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Controlling Weeds

in Your Agroforestry Planting

Canada

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Controlling Weeds in Your Agroforestry Planting includes the most recent recommendations for weed control in agroforestry plantings on the Prairies.

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For additional copies of this publication or to request an alternate format, please contact:

Agriculture and Agri-Food Canada
Agroforestry Development Centre
PO Box 940
Indian Head, SK S0G 2K0

Telephone: 866-766-2284
Facsimile: 306-695-2568

E-mail : agroforestry@agr.gc.ca

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Controlling Weeds

IN YOUR AGROFORESTRY PLANTING

Introduction

Agroforestry plantings, including shelterbelts, require maintenance for survival and optimum growth. An important maintenance practice is controlling competing vegetation around the woody plants. Any plant that competes with the woody plant for moisture, nutrients and light is undesirable and considered a weed. This includes grasses, forbs, crops, noxious weeds or other trees.

Weeds should be controlled throughout the life of the agroforestry planting. This may require mechanical or chemical weed management. Controlling weed competition is especially critical during the first three years after planting. Competing vegetation reduces water and nutrient availability, space and light thereby limiting plant growth and delaying the function of the planting.

No weed control

Good weed control

Site Preparation

Site preparation is essential for successful agroforestry planting establishment. Perennial weeds and grasses are much more difficult to control after the trees and shrubs have been planted. Focusing on removing perennial weeds before planting allows for the use of a wider range of tillage and herbicide control options.

Site preparation should begin the year before planting. Remove all grasses, forages and weeds with herbicides and/or mechanical cultivation. Apply glyphosate at the planting site one or two weeks prior to tillage to kill the weed root system. This will enhance sod breakdown and make cultivation easier. Glyphosate is more effective if applied in the fall when the herbicide is more readily translocated to the weed roots. Spring site preparation may require higher glyphosate rates for effective perennial weed control.

If planning on installing plastic mulch, prepare the planting strip to a width of 2.5m (8 ft.); otherwise the strip only needs to be 1.2m (4 ft.) wide. Each strip should be cultivated and disced to a depth of 15 to 20 cm (6 to 8 in.) in the year prior to planting.

When preparing the planting site, it is recommended to minimize crop residue on the soil surface. The site should be free of sod clumps, and all weeds and large stones need to be removed. Following these steps will make tree planting and mulching much easier and improve seedling establishment.

Non Chemical
WEED CONTROL METHODS

After your agroforestry planting has been installed, weeds can be controlled using non chemical methods including mulches, specially designed mowers, tillers, or by hand hoeing. A combination of weed control methods, non chemical and chemical, may be necessary for optimum results.

Plastic mulch and grass controls weeds in agroforestry plantings

Mechanical Weed Control

Cultivation is most effective just after a flush of weed growth when the weed seedlings are still small, less than 5 to 7.5 cm (2 to 3 in.) tall. Operate cultivation equipment slowly, especially in proximity to trees, shrubs and mulch during the establishment period. Excessive tractor and equipment speed causes seedling disturbance and damage. Avoid contacting the stem of the trees with mechanical equipment because this leads to girdling damage which can kill the tree. Tillage in the tree row should be shallow - no deeper than 5 cm (2 in.) - to avoid injuring tree roots.

Discing is a common mechanical weed control method

Common within row tillage equipment includes hand hoes, shovels, line-trimmers, and specialized rotary tillers (such as the Weed Badger®). Between row tillage equipment includes disc harrows, cultivators, and roto-tillers. When using tillage between tree rows with plastic mulch, remain at least 15 cm (6 in.) from the edge to avoid catching and tearing up the buried plastic.

Organic Mulches

Organic mulches consist of loose materials such as flax, sawdust, or wood chips. These mulches control weeds and conserve soil moisture. They are typically more difficult to apply than plastic mulch, can be difficult to obtain in large quantities and application is often laborious, although no specialized equipment is required. A 10 cm (4 in.) layer of organic mulch is needed to provide adequate weed control.

In most cases, soil temperature is cooler under organic mulches. On nutrient poor soils, decomposing organic mulches may cause nitrogen deficiency which may be evident from pale green leaves and slower than expected growth. If this occurs, apply nitrogen fertilizer in the spring or early summer.

