Herbicides

Trade Name(s): 2,4-D Amine 600[&]

Common Name: 2,4-D

Group: 4

Registered On: Bearing apples, peaches, pears, plums, apricots, cherries.

Target Weeds: Plantains, dandelion, curled dock, mustards, redroot pigweed, prostate pigweed, Russian pigweed, common ragweed, shepherd's purse, lamb's-quarters, stinkweed, cocklebur, prickly lettuce, narrow-leaved hawk's beard (fall rosette or spring at 1-2 leaf stage), Russian thistle, seedling sow thistle and seedling Canada thistle.

Activity: Readily absorbed through leaves or roots. Translocated primarily in phloem with the sugars but can also move with water in the xylem. The amine formulations are registered but can still be volatile when leaf temperatures exceed 25°C. Ester formulations are very volatile and therefore not registered on tree fruits. Short residual life.

Use Suggestions: Can be used at low rates in combination with glyphosate for broader weed control and to delay selection for resistance to glyphosate. Avoid drift onto leaves.

Application: Post-emergence in spring when growing rapidly in moist soil or post-harvest if weeds are still growing rapidly. To prevent run-off do not irrigate within 24 hours of application. Rainfast in 4 hours. Take care to avoid spray drift or vapor drift coming in contact with grapes. Do not spray when temperatures exceed 25°C. Even trace amounts of 2,4-D can cause damage to grapes and some other ornamental plants.

Environmental Considerations: TOXIC to broadleaf terrestrial plants. Observe specified buffer zones. not spray exposed roots of trees and ornamentals. LEACHING: The use of this chemical may result in contamination of groundwater, particularly in areas where soils are permeable (e.g., sandy soil) and/or the depth to the water table is shallow. RUN-OFF: To reduce runoff from treated areas into aquatic habitats, consider the characteristics and conditions of the site before treatment. Site characteristics and conditions that may lead to runoff include, but are not limited to, heavy rainfall, moderate to steep slope, bare soil, poorly draining soil (e.g., soils that are compacted, fine textured or low in organic matter and clay).

Re-entry Interval: Do not enter treated area until spray has thoroughly dried.

Days to Harvest: 80

Nurseries & New Plantings: Not recommended.

[&]NOT ALL 2,4-D PRODUCTS ARE REGISTERED FOR USE IN ORCHARDS

Trade Name(s): Aim EC

Common Name: carfentrazone-ethyl

Group: 14

Registered On: Pome Group (apples, pears), and Stone Group (apricots, peaches, nectarines, prunes, plums).

Target Weeds: Rate required depends on the species and size of the weed (up to 10 cm). Low rate (36.5 ml/ha) controls lamb's-quarters, (< 7.5 cm tall), morning glory (up to 3 leaves), black nightshade, (up to 5 cm tall), eastern black nightshade, (<5 cm tall), redroot pigweed, velvetleaf, tall waterhemp (up to 5 cm tall); 58 ml/ha controls above weeds and flixweed, lamb's-quarters, round-leaved mallow, morning glory, hairy nightshade, stinkweed, prostrate, smooth and tumble pigweeds, purslane, smartweed, tansy mustard, tall and common waterhemp; 73 ml/ha additionally controls carpetweed, cleavers, cocklebur, jimsonweed, kochia, black and eastern nightshade, Russian thistle, shepherd's purse, volunteer canola, **117 ml/ ha** controls the above weeds plus burclover, prickly lettuce, Venice mallow, (up to 5 cm tall), and corn spurry.

Activity: Contact herbicide, not translocated in plant. No residual activity. Non-mobile in soil.

Use Suggestions: Alternative to Ignite for sucker management.

SUCKER MANAGEMENT: Apply to young suckers that have not reached maturity and hardened off. Do not allow spray to contact fruit, foliage or green bark.

Take all precautions to prevent the spray from contacting desirable foliage or fruit. Complete coverage is necessary. Do not apply if drift is possible. Avoid using fine droplet nozzles. Use a hooded sprayer or directed sprayer application. To prevent drift from reaching other parts of the tree, the use of drift reducing nozzles, splash screens or full screen is recommended (at least one method is required). Direct spray toward the sucker zone.

