



# Weed control guide: **NORTH** & **SOUTH**

## **Up North, you don't have to kill *all* the weeds**

*How many weeds will customers tolerate? That's a good question to ask when planning control strategies.*

by TOM FERMANIAN, Ph.D./University of Illinois

**T**he keys to weed control is deciding on a maximum number of weeds that are tolerable and designing a management system to achieve and maintain that goal. It is certainly possible to hold weed populations to about one or two percent of the turf area. For some turfed areas, larger populations of four to 10 percent are more practical.

### **IPM**

Integrated Pest Management is one way to control a variety of turf pests. IPM combines sound cultural practices with occasional herbicide applications to manage weeds. In an integrated program, primary care areas such as mowing, fertilization and irrigation should be designed to maximize the turf's competitive potential and minimize the most troublesome weeds. Secondary practices such as cultivation, mechanical control and sanitation can also be used to reduce or manage weeds.

### **Mowing**

Unfortunately, the most persistent weeds have adapted to low mowing heights and frequent mowing. A mowing strategy should be developed to first minimize its impact on the turf and to reduce weed growth. Mower blades should be adjusted and sharpened to reduce potential stress on the turf.

Adjust mowing frequency to remove less than one third of the leaf blade surfaces, and to provide maximum turf regrowth. Mowing also affects other potential pests such as insects and diseases that might eventually thin the turf and allow weed development. Some weeds, particularly tough-

stemmed species such as chicory require extra careful mowing to remove them effectively.

### Fertilization

Studies show a direct relationship between the development of several weed species and the general availability of soil nutrients. While accurate timely fertilizations will maximize turf development and provide a good competitor, too much fertilizer can promote weed growth.

Annual bluegrass (*Poa annua*), crabgrass and many other species grow rapidly after receiving high N levels.

Excess fertilizations, particularly with soluble N sources, can injure turf foliage. Even if the injury is short-term, opportunistic weeds can develop before the turf has a chance to replenish the canopy.

Irrigation—or soil moisture—also has a dramatic effect on the growth of many weeds. Nutsedge, annual bluegrass, crabgrass, goosegrass and many other weeds are better adapted to high soil moisture. Drying out turf or less frequent irrigation will help the turf gain a competitive advantage over these water-loving weeds.

### Cultivation

Core aeration, vertical mowing, spiking, or slicing provide a more conducive rootzone for turf growth. This better growing environment allows the turf to compete strongly with weed populations.

These same practices can also move buried weed seeds to the surface and allow them to germinate. Topdressing might also introduce foreign seed and provide a new avenue to weed infection.

Mechanical devices or materials such as topdressing, mulch or similar items should be closely examined for any plant parts—particularly weed seed—that might be deposited into the turf. Many annual weeds are best managed by reducing their production of viable seed through timely mowings, using plant growth regulators or collecting clippings when seedheads are present.

### Herbicides

In a well-designed IPM



Knotweed, left, and broadleaf plantain. Center of page, henbit, left, and purslane. Bottom of page, mower injury to leaf blades.

program, each cultural strategy is selected to reduce weeds. Practically, however, some weeds will always survive even your best management. Herbicides—particularly post-emergence herbicides—can be used to reach your desired weed management goals. Many materials are available for direct control of both annual grasses and broadleaf weeds.

### The post-emergents

One of the original selective post-emergence herbicides was 2,4-D. This and other similar compounds—such as mecoprop, dichlorprop and dicamba—control a wide spectrum of broadleaf weeds.

Each controls a select group of weed species. Often, they are used in combination, which allows you to reduce their individual single use rates through a synergistic action. Double and triple combinations of these materials provide effective control for almost any broadleaf species found in turf. Likewise, the materials are formulated either as esters or amine based compounds, to provide more control or a higher level of turf safety (Table 1).

Two particular materials, triclopyr and clopyralid, are broad-spectrum post-emergence herbicides that can be targeted toward a wide range of weeds in many turfs. Triclopyr is often formulated by itself or in combinations with 2,4-D to broaden its effectiveness across a wider group of weeds.

Confront is a combination of both triclopyr and clopyralid, which is particularly effective with many tough-to-control broadleaf weeds, such as wild violets and creeping charlie.

Several additional materials are available for a smaller group of weeds or for special uses. Bromoxynil will not injure seedling turfgrasses and is often used as the



initial material for cleaning up newly-seeded turf. Several materials such as Basagran, Vantage and DCPA are targeted toward a small group of species. Manage and Basagran can be used effectively for controlling yellow and purple nutsedge.

