



Herbicide Weed Control in Windbreaks and Shelterbelts **Fact Sheet (Forestry)**

USDA Natural Resources Conservation Service - North Dakota

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Weed control is critical for the successful establishment and growth of new tree plantings. Weeds reduce survival and growth of trees and shrubs through competition for moisture, sunlight, space, and nutrients. Competition from weeds is the leading cause for failure of newly planted windbreaks. By providing timely weed control, the survival and vigor of conservation plantings can be increased significantly.

There are several methods used to control weeds in a windbreak – cultivating, mulching, mowing, and chemical control. If using chemical control, herbicides may be applied as broadcast, banded, or spot applications. You must know and understand the timing of treatments, labor availability, cost, types of weeds to control, and species of trees/shrubs in the windbreak. Depending upon the situation, a combination of weed control methods may work best.

Weed control before planting trees and shrubs

Plan one or two years in advance. Avoid using herbicides that leave soil residues because they may damage trees. The year before planting, control annual weeds with tillage or systemic herbicides with short soil residual and eliminate perennial weeds from the site with frequent tillage or use of a glyphosate product (*Roundup*).

At planting, eliminate emerged weeds with tillage or a contact herbicide such as glyphosate (*Roundup*). With glyphosate products there is no residual control; only weeds that are green and growing are controlled. Effective control with glyphosate requires that the plant not be disturbed by tillage or mowing for three days after application, one day for newly emerged annuals, and up to one week for perennials during times of reduced plant growth caused by cool weather. For residual control a pre-plant herbicide such as trifluralin (*Treflan*) can be incorporated as a broadcast treatment before trees and shrubs are planted. The chemical must be well mixed into the top two to three inches of soil within 24 hours of application. Generally, two-pass incorporation is recommended to get adequate mixing. Established weeds are not controlled, but it provides excellent annual grass control that persists into late season. Most trees and shrubs have excellent tolerance to trifluralin (*Treflan*).

Controlling weeds in new plantings

If chemical control is used, herbicide selection depends on tree species in the windbreak, seedling age, weed species to be controlled, and site soil conditions. Soil texture, soil pH, organic matter, and precipitation also need to be considered. Some herbicides cannot be used on sandy or gravelly soils, or soils with high pH or low organic matter. Severe tree injury can occur with the use of chemical control.

Always read and follow directions on the herbicide label, including any Federal or State supplemental labels. It is a violation of Federal laws to use any pesticide in a manner inconsistent with its labeling. The label lists tree and shrub species on which it can be used, weeds controlled, application rates, timing, disposal, and other directions and precautions.

All programs and services are offered on a nondiscriminatory basis.

Preemergence herbicides are used after planting trees, but must be applied to the soil before weeds emerge. Late fall is the best time to apply most preemergence herbicides. Rainfall is needed to activate the herbicides and move them into the root zone prior to weed seed germination.

New plantings - plan to use other weed control methods for the first summer, then apply preemergence herbicides in the late fall for weed control the following year. Most labels of soil applied preemergence herbicides require that the soil is firmly settled around the roots of trees before application; many have restrictions on the age of the transplant or length of time since planting.

Simazine (*Princep 4L*) and diuron (*Karmex DF*) are examples of sprays applied to the soil before weeds germinate and give residual annual grass and broadleaf weed control. Use as a directed spray at the base of trees. The site should be relatively free of weed residue on the surface. For best results, apply in late fall after leaf drop on deciduous species. Do not use on sandy or gravelly soil. Do not use simazine on lilac, cottonwood, poplars, or other trees not specified on the label, as tree injury will result.

Dichlobenil (*Casoron 4G*) is a preemergence granule that can be applied to ground with weedy residue. If applied in late fall, it has shown some effect on established perennial weeds. Apply in late fall after a killing frost, but before the soil freezes. Avoid use on very light, sandy soils.

Post emergence herbicides are applied to the foliage of established weeds. Some must be used as directed sprays to target weeds but contact with trees and shrubs must be avoided. Others can be applied over the top. Sometimes the fumes of broadleaf weed control products can damage trees, even though the product did not contact the foliage as spray drift. This can occur for several days after application, especially in warm weather and with new succulent tree foliage. Check the product label.