Apply 150 mL of product per hectare or 75 mL of product/100L of water, using 200 L/ha spray mixture per treated area. Maximum 2 applications per year. Preharvest interval is 30 days. Apply with an adjuvant such as Agral® 90 or Ag-Surf® at 0.25% v/v (0.25 litres per 100 litres of spray solution) or use Merge® at 1% v/v (1 litre per 100 litres of spray solution).

DO NOT enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

Application: Post emergence to actively growing weeds. Must be applied with a hooded sprayer, 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. Less activity under dry conditions (drought or low humidity). Always add an adjuvant (e.g., Agral 90, Merge).

Environmental Considerations: DO NOT apply directly to aquatic habitats. Observe specified buffer zones. To reduce runoff from treated areas into aquatic habitats, avoid application to areas with a moderate to steep slope, compacted soil, or clay. Avoid application when heavy rain is forecast.

Re-entry Interval: 24 h

Days to Harvest: 3

Nurseries & New Plantings: Safe on crop.

Trade Name(s): Alion

Common Name: indaziflam

Group: 29

Registered On: Pome Group (apples, pears), and Stone Group (apricots, sweet/sour cherries, peaches, nectarines, plums).

Target Weeds: Barnyard grass, bluestem broomsedge, downy brome, ripgut brome, cheat grass, giant foxtail, green foxtail, Italian ryegrass, large crabgrass, medusa head, wild proso millet, yellow foxtail, volunteer rye, wild barley, wild oats, witchgrass, annual sow-thistle, black mustard, common groundsel, cudweed, dog fennel, field bindweed, kochia[S], lamb's-quarters, morning glory, prickly lettuce[S], redroot pigweeds, shepherd's purse, smooth hawk's-beard, spotted spurge, St. John's wort, stork's-bill, white sweetclover, wild mustard, yellow starthistle. (S=suppression)

Activity: Selective, season long, pre-emergent, grass and broadleaf weed control. Weed seeds and seedlings must come into contact with the herbicide prior to emergence to be controlled. A uniform layer of herbicide is required. Do not apply prior to soil disturbance. Excessive crop or weed debris present on the soil surface at time of application may prevent uniform product distribution reaching the soil and reduce weed control.

Use Suggestions: May be tank mixed with Ignite, glyphosate and Sencor to control weeds that have already emerged (see label).

Application: Apply to soils before weeds germinate. Alion is most effective when adequate moisture is present and the application is followed by rain or an irrigation prior to weed germination. Alion may be applied only once at any time throughout the growing season when the ground is not frozen or covered with snow. Avoid disturbing treated soil after application.

Do not apply to trees that have been established for less than 3 growing seasons after transplanting.

Do not plant into Alion-treated soil for 2 years after treatment.

Environmental Considerations: DO NOT apply directly to aquatic habitats. Observe specified buffer zones.

Re-entry Interval: 12 h

Days to Harvest: 14

Nurseries & New Plantings: DO NOT apply Alion to trees that have been established for less than three full growing seasons after transplanting.

Trade Name(s): **Authority 480**

Common Name: sulfentrazone

Group: 14

Registered On: Apples.

Target Weeds: kochia, redroot pigweed, lamb's-quarters, wild buckwheat, eastern black nightshade, common waterhemp, smooth crabgrass, large crabgrass, yellow woodsorrel, common groundsel, cleavers[s], Powell pigweed, common purslane. (S =suppression).

Activity: Pre-emergent, residual herbicide. Weed seeds and seedlings must come into contact with the herbicide prior to emergence to be controlled. Do not apply to fine textured soil, with <1.5% OM.

Environmental Considerations: Authority 480 is known to leach through soil into groundwater particularly in areas where soils are permeable (e.g., sandy soil) and/or the depth to the water table is shallow. DO NOT use on coarse soils classified as sand, which have less than 1% organic matter. To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay. Avoid application when heavy rain is forecast. Observe specified buffer zones.

Use Suggestions: Banded application to the base of the tree prior to weed emergence. See label for instructions on mixing with other herbicides. Do not tank mix with Chateau or other products containing sulfentrazone.

Application: Apply to soils before weeds germinate. Avoid direct or indirect spray contact with green bark, crop foliage and fruit. Authority 480 requires rain or irrigation to activate. AUTHORITY 480 Herbicide may be applied once per year.