Keep organic mulches 10cm (4 in.) away from the base of the seedling to reduce rodent damage

Flax Straw or Shives

Flax shives are a by-product from the initial process involved in the production of paper from flax straw. The shives form a dense mat on the soil surface which blocks sunlight to prevent weeds from germinating and growing. Unprocessed flax straw can also be used, and is likely more available than shives. With the straw, it is advisable to process first (i.e. chop/grind) with a bale processor or tub grinder before applying as a mulch.

> Mulches can reduce losses from soil-borne diseases by preventing fruit and plants from becoming mud splashed

Using flax straw will improve growing conditions by conserving soil moisture. The flax straw is applied over seedlings by hand or mechanically with a modified manure spreader or bunk feeder. To help prevent rodent damage leave about 10 cm (4 in.) between the base of the tree and the flax. Do not apply more than the recommended layer depth of flax mulch as this will restrict soil aeration. After 30 to 50 days the flax will consolidate and a crust will form on the surface. The flax will decompose over time and therefore more should be added to maintain the mulch depth.

Sawdust

Sawdust is a by-product of the forest industry. It forms a dense mat on the soil's surface which prevents weeds from germinating and growing by blocking sunlight. Sawdust is applied over seedlings by hand or mechanically with a modified manure spreader or bunk feeder. Do not apply more than 10 cm (4 in.) of sawdust as this will restrict soil aeration. After a period of time, the sawdust will consolidate and a crust will form on the surface.

Wood Chips

Wood chips are usually waste products from the forestry industry. Chips may also be available from landscapers or tree care companies from chipped tree trimmings. The chips are normally applied by hand. To reduce rodent damage, keep the chips approximately 10 cm (4 in.) from the base of the tree. Do not use a depth greater than 10 cm (4 in.) as this will reduce root development and the amount of air available to the soil. Occasionally, wood chips will need to be replenished. Composted wood chips make good mulch, especially when it contains a mixture of leaves, bark and wood. Fresh wood chips may be used around established trees and shrubs. Avoid using un-composted wood chips that have been piled without exposure to oxygen, as anaerobic conditions may develop leading to the production of toxic alcohols and organic acids.

Note: Decomposing organic mulches can tie up nutrients for the first year. If nutrient deficiencies occur (shown by leaf discolouration) seedlings can be treated with nitrogen fertilizer. This normally occurs only on nutrient poor soils.

Plastic Mulch

Plastic mulch is an effective method to control weeds within the tree row. It is non-perforated, contains a UV inhibitor and is applied with a specialized mulch applicator. It is a one time expense that offers significant returns over the lifetime of the agroforestry planting. Properly installed, weeds will be controlled for many years within the tree row.

The plastic does not need to be installed immediately after planting the seedlings, but it should be installed before the seedlings start to grow and while the site is weed-free. When installing plastic mulch, it is necessary to pull the seedlings up through the plastic as soon as it is applied. If the seedlings are left under the plastic for more than a few minutes there will be potential for heat damage to the seedlings. Also, when enlarging the hole in the plastic to pull the seedling up through it, ensure that the hole is large enough to accommodate the seedling without rubbing against its stem.

A specialized plastic mulch applicator is necessary to properly install. Life span up to five years; labour intensive if not mechanized.

The plastic-covered area within the tree row allows trees to maximize their growth potential and get a head start due to elimination of weed competition. In addition, soil moisture loss due to surface evaporation is greatly reduced within the tree

After the seedling is pulled up, ensure that the plastic is not rubbing against it

For controlling weeds adjacent to plastic mulch, spray herbicides or mow weeds

row. Under the plastic mulch, the soil warms sooner and stays warm longer during the growing season promoting and stimulating tree growth and root development. Trees under plastic mulch can experience a 25% increase in growth over trees planted without mulch. Normal rainfall will provide enough moisture for growing trees through lateral flow of water migrating from soil adjacent to the plastic-covered soil. All tree species may require supplemental watering during extended dry periods regardless of whether mulch has been used or not.