Glyphosate (*Roundup*) is a non-selective foliar applied herbicide. Apply to green and actively growing weeds. Keep the spray off green bark and leaves of non-target species. Shield the tree if necessary.

Sethoxydim (*Poast or Vantage*) and Fluazifop-P (*Fusilade DX*) are examples of foliar applied, translocated herbicides with no soil residual, these can be used to control existing weeds in shelterbelts. They provide good to very good control of most annual grasses, but do not control broadleaf weeds. They may be applied over the top on several trees and shrubs, but be sure to check the label as all common shelterbelt species are not included. Direct the spray to reduce contact with tree foliage.

Oxyfluorfen (*Goal 2XL*) can be used preemergence or post emergence to control primarily annual broadleaf weeds. It can be applied over the top of conifers, but must be applied prior to bud break. Directed spray towards the base of deciduous trees and shrubs prior to bud break to avoid spray contact on the leaves. *The inclusion of trade names does not constitute an endorsement of any product or manufacturer.*

Some chemical formulations are available as liquids or dispersible granules that are mixed with water and applied as a spray; while other formulations are available as a granular product.

For granular products, apply using a drop or rotary type spreader. Prior to use, calibrate application equipment according to the manufacture's directions. Check frequently to ensure equipment is working properly and distributing granules uniformly.

Apply spray solutions with conventional ground sprayers, backpack sprayers, or hand sprayers equipped with low pressure (15–40 psi) reduced drift nozzles. Proper calibration of spray equipment is critical to ensure accurate and uniform herbicide application. Improper calibration can result in poor weed control if too little herbicide is applied or tree injury if too much herbicide is applied. Avoid boom overlaps because that will increase recommended application rates.

Backpack and handgun sprayers are practical for use in small plantings or for spot treatment of isolated weed infestations. They allow for carefully directed application and provide mobility in areas inaccessible to tractor mounted equipment.

Application rates often depend on the soil type, weeds to be controlled, and whether the shelterbelt is a new planting or is well established. Higher rates are often needed on soils high in organic matter. For light textured soils, soils with high pH, or young trees use lower rates according to label directions.

Weed control is needed for the first three to five years after planting tree seedlings. There should be a four foot band or zone around each tree **with total weed control**. Weed control should continue as long as practical, but typically five to ten years after planting. Beyond ten years, weed control should focus on reducing the presence of noxious weeds and sod forming grasses, especially smooth brome grass.

Use of herbicides to compliment other weed control methods

- *Use as an in-row treatment with tillage between the rows.* Apply herbicide as a directed spray to a two to three foot band on either side of the tree row for in-row weed control. Perform frequent, shallow tillage between tree rows.
- *Use as between row treatment with fabric applied for in-row weed control.* Use a directed spray between fabric rows, utilizing low drift nozzles, hooded sprayers, or low pressure technology to minimize risks of herbicide damage to trees and shrubs. If suckers are desired, avoid herbicide contact. Some herbicides could be translocated and stress or kill the parent plant.

Mowing alone is a poor alternative for controlling weeds. If aggressive sod forming grasses such as brome, quack, blue, or canary grass are present mowing is not an acceptable alternative.

- When combined with fabric or strip herbicide control, mowing of warm season grasses such as blue grama, side oats, or buffalograss can provide weed control for the trees, protect fabric edges and control between row erosion. The warm season grasses between rows remain dormant until much of the tree growth has been attained. Since warm season grasses are shade intolerant, they will die out as the tree canopy expands.

Safety is very important and precautions should be taken to protect the applicator and the environment from careless use of herbicides. Apply herbicides only when needed and handle them with care. Follow label directions and heed all precautions. Pesticides can be dangerous when improperly handled, applied, or disposed. They can injure humans, domestic animals, desirable plants, wildlife and fish, and they contaminate water supplies.

Where to get help

For more information, contact the local USDA Natural Resources Conservation Service office or your local Soil and Water Conservation District.

References

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