Re-entry Interval: 12 h

Days to Harvest: 14

Nurseries & New Plantings: DO NOT apply Authority to trees that have been established for less than **one** full growing seasons after transplanting.

Trade Name(s): Basagran

Common Name: Bentazon

Group: 6

Registered On: Newly planted apples, cherries, peaches, pears, nectarines (directed applications).

Target Weeds: Controls young broadleaf weeds including: bird rape, buttercup, cleavers, cocklebur, common chickweed, common groundsel, common ragweed, corn spurry, flower-of-an hour, giant ragweed, hairy galinsoga, hairy nightshade, jimsonweed, lady's-thumb (smartweed), lamb's-quarters, low cudweed, purslane, redroot pigweed[S], Russian thistle, shepherd's purse, stinkweed, stork's bill, velvetleaf, volunteer canola, wild mustard, wild radish. (S=suppression)

Activity: Works best on young, rapidly growing weeds. Mainly contact. No translocation within the plant. No residual activity. High water volumes recommended.

Environmental Considerations: Observe specified buffer zones.

Use Suggestions: Safe in nurseries and new plantings.

Application: Apply post emergence when weeds are small and actively growing. Use the recommended surfactant. Direct the spray away from crop foliage. Rainfast in 6 to 8 hours.

Re-entry Interval: 12 h

Days to Harvest: Use on non-bearing trees only.

Nurseries & New Plantings: Direct spray away from crop foliage.

Trade Name(s): Casoron G4

Common Name: dichlobenil

Group: 20

Registered On: Apples, cherries, peaches, pears and plums. Newly planted apples trees.

Target Weeds: Depending on the rate used, most weeds are susceptible to or suppressed by CASORON including vetch and horsetail, and annual bluegrass, foxtail, pigweed, artemisia[H], groundsel, plantain, bindweed[H], horsetail, purslane, bittercress, grasses (sedges and Juncus species) sheep sorrel[H], blue aster, knotweed, shepherd's purse, bracken fern, kochia, smartweed, Canada thistle[H], lamb's-quarters, sow thistle,

chickweed, loosestrife, spurge, crabgrass, mustard, vetch[H], quack grass[H], nutsedge[H], wild buckwheat[H], dandelion[H]. Only fair control of poison ivy and Canada thistle. (H=higher rate and fall application required).

Activity: Soil applied granule. Inhibits cell growth at the growing points. Volatilizes readily at temperatures over 10°C. Mobile in soils with low organic matter. Residual for 2 to 6 months. Longer residual with higher rates and in higher organic matter soils. Works well in combination with organic mulches.

Environmental Considerations: To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay. Avoid application when heavy rain is forecast.

Use Suggestions: Consider using every few years as part of a rotation of herbicides.

Application: Pre-emergence, soil-active herbicide. CASORON is a granular which must be spread uniformly for maximum efficacy. Usually spread by hand or shaker. Preferred application is in late fall before the soil freezes or the snow falls. As temperatures approach 10°C or higher Casoron must be watered in during or immediately after application.

Re-entry Interval: 12 h

Days to Harvest: Not specified on label, but normally applied late fall or early spring.

Nurseries & New Plantings: Do not apply 3 months before or after planting grafted or budded rootstocks. For finished trees, wait 4 weeks after planting before applying Casoron and use lower rates on light soils.

Newly planted apple trees: may be applied four weeks after new trees are planted in the orchard but prior to weed growth. Use the lower rate on lighter soils.

Trade Name(s): **Centurion**

Common Name: **clethodim**

Group: 1

Registered On: Established cherries.

Target Weeds: Foxtail (green, yellow), wild oats, volunteer cereals, barnyard grass, witchgrass, fall panicum, proso millet, Persian darnel, crabgrass (smooth and large), Japanese brome, foxtail barley, quackgrass, annual bluegrass (suppression). Level of control will vary with rate on perennial weeds.

Activity: Contact and systemic control. Uptake is mainly through the leaves. No residual activity. Increase rates on older grass weeds or when weeds not growing rapidly.

Use Suggestions: Alternative to glyphosate to control annual grasses, wild oats, volunteer cereals and quackgrass.