Although the plastic is durable, it should be inspected periodically throughout the growing season for holes and to ensure the edges are secured. Large rips or holes can be repaired by first using sod staples to close the gap, second, stabilizing with rocks, and third, covering with soil. Ensure the holes around the base of the trees are large enough to accommodate the growing trees as plastic rubbing trees can damage the bark. To prevent damage from livestock, fence off the agroforestry planting area.

Spraying herbicides or mowing is recommended for controlling weeds adjacent to the edge of the mulch. Care should be taken to prevent herbicide drift when spraying weeds near the trees. Stay at least 15 cm (6 in.) from the edge when using tillage equipment alongside the plastic mulch, since the buried edges may get caught and ripped. Another option is to plant a non-competitive turf grass, such as sheep fescue, between the rows and mow it twice a year for maintenance.

Plastic squares

Various brands and sizes of plastic squares are available for weed control in agroforestry plantings. However, the larger the square the more effective the weed control and moisture retention. Some are porous plastic that allows water to reach the soil and excess water to evaporate while others are impermeable. Both types are effective for weed control. The plastic contains a U.V. inhibitor and is embossed for extra strength. Some squares contain a preformed slit which extends from the centre to the outside edge of the sheet.

If you are installing a plastic square into a grassed area, first spray an area the same size as the square with a glyphosate product. For all installations, plant the tree seedling directly into the middle of the square area, and then slide the plastic under the planted seedlings until the tree stem is positioned in the pre-formed hole in the centre of the square. Secure the plastic to the ground using six inch long metal staples. Insert the first staple in the centre of the square, then pull the corners tight before inserting staples into them. Rocks can also be used to anchor the plastic. If necessary, organic mulches such as straw or wood chips can be applied over the plastic mat.

For best weed control results, ensure the seedling is in the centre of the plastic square

Chemical

WEED CONTROL METHODS

Consult product labels attached to herbicide containers for final label recommendations. To avoid application errors be sure to read and understand label recommendations. If you have any doubts regarding the instructions in this publication, or on the product label, contact the company representative, your local agricultural office or the Pest Management Regulatory Agency for further advice.

Amitrole

Formulation and Rate:

Amitrol 240 (231 g/L amitrol formulated as a liquid)
Apply at a rate of up to 11.3 L/acre

Registered for: Established agroforestry plantings

Controls: Canada thistle; Cattails; Dandelion; Hoary cress; Horsetail; Leafy spurge; Milkweed; Perennial sow-thistle; Poison ivy; Quackgrass; Toadflax

Important: Apply in 100-300 litres of water per hectare as directed spray to weed foliage. Do not allow spray to contact the tree trunks or foliage of agroforestry plantings. Use a hooded sprayer if necessary.

Amitrole is a non-selective systemic herbicide that inhibits chlorophyll production. It is applied as a directed spray to weed foliage. Prevent spray from contacting green stems, foliage or fruit of trees and shrubs. Amitrole has residual activity for two to four weeks in moist, warm soil.

Apply to actively growing weeds. Good coverage is essential. If weeds are mature, it is advisable to cut them and then spray the regrowth. Do not disturb treated weeds for at least two weeks after application. For control of quack grass and Canada thistle, apply in spring or late fall to actively growing weeds 15-20cm (6-8 in.) tall; then plough or disc ten to fourteen days following application.

Clopyralid

Formulation and Rate:

Lontrel 360 (360 g/L clopyralid as a solution)
Apply at a rate of 0.34 L/ac

Registered for: Acute willow; Buffaloberry; Choke cherry; Colorado spruce; Poplar; Villosa lilac; White spruce

Controls: Alsike clover; Canada thistle; Common groundsel; Common ragweed; Knapweed; Oxeye daisy; Perennial sow-thistle (top growth only); Scentless chamomile; Sheep sorel; Wild buckwheat; Vetch; Volunteer alfalfa

Important: Since these uses are registered under the User Requested Minor Use Label Expansion program, the manufacturer assumes no responsibility for herbicide performance. Users of this product for these uses do so at their own risk.

Clopyralid is a selective herbicide used for broadleaf weeds, especially thistle and clover. Application of clopyralid has varying control dependent on the application rate. Control ranges from top growth of Canada thistle to season long control with suppression into the following year. Apply after all thistles have emerged and when the majority are in the rosette to pre-bud stage.

