to 3rd leaf) 1.1 L/ha. Complete grass control will take 7 to 21 days.
Broadleaf	▶ 2,4-D Amine 600 2,4-D 564 g/L	1.67 L/ha	4	12	80	Apple, cherry, peach, pear, plum	Apply in early spring after weed emergence or in the fall once harvest is complete and when weeds are actively growing.
Grass and Broadleaf	▶ Ignite SN Glufosinate ammonium 150 g/L + Alion Indaziflam 200 g/L	2.7 – 5 L/ha 375 mL/ha	10 + 29	12	40	Apple, cherry, peach, pear, plum	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.
	▶ Roundup Transorb Glyphosate (360 g/L) Roundup Transorb Max Glyphosate (480 g/L) Roundup WeatherMax with Transorb 2 Tech	2.25 – 12 L/ha 1.69 – 9 L/ha	9	12	30	Apple, cherry, peach, pear, plum	Apply with 200-300 L/ha of water. Do not apply to trees with green bark. Use low rate for emerged annual and perennial weeds, mid rates for quackgrass and Canada thistle, high rates for woody perennials such as nightshade and brambles. Remove all root suckers 2 weeks before application. Do not apply when weeds are under drought stress.

Weeds	Product	Rate	Group	REI (hours)	PHI (days)	Crops	Notes
	<i>Glyphosate (540 g/L)</i> *No tree age specified. Younger than 3 years is questionable.	1.5 – 8 L/ha					
▶	Glyphosate (360 g/L) Glyphosate (480 g/L) Glyphosate (540 g/L) + Alion Indaziflam 200 g/L	2.25 – 12 L/ha 1.69 – 9 L/ha 1.5 – 8 L/ha 375 mL/ha	9 + 29	12	30	Apple, cherry, peach, pear, plum	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.
▶	Princep Nine-T Simazine 90% + Glyphosate (360 g/L) Glyphosate (480 g/L) Glyphosate (540 g/L)	2.25 – 5.0 kg/ha 2.25 – 12 L/ha 1.69 – 9 L/ha 1.5 – 8 L/ha	5 + 9	12	30	Apple, cherry, peach, pear, plum	To control actively growing weeds, with residual control of germinating weeds. Remove all suckers from base of trunks two weeks before application. Apply with 200-300 L/ha of water. Do not apply to trees with green bark. Use low rate for emerged annual and perennial weeds, mid rates for quackgrass and Canada thistle, high rates for woody perennials such as nightshade and brambles. Do not apply when weeds are under drought stress.
▶	Lorox DF Linuron 480 g/L Or Afolan F Linuron 450 g/L	9.0 L/ha 10.0 L/ha	7	12	Not stated	Apple, cherry, peach, pear, plum	Apply before weeds are 10 cm high. Apply in 400-600 L/ha water with a surfactant. Avoid spray drift contact with fruit, foliage or bark. Use only on trees that have been established 10 or more years (1 year in the case of peach). Product being cancelled on tree fruit. Last date of use is November 5, 2022.
▶	*Prism SG Rimsulfuron 25.0% + Agral 90 or Ag-Surf Non-ionic surfactant *No tree age specified	60 g/ha 0.2% (v/v)	2	12	14	Cherry, plum, peach	Use only on stone fruit in a directed spray application adjusted to provide complete coverage of the weeds under the crop canopy. Use a minimum of 200 L of water/ha. Do not apply more than 60 g/ha 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.

5. Weed Management Calendar: Nurseries

A guide to weed management in apple tree nurseries.

Always read the label before using any pesticide. Where differences between the label and this guide occur, label information prevails. Fruit trees can be damaged by herbicides if not used properly. Injury can be local (affecting only the tissue directly hit by the spray), or it may be systemic. Systemic injury can produce symptoms some distance from the site of contact. Damage can also be related to the herbicide rate, tree vigour, and tree age as well as drought stress. Review label information to determine the potential for herbicide damage. Care should be taken not to apply herbicides to root suckers, foliage, bark or fruit, especially the green bark of young trees. Before mixing up the spray solution it is important to calculate the actual area of ground surface under the trees to be sprayed. For band applications, use proportionally less spray mixture based on the area actually sprayed so that a full rate is not concentrated into the band which may result in crop injury.

Weeds	Product	Rate	Group	REI (hours)	Notes
PRE-PLANT					
Grass and Broadleaf	Roundup Transorb <i>Glyphosate (360 g/L)</i>	2.25 – 12 L/ha	9	12	This product may be used to control listed annual or perennial weeds prior to planting nursery stock. Treat area to be planted, and till soil 7 to 10 days later. Use postemergence at bud bloom growth stage to control most perennial weeds. Repeat treatments may be necessary to control weeds originating from underground parts of untreated weeds or from seeds. This product does not provide residual or pre-emergent weed control.
	Roundup Transorb Max <i>Glyphosate (480 g/L)</i>	1.69 – 9 L/ha			

PRE-EMERGENCE

Preemergent herbicides need to be applied to apple tree nurseries shortly after transplanting trees into the nursery. A soil-settling rainfall of 15-25 mm is advised prior to making any preemergent herbicide application to newly planted nursery trees. For most preemergent herbicides, further rainfall of 15-25 mm is required within 1-2 weeks to move the herbicide into the soil. An effective preemergent program can reduce the need for postemergent herbicide application later.