Application: Apply to 2-6 leaf grass weeds. **Must** use the specified surfactant.

Re-entry Interval: 12 h

Days to Harvest: Not stated on label. Generally applied only in spring.

Nurseries & New Plantings: Do not use in nurseries.

Trade Name(s): Chateau

Common Name: flumioxazin

Group: 14

Registered On: Bearing and non-bearing pome fruit group (apples, pears) and stone fruit group (apricots, cherries, nectarines, peaches, plums, prunes).

Target Weeds: Rates vary with soil texture; course textured soils require lower rates. Control selected grass and many broadleaf weeds. Controls common groundsel, green pigweed, redroot pigweed, common ragweed, common lamb's-quarters, green foxtail, hairy nightshade, dandelion, eastern black nightshade, kochia, Canada fleabane.

Activity: Residual control of broadleaf and grass weeds. Water is required for activation. Does not leach or volatilize from soil, but does breakdown with microbial activity, therefore residual control decreases under conditions of higher microbial activity (increased temperature, moisture, high organic matter, etc.). Rates depend on soil texture. Do not apply on soils with > 5% OM, or fine-textured soils.

Environmental Considerations: Observe specified buffer zones. Avoid application to areas with a moderate to steep slope, compacted soil, or clay. Avoid application when heavy rain is forecast.

Use Suggestions: Should be mixed with glyphosate to control emerged weeds. Alternative to simazine when rotating herbicides.

Do not apply within 100 meters of non-dormant pears. Do not apply to apple or pear trees established less than one year. For apples, do not apply after budbreak unless using hooded or shielded application equipment and applicator can ensure spray drift will not come in contact with crop fruit or foliage. Only apply to dormant pears. 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 tank mix Chateau Herbicide WDG, or use in the same field, with Dual Magnum (metolachlor or s-metolachlor) as crop injury may occur.

Re-entry Interval: 12 h

Days to Harvest: 60

Nurseries & New Plantings: Do not apply to trees established less than 1 year unless protected by non-porous wraps, grow tubes or waxed container.

Trade Name(s): Dual Magnum

Common Name: S-metolachlor

Group: 15

Registered On: Bearing and non-bearing apples, apricots, cherries, peaches, pears and plums.

Target Weeds: Annual grasses (foxtail, crabgrass, barnyard grass) and select annual broad-leafed weeds (pigweed, lambs-quarters). Rate for non-bearing trees is 1.25 - 1.75 L/ha. Use higher rate for heavier weed pressure. Rate for bearing trees is 1.75 L/ha.

Activity: Absorbed by germinating grasses mainly through shoot just above seed. Absorbed by germinating broadleaf weeds through shoots and stems. Normally residual in soil for 10 to 14 weeks.

Use Suggestions: Use in combination with broadleaf weed herbicide such as Princep-Nine-T. Use as an alternative to PROWL, particularly when pressure from annual grass weeds is low.

Environmental Considerations: Observe specified buffer zones. Avoid moderate to steep slopes, compacted soil, or clay. Avoid application when heavy rain is forecasted.

Application: Best applied pre-emergent before weed seeds germinate. Rainfall or irrigation within 10 days of application is required for maximum activity. Do not use on soils with less than 2% OM.

In established orchards, apply as a band under trees. Can be tank mixed with Princept Nine-T.

Re-entry Interval: 12 h – read label for exceptions.

Days to Harvest: Not stated on label, but normally only applied in spring.

Nurseries & New Plantings: Safety on nurseries not tested. Safe on new plantings.

Trade Name(s): Credit Xtreme, Glyfos, Round-up Weathermax, Round-up Transorb, Touchdown, Crush'R Plus and others.

Common Name: glyphosate

Group: 9

Registered On: Both bearing and non-bearing apples, apricots, cherries, peaches, pears and plums. Can be used prior to establishment because it is non-residual.

Target Weeds: Read the label of the product purchased as rates and target weeds vary. Controls annual and perennial weeds, both broadleaved and grasses. Poor control on field horsetail and fair control on vetch. Rates vary with the weed size; younger weeds and annual weeds require less product for control, i.e, most weeds 8 to 15 cm tall are controlled by 1 L/ha and 1.25-1.9 L/ha is required for weeds up to 15 cm. Perennial weeds may be best controlled by a fall application.

