



AGRICULTURAL EXTENSION SERVICE

UNIVERSITY OF MINNESOTA

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Timothy and Kentucky bluegrass are important seed crops in northern Minnesota. Several weed species are serious pests in these crops and must be controlled to ensure the production of weed-free grass seed. Many of these weeds become established during the year of seeding. Other weeds may germinate and appear at any time during the life of the stand.

Timothy and Kentucky bluegrass seed fields can be established by seeding with a companion crop such as oats, wheat, or flax in the early spring, or by seeding alone in the summer or early fall, when annual weeds are less of a problem. It is extremely important that troublesome annual or biennial weeds like white cockle and nightflowering catchfly be controlled during the year of establishment by using good seedbed preparation and tillage practices as well as chemical weed control if needed. Troublesome perennial weeds like quackgrass, Canada thistle, and perennial sowthistle should be controlled before seeding. Knowing how to identify weeds and being familiar with their reproductive characteristics can help greatly in controlling them.

Quackgrass

Quackgrass (*Agropyron repens*) is a competitive perennial that spreads by underground rhizomes and by seed that is difficult to separate from Kentucky bluegrass seed. Seeding either timothy or Kentucky bluegrass in fields infested with quackgrass should be avoided. There are no available herbicides that can be applied on a broadcast basis to control quackgrass in grass fields without causing severe injury to the crop. Quackgrass must be controlled by tillage and chemical treatments prior to seeding grass seed fields.

Glyphosate (Roundup), a nonselective, foliar-applied herbicide, is effective for quackgrass control but must be applied prior to seeding grasses. (See table 1 for the trade names and formulations of herbicides recommended in this fact sheet.) It also can be used in a wiper or roller applicator to control tall-growing weeds that overtop the grass seed canopy. Glyphosate at $\frac{3}{4}$ to 2 $\frac{1}{4}$ pounds per acre (1 to 3 quarts per acre) can be applied as a broadcast preplanting spray to actively growing quackgrass that is 6 to 8 inches or more in height (at least at the three- or four-leaf stage of growth). Use the high rate for thick stands of quackgrass when no supplemental tillage will be used; use the low rate on thin stands when supplemental tillage will be used. Areas to be treated in spring should

Table 1. Herbicide names and formulations

Common name	Trade name	Concentration and commercial formulation*
Bromoxynil	Buctril, Brominal	2 or 4 lb/gal L
Bromoxynil and MCPA	Bronate, Brominal Plus	2 or 3 lb/gal bromoxynil and 2 or 3 lb/gal MCPA L
Dalapon	Dowpon	74% WSP, 5 lb/gal L
Dicamba and MCPA	Mon-Dak	1.25 lb/gal dicamba and 2.50 lb/gal MCPA L
Glyphosate	Roundup	3 lb/gal L
MCPA	Severol	Various L
2,4-D	Severol	Various L, G

*G = granular, L = liquid, WSP = water soluble powder.

Weed Control in Grass Seed Fields

not be plowed or disked the previous fall and should not be spring tilled prior to treatment. For maximum control, planting should be delayed to determine if any regrowth occurs from underground rhizomes. If a repeat treatment is necessary, quackgrass should again be allowed to grow to a height of 6 to 8 inches before spraying. Rainfall within 6 hours of application may wash the herbicide off the quack grass and make another application necessary.

Glyphosate is inactive in soil and should not be applied to bare soil or to dormant weeds. Wiper applications with a rope-wick or similar applicator to quackgrass that is headed or to other weeds that extend above the crop canopy have been effective using a 25- to 33-percent Roundup solution in water. Successful roller applications have been made using a 5- to 10-percent mixture of Roundup and water. Glyphosate-treated areas may be tilled and seeded 3 to 7 days after application, depending on quackgrass stand and climatic conditions.

