

sources by university researchers. Also, chemical companies have been reluctant to label their herbicides for this use due primarily to the limited acreages and high financial risk involved.

Nevertheless, fair to good control of weeds in this turf situation can usually be achieved.

Annual bluegrass control in overseeded golf greens may be accomplished with Prograss. Prograss will control annual bluegrass when applied either pre-emergence or post-emergence. However, Prograss is recommended only for post-emergence control in overseeded golf greens, and further only to greens overseeded to a monostand of ryegrass or blend of ryegrass. Prograss may also be used to control annual bluegrass in overseeded turfs.

Safety to perennial ryegrass dictates that it be used as a post-emergent. One or two applications are needed, and the first application should be made 30 days after overseeding (bermudagrass dormant). The follow-up application should not be made after the date specified on the label. It appears that the safe use of Prograss is limited to the northern part of the bermudagrass belt.

Unless the bermudagrass is completely dormant at application, significant delays in growth from dormancy to actively growing bermudagrass can occur.

Disadvantages of Prograss may involve both the bermudagrass and the ryegrass. If bermudagrass is not dormant when the initial application is made, delays in transition are sometimes observed the following spring.

If the second application is made too late, significant delays in spring transition are also observed. Additionally, Prograss can be used only on ryegrass.

Consequently, overseeding mixtures containing creeping bentgrass, red fescue or rough bluegrass cannot be planted when Prograss is used for



Common chickweed tolerant to 2,4-D, necessitates the use of other materials.

annual bluegrass control.

Broadleaf weed problems in overseeded turf are quite variable. A number of the common winter annual broadleaf weeds found throughout the southern United States during the dormant season may or may not be a problem in overseeded turf.

Henbit, common chickweed, clovers, spurweed and mustards are among the more important of this group. Competition from the overseeded turf would seem to hold infestations down significantly. When a herbicide is needed, henbit, common chickweed and (or) clovers usually dictate the herbicide(s) that will be used.

These weeds are fairly tolerant to 2,4-D, necessitating the use of other

"phenoxy type" materials. In general, Banvel or a phenoxy-Banvel mixture are recommended for broadleaf control where these weeds are present.

Banvel or Banvel mixtures appear to be the most widely used for control of these weeds. Numerous two-way mixtures of Banvel and 2,4-D formulations exist on the market. These and the three-way mixtures Trex-San or Trimec are probably used more than Banvel alone. Weed-B-Gon for Southern Grasses, which is a mixture of mecoprop and chlorflurenol, is also used to some extent by homeowners. In overseeded greens where lawn burweed (spurweed) is the problem, Buctril or Brominal is a very effective and safe herbicide to use. **LM**

COOL-SEASON

by John R. Hall III, Virginia Polytechnic University

Post-emergence herbicides most commonly include materials utilized to selectively control broadleaf weeds, annual grassy weeds and sedge-type plants after they have germinated or emerged. However, this category can also include non-selective materials that are used in renovation for total plant kill prior to seeding.

The most commonly utilized cool-season turfgrass broadleaf herbicides include materials such as 2,4-D, 2,4-DP (dichloroprop), mecoprop (MCP), dicamba and bromoxynil. Annual grassy post-emergence weed control in cool-season turfgrass is achieved with materials such as DSMA (disodium methane arsonate), MSMA (monosodium methane arsonate),

MAMA (monoammonium methane arsonate), CMA (calcium methane arsonate) and fenoxaprop-ethyl.

The arsonates have also been shown to be moderately effective for control of yellow nutsedge in cool-season turfgrasses. However, bentazon has provided more effective long term control with less injury to the desirable cool-season turfgrass.

Glyphosate has proven to be the most effective renovation herbicide where total kill of the existing stand of grasses and weeds is desirable. Soil

sterilants are certainly considered post-emergence herbicides. However, safety concerns associated with their use in the homeowner environment have reduced their popularity.

Many factors affect herbicide efficacy. Some of the more important factors that should be given consideration prior to use include the following:

1. Identification of the weed and desirable turfgrass. Positive identification of the weed to be controlled is essential to prescribing the most effective herbicide.

In addition, it is important to know which turfgrass the weed is in since different turfgrasses have varying susceptibility to applied herbicides.

2. Growth stage of the weed. Most effective post-emergence weed control is achieved on young, actively growing weeds. If weeds are nearing the end of their life cycle and not actively growing, they will not be effectively controlled.

Examples of improper timing would include attempts to control winter annuals such as common chickweed, henbit, German moss (Knawel) and sowthistle in June when they have already produced seed for the upcoming fall germination and are near the end of their

annual life cycle.

3. Growth rate of the weed. The more metabolically active a weed is, the more effectively it will be controlled by herbicides. Therefore, any factor such as sunlight, moisture or good nutrition that speeds up growth rate will generally increase herbicide efficacy.

If weeds to be controlled are under heat or drought stress they will not be metabolically active and will be less affected by applied herbicides.

On the other hand, if the desirable cool-season turfgrass is somewhat sensitive to the herbicide being applied and is under drought or heat stress, it is likely it will suffer greater damage from the application.

3. Morphology of the weed. If the weed to be controlled has a thick, waxy cuticle or a leaf shape which is not conducive to good herbicide spray contact, decisions about which formulation of the herbicide to utilize can be critical. Weeds like wild onion and wild garlic are better controlled with liquid sprays than granular sprays.

Additionally, waxy cuticles are better penetrated by low-volatile esters than amine formulations. Concern about the increased probability of ester volatilization in the landscape has however reduced ester popularity.

4. Air and soil temperature. Maximum metabolic activity in most weeds occurs between 55 and 80 degrees Fahrenheit and therefore herbicide spraying should be planned for times of the year when temperatures are in this range. Temperatures outside this range will reduce metabolic activity and therefore herbicide effectiveness.

5. Rainfall probability and foliage wetness. Liquid herbicides are most effectively absorbed when applied to dry leaf surfaces. Water dilution rates for herbicides have been recommended assuming the foliage is dry at the time of application.

Wet foliage will reduce liquid herbicide effectiveness at normal water spray rates. Granular herbicides are generally more effectively absorbed when applied to wet foliage.

Most foliar absorbed post-emergence herbicides require four to six hours of foliar absorption to be effective. Rainfall prior to this time will significantly reduce herbicide effectiveness.

Anything that reduces metabolic activity of the weed during the foliar absorption period will increase the time required to achieve adequate herbicide absorption. Other factors such as physiological detoxification of applied herbicides, organic matter binding, soil binding, leaching,

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(317) 276-3759

Fermenta Plant Protection

P.O. Box 348
Painesville, OH 44077
(216) 357-3000

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photo decomposition, water pH, mixture incompatibility and rate of the herbicide applied can all have an effect upon the efficacy of the applied herbicide.

Combinations of commonly used broadleaf post-emergence herbicides are generally more effective in providing broad spectrum weed control than single herbicide mixtures.

Repeat applications of some herbicides will be necessary for 100 percent control. Use of post-emergence arsenicals for annual grass control actually necessitates re-application two

or three times at 10- to 14-day intervals.

Repeat applications of the broadleaf herbicides should be spaced at least 30 to 45 days apart to minimize injury to the turfgrass.

In all spraying situations, spot spraying minimizes cost, environmental exposure and general stress on the desirable species while maximizing herbicide efficiency. In all instances, it is of paramount importance that label recommendations be closely followed.

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Mobay Chemical Group

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(816) 242-2000

Monsanto Co.

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St. Louis, MO 63167
(314) 694-1000

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(609) 691-3535