Activity: Absorbed through foliage and translocated throughout the plant. Readily adsorbed to soil organic matter. No residual activity.

Use Suggestions: Remove suckers before application. Currently the herbicide most at risk for developing weed species resistance due to repeated use. Reduce use of glyphosate by alternating herbicides or tank mixing with herbicides from other groups.

Application: Rates vary with the specific product formulation. Check the label of the product purchased.

Apply post emergence to actively growing weeds. For best activity on annual weeds, apply when actively growing. Best activity on perennial weeds is usually at the bud to bloom stage of growth. Quack grass is best treated in the spring or fall when it is actively growing with at least 3-4 new leaves on each emerged shoot. Do not allow herbicide solution to contact green foliage or green bark of trees. Not usually damaging to mature trees when sprayed on root suckers during the spring, but at other times of the year suckers must be removed before spraying. Do not apply to fresh cut or wounded wood. Best results when applied in low water volumes. Even small amounts of soil or organic matter in spray water will reduce efficacy. Depending on the product used glyphosate is rainfast 1 to 6 hours after application. Check the label.

Re-entry Interval: 24 h

Days to Harvest: 30

Nurseries & Newly Planted Trees: Recommended as a pre-planting treatment. Treat area to be planted, and till 7 to 10 days later to control perennial weeds. Not recommended first year after planting unless extreme care is taken to keep spray solution from contacting any part of the young tree.

Warning: Due to risk of explosion - do not mix, store, or apply glyphosate products in galvanized steel or unlined steel (except stainless steel) tanks.

Trade Name(s): Ignite 15 SN

Common Name: glufosinate ammonium

Group: 10

Registered On: Bearing apples and pears, apricots, cherries (sweet and sour), nectarines, peaches and plums.

Target Weeds: Control varies with rate. For example, 2.7 – 4 L/ha controls chickweed, green foxtail, lamb's-quarters, stinkweed, wild mustard, redroot pigweed (use 4 L/ha) whereas 4 – 5 L/ha controls dandelion, oak-leaved goosefoot, wild buckwheat.

Activity: Acts rapidly, primarily as a contact herbicide. Absorbed through foliage with minimal translocation. No residual activity.

Use Suggestions: Use an alternative to glyphosate if there is low pressure from difficult to control or established perennials weeds. Ignite will knock back root suckers without harming tree. Use high volumes of water to increase control.

Application: Post emergence application: avoid contact with leaves or green bark of crop, but suckers do not need to be removed. Thorough coverage of the plant tissue to be controlled is essential. Activity is reduced by environmental factors such as cool temperatures, poor moisture and low humidity. Heavy dew at time of application may reduce control of certain weed species. Rainfast in 4 hours.

Sucker Management:

Re-entry Interval: 12 h

Days to Harvest: 14 to 40, depending on the crop.

Nurseries & New Plantings: Not recommended.

Trade Name(s): Lorox

Common Name: Linuron

Group: 7

Registered On: peaches, apples, pears, plums, cherries established 10 years (except 1 year for peach trees).

Target Weeds: Grasses, including crabgrass, green and yellow foxtail, witchgrass, barnyard grass(es) and broadleaf weeds, including chickweed, goosefoot, knotweed, lamb's-quarters, redroot pigweed, purslane, shepherd's purse, smartweed, stinkweed, annual sowthistle, wild buckwheat, and wormseed mustard.

Activity: Foliar and residual activity. High water volumes recommended.

Environmental Considerations: Water soluble, residual. Do not apply (except as recommended for crop use), or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Observe specified buffer zones.

Use Suggestions: Selective control of annual weeds.

Application: Directed or band spray. Make a single application of 9 L of LOROX L Herbicide per ha plus a surfactant in 400 to 600 L water per ha of ground actually sprayed. Apply before weeds are 10 cm high.

Re-entry Interval: 12 h

Days to Harvest: Usually applied in spring.

Nurseries & New Plantings: Not registered.

Trade Name(s): **Poast Ultra**

Common Name: sethoxydim

Group: 1

Registered On: Non-bearing apples, peaches and plums, bearing apples and pears, and apricots, cherries (sweet and sour), peaches and plums.

