

Herbicides for Control of Weeds and Invasive Exotic Plants In Backyard Woodlots

There are a great many herbicides that may be used in controlling invasive exotic plants and other weeds in tree planting sites, residential woodlands, etc. The trade names and a brief description of some of the most common and useful of these are listed below, along with some information about their uses and limitations. It is essential that the label for a particular product be checked prior to purchase or use, and that the information on uses, target species, application rates, and precautions followed. Reference to a specific product does not constitute a warranty or endorsement by the author, nor does it imply their suitability to the exclusion of other products that may also be suitable. All of the products listed below are labeled for use in tree plantings (although the specific sites vary), and none are restricted use pesticides.

Non-Selective Post-Emergent Herbicides

Chemical name: **glyphosate**

Brand Name(s): Roundup, Accord, Glyphomate 41, GlyPro, GlyStar, Honcho, Rodeo, Razor, many others.

Typical Form of Product: Liquid

Uses: Post-emergent non-selective control of grasses, and most broadleaf weeds and woody plants. Do not apply over-top, or allow contact with bark or foliage, of desirable trees or shrubs. Usually used for site preparation and for directed spray after planting. Best product for established grasses, especially perennial grasses. No uptake through roots or pre-emergent effect.

Selective Post-Emergent Grass Herbicides

Chemical name: **clethodim**

Brand Name(s): Envoy, Envoy Plus

Typical Form of Product: Liquid

Uses: Post-emergent selective control of many grasses. Does not kill broadleaf weeds or sedges. Works best on young, short grasses, especially annual grasses. May be applied over-top of desirable trees or shrubs if mixed with non-ionic surfactant rather than crop oil. Usually used after planting over young trees to release from new grass competition. No uptake through roots or pre-emergent effect.

Chemical name: **fluazifop**

Brand Name(s): Fusilade, Ornamec

Typical Form of Product: Liquid

Uses: Similar to clethodim and sethoxydim. Better on perennial grasses.

Chemical name: **sethoxydim**

Brand Name(s): Poast, Vantage

Typical Form of Product: Liquid

Uses: Similar to clethodim and fluazifop. Better on annual grasses, can sometimes use selectively among perennial grasses.

Selective Post-Emergent Broadleaf and/or Woody Plant Herbicides

Chemical name: **metsulfuron**

Brand Name(s): Escort XP, Patriot

Typical Form of Product: Dry flowable granules that mix with water.

Uses: Post-emergent control of many woody plants and broadleaf weeds. Does not kill grasses. Do not apply over-top of, nor allow contact with bark or foliage of, desirable trees or shrubs. Usually used for site preparation, or for directed spray outside root zone of planted trees. Best product for multiflora rose control and foliar spray of tree-of-heaven. Can be mixed with glyphosate or triclopyr. Has some potential for uptake through roots and slight pre-emergent effect.

Chemical name: **triclopyr**

Brand Name(s): Amine form (water soluble): Garlon 3A, Brush-B-Gon, Power Force Brushkiller Plus, Tahoe 3A. Ester form (oil soluble, though it can be mixed in water): Garlon 4, Tahoe 4E, Crossbow (also contains 2,4-D), Pathfinder II (pre-mixed for basal bark only).

Typical Form of Product: Liquid.

Uses: Post-emergent control of woody plants and broadleaf weeds. Does not kill grasses. Do not apply over-top of, nor allow contact with bark or foliage of, desirable trees or shrubs. Usually used for site preparation, or for directed spray outside root zone of planted trees. Good product for multiflora rose control and foliar spray of tree-of-heaven. Garlon 4 or Tahoe 4E may be mixed with an oil carrier and used for basal bark application, and Pathfinder is a pre-mixed form for this use. Has slight potential for uptake through roots and slight pre-emergent effect.

Chemical name: **clopyralid**

Brand Name(s): Transline, Stinger

Typical Form of Product: Liquid.

Uses: Post-emergent control of broadleaf weeds and a few species (legume) of woody plants. Does not kill grasses, but can kill or damage some trees and shrubs through contact or root uptake. May be used over-top some hardwoods and shrubs while not actively growing or if used without surfactant. Do not apply over-top of, nor within root zone of, desirable legume trees or shrubs (e.g., locust, redbud). May be used for site preparation, or for over-top or directed spray outside root zone of planted trees. Best product for Canada thistle control. Has some uptake through roots, and slight pre-emergent effect.

Pre-emergent Herbicides

Chemical name: **pendimethalin**

Brand Name(s): Pendulum 3.3 EC, Pendulum WDG, Pendulum Aquacap

Typical Form of Product: Liquid, or powder that disperses in water.

