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Herbicides for Year-of-Planting Weed Control In Hardwood and Conifer Plantations

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Success in reforestation depends on thorough site preparation and weed control for the first three years after planting. Weed control during that first year can be the most critical for tree survival. Registration, labeling and availability of herbicide products for use in forestry are constantly changing. Currently, there are few options for chemical weed control for the variety of hardwood species commonly planted in Michigan.

There just isn't a silver bullet—Keep in mind that the effects of most herbicides are temporary. Most wear off within three to four months after application, resulting in a resurgence of weed populations. Weeds repopulate treated areas from dormant seeds stored in the soil and from surrounding untreated vegetation. Additionally, weed populations change over time with repeated use of the same selective herbicide. This means that weed control is at best an annual process.

None of the currently available herbicides provides complete control on a wide range of species all season long. Herbicides differ in how they work, what species or plant types they affect, and how they are applied. For example, broad-spectrum herbicides affect a relatively wide range of species, while selective herbicides control only a few species and plant types. For instance, Pendulum—a selective herbicide—primarily affects grasses. The primary types of weeds that compete the most with tree seedlings for light, moisture and nutrients are annual grasses, perennial grasses and broadleaf weeds. Therefore, a combination of herbicides that control these types of weeds—and keep them from growing back—should be used to achieve adequate weed control.

Some herbicides kill only emerged, actively growing weeds—these are called ***postemergent herbicides***. Roundup(glyphosate) and Oust are examples of herbicides with postemergent effects. ***Preemergent herbicides*** such as Pendulum and Simazine kill only weeds germinating from seed. Most preemergent herbicides will not control actively growing weeds. Consequently, to provide effective, long-lasting control, both a postemergent and a preemergent herbicide must be used to eliminate existing weeds and to keep weeds from growing back.

Caution: With most herbicide applications in reforestation (especially preemergent herbicides), **be sure that the soil has been firmly settled around the seedling's roots before application, either by packing or by sufficient rainfall**. Consult the product label for other specific instructions regarding timing of application, methods and personal safety precautions.

Be sure to read the product label carefully before using the herbicide. Wear **at least** the minimum personal protective gear recommended on the label. Also, be sure it's safe to use around the tree species being planted. For instance, Surflan should not be used on Douglas-fir, nor should Oust be used on red pine. Seedling death or damage could occur.

Herbicides for hardwoods at time of planting

The herbicides listed in Table 1 can be applied using a tractor-mounted boom sprayer or hand or backpack sprayers. Some postemergent and preemergent herbicides may be tank mixed (applied

together in the same spray solution). Consult the herbicide labels for each product for instructions on which can be safely mixed and how much to use in tank mixtures.

Mixtures containing glyphosate should be applied as a *directed* application—use off-center nozzles and/or spray shield to avoid getting any herbicide on the seedlings to be protected. Roundup can kill hardwood seedlings if it contacts them, even before bud break.

Oust applications made after bud break may kill or damage seedlings.

Herbicides for conifers at time of planting

The herbicides listed in Table 2 can be applied using a tractor-mounted boom sprayer or hand or backpack sprayers. Some postemergent and preemergent herbicides may be tank mixed (applied together in the same spray solution). Consult the herbicide labels for each product for instructions on which can be safely mixed and how much to use in tank mixtures.

Mixtures containing glyphosate should be applied as a *directed* application—use off-center nozzles and/or spray shield to avoid getting any herbicide on the seedlings to be protected. Roundup can kill conifer seedlings in the first year if it contacts the terminal or top shoot, even before bud break.

Oust applications made after bud break may damage or kill conifer seedlings.

If your seedling stock is 2 years old from seed or older, you may use Simazine (Princep) as a preemergent for broadleaf weed control. Simazine is not recommended for use on seedling stock younger than 2 years old. Note that you should also use a preemergent that controls perennial grasses as well, such as Arsenal, Factor, Surflan or Oust.

Information sources

C & P Press, Inc. Web search for labels, MSDSs and all supplemental labels for a product. On-line Web address: http://www.greenbook.net/free.asp.