To avoid application errors be sure to read and understand product label recommendations

Dichlobenil

Formulation and Rate:

Casoron 4G (4% dichlobenil formulated as a granular)
Apply at a rate of 45 to 70 kg/ac

Registered for: Ash; Caragana; Cottonwood; Crabapple; Dogwood; Lilac; Maple; Oak; Pine; Poplar; Rose; Willow

Controls: Annual bluegrass; Artemisia; Chickweed; Foxtail; Groundsel; Horsetail; Knotweed; Kochia; Lamb's-quarters; Loosestrife; Mustard; Pigweed; Plantain; Purslane; Shepherd's-purse; Smartweed; Sow-thistle; Spurge

Controls with fall applications at the higher rates: Bindweed; Canada thistle; Dandelion; Nutsedge; Quack grass; Sheep sorel; Vetch; Wild buckwheat

Important: Do not use on trees that have been established for less than 6 months. Pine species are sensitive to injury from Casoron 4G if applied within 2 years after transplanting. Do not apply to shelterbelts with spruce or other shallow rooted species or injury may result. Do not use on light sandy soils.

Dichlobenil is a volatile herbicide, which can be lost in the form of vapours following application to warm, moist soil. Therefore, it is recommended that it be applied to established agroforestry plantings in late fall; if application is delayed until spring it should be incorporated with shallow tillage. If dichlobenil volatizes following spring application, trees and shrubs may be significantly damaged if the vapours are absorbed by the opening buds or new leaves.

Flumioxazin

Formulation and Rate:

SureGuard (51.1% flumioxazin formulated as water dispersible granules)

Apply at a rate of 280 g/ha on coarse-textured soils to 420 g/ha on medium-textured soils

Registered for: Colorado spruce; Green ash

Controls: Redroot pigweed; Green pigweed; Common ragweed; Lamb's quarters; Green foxtail; Hairy nightshade; Dandelion; Eastern black nightshade

Important: Do not apply on fine-textured soils. Do not make more than 2 applications in a growing season. Apply only as a directed, shielded or hooded spray to established trees.

Pre-emergence weed control with SureGuard is most effective when applied to clean, weed-free soil surfaces. Disturbing soil surfaces may reduce herbicide efficacy. The length of residual control is dependent on the application rate as well as on rainfall and temperature conditions. Length of residual control will decrease as temperature and precipitation increase and on soils of high organic matter and/or high clay content.

Glyphosate

Formulations:

Cheminova Glyphosate (active content: 356)
ClearOut 41 Plus (active content: 360)
Credit 45 (active content: 450)
Crush 'R Plus (active ingredient: 360)
Glyfos (active content: 360)
Knockout Extra (active content: 360)
Lajj Plus (active content: 360)
MPower Glyphosate (active ingredient: 360)
NuGlo (active content: 450)
Polaris (active content: 360)
Sharpshooter (active content: 356)
Sharpshooter Plus (active content: 360)
Wise-Up (active content: 356)

Registered for: Ash; Caragana; Lilac; Maple; Poplar; Willow; Pine; Spruce

Controls: Wild oats; Green foxtail; Volunteer wheat; Volunteer barley; Lady's thumb; Stinkweed; Volunteer canola; Wild mustard,

Important: Active content is glyphosate, present as the isopropylamine salt (IPA salt) expressed as "grams of acid equivalent per litre of product" (a.e./L). Only IPA salt formulations are registered for application on agroforestry plantings.

Glyphosate may be used to control annual or perennial weeds prior to planting, or as a post directed spray in established agroforestry plantings for the species listed above. It can be used to clean up perennial weeds such as Canada thistle and Quack grass.

This product is not recommended for use as an over-the-top broadcast spray. When spraying around trees, glyphosate application should be restricted to a directed or shielded spray as contact with foliage or green, thin immature bark will result in significant tree damage or death of deciduous trees. Conifers, such as spruce and pine, are an exception to this – they are sensitive to glyphosate only during the period of active growth (April to August). Colorado spruce can be sprayed after July 15th, while white spruce and Scots pine should not be sprayed before September 1st.