Target Weeds: Post-emergent control of grasses. barnyard grass, crabgrass (large), fall panicum, foxtail (green/yellow; wild millet), Persian darnel, proso millet, volunteer corn, witchgrass, wild oats, volunteer barley, volunteer wheat. Does not control sedges or broadleaf weeds.

Activity: Contact and systemic control. Uptake is mainly through the leaves. No residual activity. Increase rates on older grass weeds or when weeds not growing rapidly.

Use Suggestions: Alternative to glyphosate to control annual grasses, wild oats, volunteer cereals and quackgrass (applied early).

Application: Post emergence application. Merge Adjuvant (1% v/v in 100-200 L/water/ha) **must** be added, including tank mixtures with broadleaf herbicides. For optimum control, apply when grasses are at 2-5 leaf stage with adequate soil moisture, light to moderate weed infestations levels and under moderate temperatures (15-28°C).

Re-entry Interval: 12 h

Days to Harvest: 30

Nurseries & New Plantings: Non-bearing apples, peaches and plums.

Trade Name(s): **Princep nine-T, Simazine 480, Simadex**

Common Name: simazine

Group: 5

Registered On: Bearing apples and pears, and non-bearing apples, pears. Labels differ between products. Refer to the label of the product purchased. Other fruit trees mentioned, but rates are not provided.

Target Weeds: Most annual broad-leaved weeds including; lady's-thumb, wild buckwheat, volunteer clovers, purslane, ragweed, smartweed, lamb's-quarters and many annual grasses including barnyard grass, crabgrass, wild oat, and yellow foxtail. Rates vary for bearing and non-bearing fruit trees. Use the lower rates for coarse, sandy soil and the higher rates for clay soils and soil high in organic matter. At low rates grasses will be the first to come through.

Activity: Absorbed by roots of developing seed. Little or no foliar absorption. Translocated upwards in xylem. Residual in soil for about 8 weeks.

Use Suggestions: At risk for selection of herbicide resistance. Rotate with flumioxazin (Chateau) or other broadleaf herbicides.

Application: Apply pre-emergent, before weed seeds germinate. Do not use on sandy soil with less than 2% OM. Simazine is persistent in the soil and may leach. Needs moisture to be activated, so apply to moist soil or irrigate after application. It should only be used once a year. Over application can cause crop damage, particularly in light soils.

Re-entry Interval: 12 h

Days to Harvest: Not stated on label. Generally applied only in spring.

Nurseries & New Plantings: Do not use in nurseries. On newly planted trees, soil should be allowed to settle by rain or irrigation before application. Use lower rates on new plantings.

Trade Name(s): Prism SG

Common Name: rimsulfuron

Group: 2

Registered On: Apricot, cherry, nectarine, peach and plum.

Target Weeds: Controls most annual grasses and selected annual broad-leafed weeds including barnyard grass, lamb's-quarters, crabgrass (large and smooth), redroot pigweed (suppression only), fall panicum, green foxtail. Controls pigweed, wild buckwheat, but is poor on common groundsel and only fair on mallow.

Activity: Barnyard grass, green and yellow foxtail, quackgrass (suppression only), lamb's quarters, redroot pigweed.

Use Suggestions: Apply on actively growing weeds.

Application: Direct spray application under the canopy. Make a single application early postemergence to actively growing weeds at a rate of 60 g/ha plus a non-ionic surfactant at 2 L per 1000 L spray solution (0.2 % v/v). Use ground equipment only. Use a minimum of 200 litres of water/ha.

Re-entry Interval: 12 h

Days to Harvest: Do not apply within 14 days of harvest.

Nurseries and Newly Planted Trees: Not specified.

Trade Name(s): Prowl H_20

Common Name: pendimethalin

Group: 3

Registered On: Both bearing and non-bearing apples, apricots, cherries and peaches.

Target Weeds: Controls most annual grasses and selected annual broad-leafed weeds including barnyard grass, lamb's-quarters, crabgrass (large and smooth), redroot pigweed (suppression only), fall panicum, green foxtail. Controls pigweed, wild buckwheat, but is poor on common groundsel and only fair on mallow.