Tillage may be used to supplement the herbicide application. If a combination of tillage and chemicals is used, however, the herbicide treatment always should precede tillage. For example, dalapon (Dowpon) at 12 to 15 pounds per acre applied to the foliage before the first tillage operation will injure the quackgrass and less tillage should be needed for control. If retreatment is unnecessary, grasses can be reseeded 2 to 4 weeks after treatment. The seeded area should not be grazed for 10 weeks or more.

If tillage alone is to be used, a year or more of fallow may be necessary for effective control of quackgrass. Tillage with a field cultivator or similar implement will pull the rhizomes to the soil surface so they can be killed by drying or freezing. This method is not very successful during a wet season. Another method is to starve the plant by disking or rototilling the rhizomes into short pieces and using repeated tillage whenever plants are 2 to 3 inches tall to kill them, thus preventing plants from storing food in the rhizomes.

Canada Thistle, Perennial Sowthistle, and Other Broadleaf Weeds

Glyphosate at 1.50 to 2.25 pounds per acre (2 to 3 quarts per acre) will control Canada thistle, as well as many other perennial weeds, if applied to actively growing thistles just before or at the bud stage of growth. Fall treatments must be applied before a killing frost. Allow 3 or more days after application before tillage. Glyphosate is nonselective, so it must be used prior to planting or after harvest; it can be used for spot treatment of these weeds in the crop if needed.

Dicamba at 1 to 2 pounds per acre (1 to 2 quarts per acre) of the 4-pound-per-gallon formulation may be used as a spot treatment for Canada thistle. Perennial grass crops such as timothy or Kentucky bluegrass can be planted in treated areas 1 year after application. Dicamba can be applied anytime following a crop harvest to stubble, fallow, or other cropland. Applications should be made when weeds are actively growing.

For annual broadleaf control, dicamba can be applied at $\frac{1}{4}$ to 1 pound per acre ($\frac{1}{2}$ to 2 pints per acre) after weeds have emerged and are actively growing. The lower rate will kill only

the top growth of Canada thistle. If the grass crop is newly seeded, wait until the crop reaches the three- to five-leaf stage and then apply no more than ¼ to ½ pound per acre (½ to 1 pint per acre of the 4-pound-per-gallon formulation). Up to 1 pound per acre (2 pints per acre) can be used on a well established grass crop, if needed. This rate, however, may injure timothy. Do not apply dicamba after the grass seed crop begins to joint, or seed production may be reduced.

Many common broadleaf seedlings in established grass seed stands can be controlled with 2,4-D amine or ester applied in either spring or fall at a rate of 0.5 to 2.0 pounds (1 to 4 pints per acre of a 4-pound-per-gallon formulation) amine or 0.5 to 0.75 pound (1 to 1½ pints per acre of a 4-pound-per-gallon formulation) ester per acre. In new seedlings use only the amine form, and spray only after the fifth leaf stage using ¾ to ½ pound per acre. After grass is well established, higher rates of up to 2 pounds per acre of amine or ¾ pound of ester can be used to control hard to kill annual and perennial weeds. For best results, apply when soil moisture is adequate for good growth. Do not graze or cut for hay within 7 days after application.

MCPA amine or ester also controls many annual broadleaf weeds. Apply MCPA at 1 to 2 pounds (2 to 4 pints of a 4-pound-per-gallon formulation) per acre when weeds are small and actively growing. Use higher rates for Canada thistle suppression. Do not use either 2,4-D or MCPA on newly seeded areas until grass is well established. Do not use either herbicide where legumes are present; they may be injured or killed. Do not use 2,4-D or MCPA when a grass crop is in the early boot to the milk stage.

Dicamba at ½ pound per acre can be mixed with 2,4-D or MCPA at ¼ pound per acre for control of a mixture of broadleaf weeds, including wild mustard. Wild mustard cannot be controlled with dicamba alone.