Linuron

Formulations and Rates:

Linuron 400 (400 g/L linuron formulated as a flowable)
Apply at a rate of 5.4 L/ha

Lorox L (480 g/L linuron formulated as a flowable)
Apply at a rate of 4.5 L/ha

Registered for: Caragana; Green ash; Maple; Pine; Poplar, Spruce; Willow

Controls: Common groundsel; Common chickweed; Goosefoot species; Green smartweed; Lady's thumb; Lamb's quarters; Mustard species; Pigweed species; Prostrate knotweed; Purslane; Ragweed; Shepherd's purse; Stinkweed; Wild buckwheat

Important: Make a single application. Apply only on stock planted for at least one year as a directed spray before the weeds are 10 cm (4 in.) high and before buds open in the spring.

Used as pre-emergent weed control, linuron must be incorporated into the germination zone of the soil with rainfall or sprinkler irrigation within 10 days of application. Without this moisture for incorporation, linuron effectiveness is reduced.

Post-emergence application must be conducted when the weeds are very small. If application takes place during the growing season, spray must be directed away to avoid injury to the trees. Do not disturb the soil after linuron application.

Metribuzin

Formulation and Rate:

Sencor Solupak 75 DF (75 % metribuzin formulated as a dispersible granule)
Apply at a rate of 400 g /ha
Can tank mix with Treflan EC at a rate of 5.2L/ha

Registered for: Caragana; Choke cherry; Green ash; Lilac; Poplar (rooted); Sea buckthorn

Controls: Barnyard grass; Green foxtail; Lamb's quarters; Persian darnel; Prostrate pigweed; Purslane; Redroot pigweed; Russian thistle; Shepherd's purse; Stinkweed; Wild buckwheat; Wild mustard; Wild oats; Witch grass.

Important: Do not apply more than once per season. Do not use on soils with less than 5% organic matter. Do not plant unrooted poplar cuttings into treated soil – they will not root.

It is recommended that metribuzin be tank mixed with trifluralin and applied prior to planting. This tank mix should be incorporated into the soil to an 8 cm (3 in.) depth within twenty-four hours of application. For incorporation, a disc type implement or field cultivator with mounted harrows should be used (not a chisel plow or deep tillage cultivator). If available, a rotovator also works well.

Oxyfluorfen

Formulations and Rates:

Goal 2XL (240 g/L oxyfluorfen formulated as an emulsifiable concentrate)
Apply at a rate of 7 L/ha for pre-emergent weed control
Apply at a rate of 0.5 L/ha to 1.0 L/ha for post-emergent weed control

Registered for: Poplar

Pre-emergent control of: Narrow-leaved hawk's beard; Pale smartweed; Sherherd's purse; Stinkweed

Post-emergent control of: Common purslane; Lamb's quarters; Maple-leaved goosefoot; Oak-leaved goosefoot; Redroot pigweed; Wild buckwheat; Wood-sorrel

Important: Apply once per growing season to dormant seedlings and trees. Make applications using a low pressure sprayer with flat fan nozzle.

Oxyflourfen is an effective herbicide for pre-emergent or post-emergent control of broadleaf weeds. Applications must be made at planting or to established trees prior to bud break to avoid injury.

Paraquat

Formulation and Rate:

Gramoxone (200 g/L paraquat formulated as a solution)
Apply at a rate of 5.5 L Gramoxone Liquid Herbicide with Wetting Agent in 1100 L of water per sprayed hectare. Of this mixture, 550 mL will treat an area 1.75 m in diameter around a tree.

Important: Applications of this product in agroforestry plantings must be made using low boom sprayers fitted with drift-reducing shrouds or shields.

For best weed control, paraquat should be applied when weeds are less than 5 cm (2 in.) in height or diameter. Large, well-established annual weeds may generate new top growth. With established perennial weeds, paraquat must be applied repeatedly to provide control, eventually depleting stored energy in the weed's root system, resulting in death. Spray should cover weed foliage thoroughly. Repeat application is required to control regrowth. It may be tank mixed with linuron and simazine products for residual control.