Activity: Weeds are controlled as they germinate. Translocation is not significant and emerged weeds are not controlled. Very low mobility in most soils. Residual period of about 8 weeks.

Use Suggestions: Use in combination with a broadleaf pre-emergence herbicide (glyphosate, Chateau, SINBAR, simazine).

Application: Apply before weed seed germination. Most effective when applied to moist soil, or activated with a short irrigation cycle immediately after application.

Re-entry Interval: 24 h

Days to Harvest: Apply in spring only.

Nurseries and Newly Planted Trees: Safety on nurseries not tested. Safe on new plantings.

Trade Name(s): Pyralid, Thizzle and others
Common Name: clopyralid

Group: 4

Registered On: Bearing and non-bearing apples and pears (spot treatments for vetch).

Target Weeds: Vetch and other legumes. Will also control/suppress Canada thistle, groundsel and dandelion.

Activity: Absorbed by foliage and translocated readily throughout the weed.

Use Suggestions: Spot treatment for perennial vetch control and other weeds on the label.

Application: Post emergence as a spot treatment for perennial vetch species. When using a hand gun or backpack sprayer to treat small infestations, apply at a rate of 56 to 67 ml (refer to label) per 1000 square metre area in 200 L of water when vetch species are in the early flowering stage. Rainfast in 4 hours.

Re-entry Interval: 24 h

Days to Harvest: 30

Nurseries & New Plantings: Not recommended. Vetch should be controlled before planting.

Trade Name(s): Sandea

Common Name: halosulfuron

Group: 2

Registered On: Bearing apples.

Target Weeds: Controls certain broadleaf weeds and nut sedge including spiny amaranth, hedge bindweed, chickweed, cocklebur, corn spurry, deadnettle, groundsel, common, Canada fleabane, horsetail, kochia, lady's-thumb, lamb's-quarters, prickly lettuce, common mallow, common milkweed, morning glories, wild mustard, redroot and smooth pigweed, broadleaf plantain, purslane, wild radish, shepherd's purse, prickly sida, common sunflower, volunteer canola, and fringed willowherb.

Activity: Absorbed through the roots, shoots and foliage, and translocated through the plant. Pre-emergent, residual activity extended with higher rates.

Use Suggestions: For best results, post-emergent applications should be made to actively growing weeds at heights described on the label. Activating soil moisture is necessary for optimum pre-emergent weed control. Avoid application when temperatures exceed 30°C. Avoid contact with tree foliage, and fruit with spray or drift.

Application: Pre- and post-emergence application as a broadcast treatment to orchard floor on each side of the tree rows. Use a non-ionic surfactant with post-emergent applications. Avoid irrigation for 2-3 days after post-emergent application. Observe resistance management recommendations on the label.

Re-entry Interval: 24 h

Days to Harvest: 14

Nurseries & New Plantings: Not specified.

Trade Name(s): Sencor

Common Name: metribuzin

Group: 5

Registered On: Established (bearing) and year of planting apples, apricots, peaches, pears, plums, cherries.

Target Weeds: Rate varies with weed. Controls grasses, including barnyard grass, green foxtail, cheat grass, Johnson grass (seedling), crab grass, witch grass, fall panicum, yellow, giant and green foxtail and broadleaf weeds including carpetweed, prickly mallow, cocklebur, prostrate pigweed, common chickweed, redroot pigweed, common ragweed, Russian thistle, corn spurry, shepherd's purse, dandelion (seedling), stinkweed, green smartweed, velvetleaf, hempnettle, wild buckwheat, jimsonweed, wild mustard, lady's-thumb, lamb's-quarters, and yellow woodsorrel.

Activity: Most uptake via the roots. Translocated upwards in the xylem. Residual for 6 to 8 weeks.

Use Suggestion: Mix with Sinbar for broad spectrum control of emerged weed seeds.

Application: Pre-emergence (to early post emergence for some weeds). Use at lower rates on most Okanagan soils. Rotate products and use well calibrated sprayer to ensure crop safety. Do not use on muck soils or gravel soils with less than 2% OM. Can be applied when treatment area is wet with dew but it should not rain for 6 hours after application.

Re-entry Interval: 12 h

Days to Harvest: 60

Nurseries & New Plantings: Caution with sandy soils.