Bromoxynil is effective for controlling several annual broadleaf weeds and can be used on seedling grasses such as Merion, Park, Delta, or common Kentucky bluegrasses; Pennlawn, Chewings, Illahee or Alta fescues; orchardgrass; or perennial rye grasses used for ornamental sod production. Apply ¾ pound per acre (1½ pints of a 2-pound-per gallon formulation or ¾ pint of the 4-pound-per-gallon formulation) after grasses emerge and before weeds are past the three- to four-leaf stage. If weeds are beyond this stage but less than 6 inches in height and have not yet flowered, apply ½ pound per acre of bromoxynil. Weeds that form rosettes should be treated when rosettes are less than 1½ inches across. Do not feed grasses grown for seed and treated with bromoxynil to livestock.

White Cockle and Nightflowering Catchfly

White cockle (*Lychnis alba*) and nightflowering catchfly (*Silene noctiflora*) are two troublesome weeds of grass seed fields in northern Minnesota. For help in controlling them, see Agricultural Chemicals Fact Sheet 18, *Identification and Control of White Cockle and Nightflowering Catchfly*.

Established white cockle and nightflowering catchfly cannot be effectively controlled with many of the commonly used herbicides, including 2,4-D and MCPA. Dicamba is the best herbicide for controlling these weeds but must be applied when cockle and catchfly are in the two- to four-leaf stage for best results. Both newly seeded and established fields of timothy and Kentucky bluegrass should be checked frequently during the year. If seedlings of white cockle and nightflowering catchfly appear, dicamba should be applied at ½ to ½ pound per acre (2 to 8 ounces of acid equivalent per acre). The rate of dicamba to use will depend on whether the weeds are in a new seeding or an established stand and on the size of weeds and the crop at the time of application. Use a lower rate in new seedings and when weeds are small and a higher rate when weeds become larger.

Table 2. Herbicides that can be used on companion crop oats or wheat for broadleaf weed control

Chemical	lb/A	Time of application	Limitations
2,4-D amine	½	Tillering to early boot stage	Do not graze for 2 weeks after treatment
2,4-D ester	¼	Tillering to early boot stage	Do not graze for 2 weeks after treatment
MCPA amine or ester	½	Crop three- to five-leaf stage to early boot stage	Do not graze for 2 weeks after treatment
dicamba + MCPA amine	¼ + ¼	Crop two- to five-leaf stage	See label for grazing restrictions for dairy animals
bromoxynil + MCPA	¼ + ¼	After grasses emerge to early boot but before weeds are past three- to four-leaf stage	Do not graze treated fields for 30 days after treatment

Herbicides for Use on Timothy or Bluegrass Sown With a Companion Crop

If the grass seed crop is established under oats or wheat, the chemicals listed in table 2 can be used on the companion crop for broadleaf weed control.

Flax is a poor competitor with weeds and is more susceptible to injury from herbicides than are oats or wheat. If used as a companion crop, apply MCPA at ¼ pound per acre or bromoxynil at ¼ pound per acre when flax is 2-6 inches tall for broadleaf weed control. Bromoxynil may cause some flax injury if applied when the humidity is high or the temperature exceeds 85° F. See Extension Folder 493, *Weed Control in Small Grains*, and Agricultural Chemicals Fact Sheet 10, *Weed Control in Flax*, for information on susceptibility of crops and weeds to specific herbicides.

Use of Surfactants With Herbicides

The use of a surfactant or additive is not recommended when spraying dicamba or any of the phenoxy herbicides such as 2,4-D on timothy or bluegrass stands, either alone or in a companion crop. Studies have shown that addition of a surfactant increases retention of the spray on the grasses, which may cause more crop injury, but does not effectively increase retention of spray on broadleaf weeds.

Application of Herbicides

After selecting the best herbicide and proper treatment time, uniform application of the chemical at the proper rate is essential for effective weed control. See Agricultural Chemicals Fact Sheet 5, *How to Calculate Herbicide Rates and Calibrate Herbicide Applicators*.

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