Holaday, S., and J. Martin. 1995. Wisconsin's forestry best management practices for water quality using forestry chemicals. Forestry Facts No. 10. Madison, Wis.: University of Wisconsin—Madison Department of Forestry.

Lantagne, Douglas O. 1990. Some fundamentals for successful weed control in forest crops. Extension Bulletin E-2218. East Lansing, Mich.: Michigan State University Extension.

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vonAlthen, F.W. 1990. A Guide to Hardwood Planting on Abandoned Farmland in Southern Ontario. Sault Ste. Marie, Ontario: Great Lakes Forest Research Centre.

Other *Tree Series* bulletins:

E-2753, Site Preparation and Tree Planting for Forest Production

E-2754, Controlling Broadleaf Weeds and Grasses for Plantation Site Preparation

Table 1: Herbicides recommended for hardwood tree seedlings. [1]

CHOOSE ONE POSTEMERGENT HERBICIDE...

Herbicide	Quantity
Accord, Glypro, Roundup Pro	1 to 2 quarts per acre
Oust[2]	1/2 to 1 ounces per acre

...AND CHOOSE ONE GRASS AND ONE BROADLEAF PREEMERGENT HERBICIDE.

Grass herbicide	Quantity
Arsenal	3/4 to 4 quarts per acre
Factor	1 to 2.3 pounds per acre
Snapshot	100-200 pounds per acre (or 2.3-4.6 pounds per 1,000 square feet) (granular herbicide)

Broadleaf herbicide	Quantity
Gallery	1/4 to 3/4 pounds per acre
Oust[2]	1/2 to 1 ounces per acre
Snapshot	100-200 pounds per acre (or 2.3-4.6 pounds per 1,000 square feet) (granular herbicide)

[1]Reference to commercial products or trade names does not imply endorsement by the MSU Department of Forestry or the MDNR Forest Management Division or bias against those not mentioned.

[2]Oust has both pre- and postemergent effects. As a preemergent, it is primarily effective on broadleaves.

Table 2: Herbicides recommended for conifer tree seedlings.[1]

CHOOSE ONE POSTEMERGENT HERBICIDE...

Herbicide	Quantity
Accord, Glypro, Roundup Pro	1 to 2 quarts per acre
Oust[2]	1/2 to 1 ounce per acre (Do not use on red pine)

...AND CHOOSE ONE GRASS AND ONE BROADLEAF PREEMERGENT HERBICIDE.

Grass herbicide	Quantity
Factor	1 to 2.3 pounds per acre
Surflan[4]	2-4 quarts per acre (Do not use on Douglas-fir)
Snapshot	100-200 pounds per acre (or 2.3-4.6 pounds per 1,000 square feet) (granular herbicide)
Arsenal AC	1/4 - 2 1/2 pints per acre

Broadleaf herbicide	Quantity
Simazine (Princep)[3]	2.5 to 4 pounds per acre
Gallery	1/4 to 3/4 pounds per acre
Goal (*before* bud break)	1.25-5 pints per acre
Goal (*after* bud break)	1.25-2.5 pints per acre
Atrazine[5]	2 to 4 quarts per acre
Snapshot	100-200 pounds per acre (or 2.3-4.6 pounds per 1,000 square feet) (granular herbicide)

[1]Reference to commercial products or trade names does not imply endorsement by the MSU Department of Forestry or the MDNR Forest Management Division or bias against those not mentioned.

[2]Oust has both pre- and postemergent effects. As a preemergent, it is primarily effective on broadleaves.

[3]Use on seedlings at least 2 years old or older.

[4]Should not be applied until 4 weeks after planting.

[5]Mainly for Christmas tree species—check label.

Selective postplanting weed control during the first growing season after planting either hardwoods or conifers is also possible for certain weeds using the following herbicides:

Herbicide	Weeds affected
Stinger/Transline	clovers, vetches, thistles, smartweed, cocklebur, horseweed, ragweed, knapweed, burdock
Fusilade DX	many annual and perennial grasses
Vantage	many annual and perennial grasses

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