Trade Name(s): Sinbar

Common Name: terbacil

Group: 5

Registered On: Apples and peaches 3 years and older. 1st year apples, apricots, cherries, peaches, pears, plums.

Target Weeds: Controls annual weeds such as barnyard grass, bluegrass, crabgrass, foxtail, chickweed, downy brome (cheatgrass), perennial rye grass, wild barley, mustard, prickly lettuce, stinkweed, annual sowthistle, henbit, lamb's-quarters, pigweed, purslane, and ragweed. In addition, treatment usually provides partial control

of quackgrass, horsenettle, yellow nutsedge and (Watson's Willowherb). Treatment will not control established perennial weeds such as bindweed and Canada thistle. On trees established >3 years, use 2.25 kg per ha on sandy loams and 3.25 kg per ha on silt loams. Where organic matter is over 2%, use 3.25 - 4.5 kg/ha.

Activity: Uptake mainly through roots. Residual action for about 5 weeks, but this is impacted by soil type and amount of organic matter.

Use Suggestions: Pre-emergent herbicide for peaches. On lighter soils, lower rates in combination with Prowl or Dual can provide good weed control and more crop safety. Do not use with Venture or mix with Venture.

Application: Pre-emergence. Rates vary with soil texture and organic matter. Overuse can result in crop damage. Do not apply on soils with less than 1% OM. Safety margin is narrow on coarse soils (calibrate sprayer). Safety margin is greater with peach rootstocks than other rootstocks species. Moisture is required to activate the chemical within 2 weeks of application.

Re-entry Interval: 12 h

Days to Harvest: Not on label, but usually only applied in early spring.

Nurseries & New Plantings: Not for nurseries. Use lower rates for 1st year trees.

Trade Name(s): Treflan Liquid EC, Bonanza 480

Common Name: trifluralin

Group: 3

Registered On: Site preparation prior to transplanting apples, apricots, cherries, peaches, plums, and pears.

Target Weeds: Rate varies with soil texture. For light soils (sandy and sandy loam), use 1.2 L/ha; for medium soils (loam, silt loam, silt sandy, clay loam) use 1.7 L/ha, and for heavy soils (silty clay, loam, clay loam, silty clay, clay) use 2.4 L/ha.
Controls most annual grasses (green and yellow foxtail, goose grass, annual bluegrass, fall panicum, barnyard grass, loose silky bentgrass, crab grass, cheat, and brome grass) and selected annual broad-leafed weeds including; lamb's-quarters, chickweed, purslane, knotweed, stink grass, carpetweed, pigweed.

Activity: Pre-plant incorporate (mix into soil). Weeds are controlled as they germinate. Translocation is not significant and emerged weeds are not controlled. Very low mobility in most soils.

Use Suggestions: Use in combination with a broadleaf herbicide such as Sencor.

Application: Apply to soil and incorporate before weed seed germination. Most effective when applied to moist soil, or activated with a short irrigation cycle immediately after application.

Re-entry Interval: 12 h

Days to Harvest: Apply in spring only.

Nurseries and Newly Planted Trees: Not registered.

Trade Name(s): Venture L

Common Name: fluazifop-P-butyl

Group: 1

Registered On: Bearing and non-bearing apples, pears, and established apples, pears, cherries, peaches, apricots and plums.

Target Weeds: Broad range of annual and perennial grasses including Johnson grass, Persian darnel, barnyard grass, volunteer spring wheat and spring barley, wild oat, green, yellow foxtail, crab grass, fall panicum and top growth suppression of quackgrass. Does not control bluegrass, fescue species or sedges.

Activity: Absorbed primarily by leaves. Translocated to roots and rhizomes. No residual activity.

Use Suggestions: Alternative to Prowl when rotating herbicides, except Venture is applied post-emergence. Could be used in spring when Chateau is applied with fall glyphosate.

Application: Apply as a band under trees, post emergence. Timing is important for effectiveness. Apply when grasses are actively growing and annual grasses are in the 2 - 5 leaf stage and quack grass in the 3 - 5 leaf stage. Rainfast in 2 hours.

Re-entry Interval: 24 h

Days to Harvest: None specified on label, but normally applied in the spring.

Nurseries & New Plantings: Safe.

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.