When applying paraquat along agroforestry plantings, spray must not come in contact with tree foliage, green buds or green immature bark. This can be achieved by a directed spray and/or some form of shielded spray equipment. Do no use around small conifers unless they are protected from the spray. Conifer needles sprayed accidentally with paraquat will be lost permanently.

Sethoxydim

Formulations and Rates:

Poast Ultra (450 g/L sethoxydim formulated as an emulsifiable concentrate)
Apply at a rate of 1.1 L/ha

Registered for: Buffaloberry; Caragana; Chokecherry; Colorado spruce; Green ash; Lilac; Maple; Poplar; Sea buckthorn; Scots pine; White spruce

Controls: Barnyard grass; Crabgrass; Fall panicum; Foxtail; Persian darnel; Proso millet; Quackgrass; Volunteer Barley; Volunteer Corn; Volunteer wheat; Wild oats; Witchgrass

Important: Apply to shelterbelts once per growing season as a directed spray.

Sethoxydim is a herbicide for post-emergence control of grasses in your agroforestry planting. It does not control sedges or broadleaf weeds. This product does not provide residual control.

Simazine

Formulations and Rates:

Princep Nine-T (90% simazine formulated as a water dispersible granular)
Apply at a rate of 2 – 3 kg/ac

Simazine 480 (480 g/L simazine formulated as a flowable liquid)
Apply at a rate of 3.8 – 5.7 L/ac

Registered for: Caragana; Dogwood; Green ash; Maple; Rose; Spruce

Controls: Barnyard grass; Lamb's quarters; Perennial species starting from seed; Purslane; Ragweed; Smartweed (including Lady's Thumb); Volunteer clovers; Wild buckwheat; Wild oats; Yellow foxtail

Important: Application is not recommended until the trees have been established for at least one year.

Applied as a pre-emergent, simazine works similar to linuron; however, it is more persistent, providing a longer period of control. Apply to established plantings in the fall or early spring, to a weed free soil surface with limited trash cover. Weeds present at the time of application will not be controlled.

Without weed control, tree survival and growth rates are reduced

Trifluralin

Formulations and Rates:

Bonanza 480 EC (480 g/L trifluralin formulated as an emulsifiable concentrate)
Apply at a rate of 4.6 L/ha in light soils and up to 9.2 L/ha in medium/heavy soils

Rival EC (500 g/L trifluralin formulated as an emulsifiable concentrate)
Apply at a rate of 4.4 L/ha in light soils and up to 8.8 L/ha in medium/heavy soils

Treflan EC (480 g/L trifluralin formulated as an emulsifiable concentrate)
Apply at a rate of 4.7 L/ha in light soils and up to 9.3 L/ha in medium/heavy soils

Registered for: Caragana; Green ash; Scots pine

Controls: Annual blue grass; Barnyard grass; Carpetweed; Chickweed; Cow cockle; Crab grass; Brome grass; Cheat grass; Goose grass; Knotweed; Lamb's quarters; Persian darnel; Pigweed; Purslane; Stink grass; Wild buckwheat; Wild millet

Suppresses: Wild oats

Important: There are specific soil organic matter, moisture and soil temperature requirements that must be adhered to - refer to the label for site-specific recommendations. Tank mixing with metribuzin results in additional weeds controlled.

Trifluralin may be applied and incorporated from 3 weeks before planting. The first incorporation must be within 24 hours of application. It must be incorporated to a depth of 8 cm (3 in.). This is best accomplished by using disc implements or cultivators. A tandem disc is recommended for the first incorporation. The first incorporation should be in the same direction as application. The second incorporation must be at a right angle to the first.