Grass and Broadleaf	▶ Princep Nine-T <i>simazine</i>	1.1 – 2.2 kg/ha	5	12	Trees established less than one year. Apply in 300 L of water. Apply once per season. Avoid contact with trunk and leaves of trees. Apply post planting, pre-emergent to weeds, preferably after rain has settled the soil around the trees. Backpack sprayer or tractor mounted boom may be used for application. If weeds have emerged, hoe or cultivate before application. Use low rate for sandy or low organic matter soils. Use high rate for clay or high organic soils. Do not use on sandy soils with organic matter less than 2%. Late season emerging fall panicum and crabgrass may escape treatment. Do not plant any crop but corn in the treated area for 1 year after a simazine application.
	▶ Princep Nine-T <i>simazine</i>	2.5 – 3.75 kg/ha	5	12	Apply only to stock which is established one year or more. Apply in 300 L of water. Apply once per season. Avoid contact with trunk and leaves of trees. Apply in the fall or spring prior to weed emergence and bud-break. If weeds have emerged, hoe or cultivate before application. Use low rate for sandy or low organic matter soils. Use high rate for clay or high organic soils. Do not use on sandy soils with organic matter less than 2%. Do not plant any crop but corn in the treated area for 1 year after a simazine application.
	▶ Devrinol DF-XT <i>napropamide</i>	9 kg/ha	15	12	Apples are a species of Malus listed under deciduous nursery stock. Apply in 470 L of water. Apply to transplanted trees as soon as possible after lining out. Wait for rainfall to settle soil before application to ensure increased crop safety. On established nursery stock, apply in late fall or early spring. Do not apply to frozen ground.
	▶ Devrinol DF-XT <i>napropamide</i> Princep Nine-T <i>simazine</i>	9 kg/ha 1.1 kg/ha	15 + 5	12	On established nursery stock, apply in late fall or early spring. Do not apply to frozen ground.

POST-EMERGENCE

For postemergent herbicide treatments in tree fruit nurseries, it is strongly recommended that equipment be fitted with an appropriate drift shroud or shield around the nozzle to prevent herbicide contact with green tissue and immature bark. This includes hand-held equipment such as backpack sprayers.

Grass	▶ Venture L Fluozifop-p-butyl 125 g/L	2 L/ha	1	12	Apply a directed spray to nursery stock to avoid spray contact with the foliage. Apply at the 2-5 leaf stage of development at the following rates: 0.6 L/ha for volunteer corn; 0.8 L/ha for wheat & barley; 1 L/ha for annual grasses and 2L/ha for quackgrass. Do not apply more than once per season. Grasses emerging after the treatment will not be controlled. WARNING: Experimental feeding studies in rats have demonstrated that the active ingredient can produce birth defects and other adverse effects in the developing fetus of rats. Women capable of bearing children should be particularly careful when handling this product.
Broadleaf	▶ Basagran <i>bentazon</i> ASSIST or XA Oil Concentrate	2.25 L/ha 1-2 L/ha	6	12	Tolerant as a directed spray only in 100-400 L/ha water. Do not overspray. Registered for newly planted fruit trees but age not specified.

Weeds	Product	Rate	Group	REI (hours)	Notes
	▶ *Aim EC <i>carfentrazone-ethyl</i> + Agral 90 or Ag-Surf Non-ionic surfactant or + Merge surfactant/solvent *No tree age specified	37 – 117 ml/ha 0.25% (v/v) 1.0% (v/v)	14	12	Hooded sprayers must be designed and operated so as to totally enclose the spray nozzles and tips and spray pattern and prevent any spray deposition to the crop being treated. Apply in a minimum of 100 litres per hectare of spray solution. PRECAUTIONS: Crop injury will occur when spray is allowed to come in contact with the green stem tissue, leaves, blooms or fruit of the crop. Apply to actively growing weeds up to 4 in. tall. To avoid significant crop response, applications should not be made within 6 to 8 hours of either rain or irrigation or when heavy dew is present on the crop.
Grass and Broadleaf	▶ Gramoxone 200 SL Paraquat 200 g/L (pending commercial availability)	2.75 – 5.5 L/ha	22	24	Labelled for inter-row directed chemical weeding of established nursery crops. Applications of this product must be made using low boom sprayers fitted with drift-reducing shrouds or shields to prevent spray contact with the green tissue. Non-selective action affects all green plants and for this reason may be considered very risky. Apply in 300 to 550 L of water per hectare. Use 4.25 to 5.5 L when weeds are above 5 cm in height and higher volume of water on dense weed growth. DO NOT APPLY using hand-held equipment (including backback sprayers).