Uses: Pre-emergent control of many grasses and some broadleaf weeds. Does not kill existing grasses or broadleaf plants and will not usually damage trees or shrubs through contact or root uptake. May be used over-top most trees and shrubs. Usually used after planting, in spring, to keep new weeds from developing. May be mixed with other herbicides, such as glyphosate. Will stain equipment yellow, less so for the newer Aquacap form.

Chemical name: **flumioxazin**

Brand Name(s): SureGuard

Typical Form of Product: Liquid

Uses: Pre-emergent and early post-emergent control of many broadleaf weeds and some grasses. Does not usually kill established grasses or broadleaf plants and will not usually damage trees or shrubs through contact or root uptake when applied while plants are dormant or when used as a directed spray. Usually used after planting, in spring, to keep new weeds from developing. May be mixed with other herbicides, such as glyphosate.

Chemical name: **simazine**

Brand Name(s): Princep 4L, Princep 90DF, Simazine 4L, Simazine 90 DF, Caliber 90.

Typical Form of Product: Liquid, or powder that disperses in water.

Uses: Pre-emergent control of many broadleaf weeds and some grasses. Does not kill existing grasses or broadleaf plants and will not usually damage trees or shrubs through contact or root uptake. May be used over-top most trees and shrubs. Usually used after planting (after first year), in spring, to keep new weeds from developing. May be mixed with other herbicides, such as glyphosate. It is better at controlling broadleaf weeds than grasses, and works well in combination with pendimethalin.

Chemical name: **prodiamine**

Brand Name(s): Barricade 4L, Barricade 65WG

Typical Form of Product: Liquid, or powder that disperses in water.

Uses: Pre-emergent control of many broadleaf weeds and some grasses. Does not kill existing grasses or broadleaf plants and will not usually damage trees or shrubs through contact or root uptake when applied while plants are dormant or when used as a directed spray. Usually used after planting (after first year), in spring, to keep new weeds from developing.

Herbicide Label Information

To view a copy of the Label or MSDS for many pesticide products, use the website <http://www.cdms.net/LabelsMsds/LMDefault.aspx>. For manufacturers not included on that list, use a web browser (such as Google) to “search” for the product name or manufacturer of interest.

Surfactants

It is normally essential for foliar application of herbicide that a surfactant or similar adjuvant such as a crop-oil be used. Some products (e.g., Roundup, Vantage) already contain a surfactant. Others (Accord, Escort) do not, and a non-ionic surfactant needs to be included during mixing. Pre-emergent herbicides do not usually need a surfactant unless also trying to control emerged weeds. Always check the label and the supplier to be sure.

Some Invasive Weeds Controlled by the Herbicides Listed Above

Products are listed in order of general preference; most effective products are listed first.

Trees

Tree of Heaven (*Ailanthus altissima*) – metsulfuron, triclopyr, glyphosate.
Norway Maple (*Acer platanoides*) – triclopyr

Shrubs

Multiflora Rose (*Rosa multiflora*) – metsulfuron, glyphosate, triclopyr
Bush Honeysuckle (*Lonicera spp.*) – glyphosate, metsulfuron, triclopyr
Autumn Olive – (*Elaeagnus umbellata*) – triclopyr

Vines

Japanese Honeysuckle (*Lonicera japonica*) – glyphosate, metsulfuron, triclopyr
Oriental Bittersweet (*Celastrus orbiculatus*) – triclopyr, glyphosate
Mile-a-Minute (*Polygonum perfoliatum*) – glyphosate, metsulfuron, triclopyr, clopyralid.
Pre-emerge with simazine, flumioxazin
Japanese Hops (*Humulus japonicus*) – metsulfuron, glyphosate, triclopyr

Broadleaf Weeds

Thistles (*Cirsium, Carduus spp.*) – clopyralid, metsulfuron, triclopyr, glyphosate. Pre-emerge with simazine, flumioxazin, pendulum (though thistles are not on label for any of these). Canada thistle is best controlled by clopyralid.
Most other broadleaf weeds – triclopyr, which will not normally kill grasses (glyphosate will often work on broadleaf weeds also, but will kill grasses too).

Grasses

Johnsongrass (*Sorghum halapense*) – glyphosate, fluazifop, clethodim
Tall Fescue ([*Festuca*] *Lolium arundinaceum*) - glyphosate, fluazifop, clethodim
Japanese Stiltgrass (*Microstegium vimineum*) – sethoxydim, clethodim, fluazifop, glyphosate (glyphosate is very effective on this species, even at low rates, but is less selective than others listed).
Most other grasses – glyphosate, any selective grass herbicide (check label).

Prepared 9/29/08, Phil Pannill, U.S. Fish and Wildlife Service