Herbicides

AND YOUR AGROFORESTRY PLANTING

HERBICIDE	USE	AGROFORESTRY SPECIES												
		SHRUBS								TREES				
		Buffaloberry	Caragana	Choke Cherry	Crabapple	Dogwood	Lilac	Rose	Sea buckthorn	Green Ash	Manitoba Maple	Oak	Poplar	Willow
Amitrole *Amitrol 240*	◆	●	●	●	●	●	●	●	●	●	●	●	●	●
Clopyralid *Lontrel 360*	■	●		●			●						●	●
Dichlobenil *Casoron 4G*	◆		●		●	●	●	●		●	●	●	●	●
Flumioxazin *SureGuard*	◆									●			●	●
Glyphosate *Cheminova Glyphosate* *ClearOut 41 Plus* *Credit 45* *Crush 'R Plus* *Glyfos* *Knockout Extra* *Lajj Plus* *MPower Glyphosate* *NuGlo* *Polaris* *Sharpshooter* *Sharpshooter Plus* *Wise-Up*	■ ★ ◆		●				●			●	●		●	●
Linuron *Linuron 400* *Lorox L*	◆		●							●	●		●	●
Metribuzon *Sencor Solupak 75 DF*	▲		●	●			●		●	●			●	
Oxyfluorfen *Goal 2XL*	▲ ◆												●	
Paraquat *Gramoxone*	■ ★ ◆	●	●	●	●	●	●	●	●	●	●	●	●	●
Sethoxydim *Poast Ultra*	■ ★ ◆	●	●	●			●		●	●	●		●	
Simazine *Princep Nine-T* *Simazine 480*	■ ◆		●			●		●		●	●			
Trifluralin *Bonanza 480 EC* *Rival EC Treflan EC*	▲		●							●				

[C] Colorado spruce only [10] Registered for LOROX L [11] Registered for Linuron 400

LEGEND: Site Preparation; At Planting; 1st Growing Season; Established Agroforestry Plantings

	WEEDS																		
	BROADLEAF WEEDS														GRASS WEEDS				
Pine	Spruce	Chickweed	Buckwheat, wild	Dandelion	Kochia	Lamb's Quarters	Mustard	Pigweed, Redroot	Smartweed	Shepherd's Purse	Stinkweed	Thistle, Canada	Thistle, Russian	Thistle, Sow	Foxtail, Green	Grass, Barnyard	Oats, Wild	Quackgrass
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Herbicide Application Equipment

FOR YOUR AGROFORESTRY PLANTING

Field sprayers can be adapted to apply herbicides in agroforestry plantings, such as shelterbelts; however, a special spray boom or a spray gun will be needed. Special spray booms are not commercially available but can be fabricated in your own shop or by a commercial fabricator. The AAFC Agroforestry Development Centre at Indian Head, Saskatchewan has designed U-shaped spray booms for use in your agroforestry plantings. Both sides of newly planted trees row can be sprayed simultaneously by straddling the row with this boom. For trees over 120 cm (50 in.) tall, herbicide can be applied along one side with only one nozzle in use. Contact the Centre to request plans for the U-boom sprayer.

U-boom sprayer

A spray gun, attached to a field sprayer, can be used to apply directed sprays in agroforestry plantings. This equipment is one of the best options available for foliar applications. It is particularly useful for spraying spotty infestations of weeds. Backpack sprayers are practical for use in small plantings and for spot treatment of weed infestations. Careful application is required to avoid spray drift. Granular herbicides are more suitable than liquid sprays when debris or dead vegetation is present because granules can fall through the soil surface. Hand-operated applicators are also available for spreading granular herbicides. Tractor mounted spreaders are also available, but they are usually not practical for use in the typical agroforestry planting. Uniform application and correct calibration are important considerations when using granular formulations.

Enviromist

An alternative to conventional spraying methods is the Enviromist® Spraydome. Enviromist has a range of products for weed control in agroforestry plantings. The tank range gives simple end of day fresh water flushing without the need to empty the spray tank. Results that can be expected from Enviromist products include improved chemical usage, minimal spray drift, less time filling tanks and more cost effective control of the spraying operation.

Enviromist® spray dome

Mankar

The Mankar® line of sprayers offer chemical weed control with low environmental impact. In particular, the Mankar-Carry line are small, hand-held units that are convenient, light and time-saving. While this unit's basic purpose is glysophate products, it can handle a variety of chemicals.

Mankar's patented segment rotation nozzle is the primary element in their spraying system. It is ideal for targeted applications such as under trees. Since there is no need to mix the chemical with any water, the person applying the herbicide benefits from carrying less weight, less downtime (no filling tanks with water, measuring, etc.) and virtually no drift.

Mankar® sprayers

Notes