### Grassy weeds

For grassy weeds, particularly annual grasses, several products are available for selective control. Additionally, non-selective herbicides can be used for spot control of both annual and perennial weeds.

Ethofumesate, fenoxaprop and dithiopyr can all be used to control annual grasses after they have emerged. Each material has its own unique spectrum of species it is effective on. In general, each of these herbicides is most effective when applied to young grass seedlings. As with the broadleaf herbicides, the grass seedlings should be actively growing under good conditions.

### Non-selective herbicides

For tough-to-control weeds or

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**TABLE 1. HERBICIDES FOR BROADLEAF WEED CONTROL IN COOL-SEASON TURF**

Common Name	Trade Name
2,4-D	AM-40; 2,4-D granular; 2,4-D L.V. ester, solution (Riverdale); 2,4-D amine 4; 2,4-D LV4; SEE 2,4-D LV4 (Riverside/Terra International); Weedone LV4 (Rhone Poulenc);
2,4-D+dicamba	81 Selective Weedkiller (Riverdale); Four Power Plus (Turfgo/United Horticultural Supply); Lawn Weed Killer (Bonide); Triple D Lawn Weed Killer (Rockland)
2,4-D+dichlorprop	2D+2DP Amine; Turf D+DP (Riverdale); Fluid Broadleaf Weed Control (The Scotts Co.); Weedone DPC Ester; Weedone Amine (Rhone Poulenc)
2,4-D+dichlorprop+dicamba	Strike 3 (Riverside/Terra International); Super Trimec (PBI/Gordon)
2,4-D+mecoprop	2D Amine + 2 MCP (Riverdale); 2 Plus 2 (ISK Biosciences); MCP-2,4-D (Cleary)
2,4-D+MCP+dicamba	Bentgrass Selective Weed Killer (Lesco); Brushfire; Brush-out; Brush-Whacker; HS-130; SNSW-2000 (NCH); Granular Broadleaf Weed Killer (Lebanon); MecAmine-D (Turfgo/United Horticultural Supply); Three-Way Lawn Weed Killer (Rockland); Three-Way Selective; Three-Way DG (Lesco); Trimec Bentgrass Formula; Trimec Classic; Trimec Southern (PBI/Gordon); Triplet Selective; Triplet Water Soluble (Riverdale)
2,4-D+MCP+dichlorprop	Dissolve; Triamine; Triamine Granular; Triamine Jet-Spray; Tri-Ester (Riverdale); Jet Spray 3-Way Weed Control (The Scotts Co.); Three-way Ester (Lesco)
2,4-D+MCP+MSMA+dicamba	Trimec Plus (PBI/Gordon)
2,4-D+triclopyr	Chaser (Turfgo/United Horticultural Supply); Turflon II; Turflon II Amine (Lesco)
DCPA	Dacthal (ISK Biosciences); Garden, Turf & Ornamental Herbicide 5G; Turf & Ornamental Herbicide (Bonide); HS-110 (NCH); Super Dacthal 686 (Rockland)
dicamba	Vanquish (Sandoz); K-O-G Weed Control (The Scotts Co.)
isoxaben	Gallery (DowElanco)
triclopyr	Turflon Ester (DowElanco; Monterey)
triclopyr+clopyralid	Confront (DowElanco)
All products listed—except DCPA—are labeled for selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled by each product. DCPA provides selective, post-emergence control of creeping speedwell and pre-emergence control of selected broadleaf species.	

**TABLE 2. HERBICIDES FOR GRASSY WEED CONTROL: COOL-SEASON TURF AND NON-SELECTIVE**

Common name	Trade Names	Uses
bentazon	Basagran T/O (BASF); Lescogran (Lesco)	Selective post-emergence control of nutsedges and some broadleaf weeds.
chlorsulfuron	TFC (Lesco)	Selective post-emergence control of tall fescue in Kentucky bluegrass, fine fescues, bentgrass.
DCPA	Dacthal (ISK Biosciences); Garden, Turf & Ornamental Herbicide (Bonide); HS-110 (NCH, Irving, Texas); Super Dacthal 686 (Rockland)	Selective post-emergence control of creeping speedwell; pre-emergence control of selected broadleaf species.
diquat	Aquatate; HNS-210; Vegetrol; Watrol (NCH); Reward (Zeneca)	Non-selective, post-emergence contact product.
dithiopyr	Dimension (Lesco; Rohm and Haas)	Selective post-emergence control of annual grasses; pre-emergence control of selected broadleaf species.
DSMA	DSMA 4 (Riverside; Terra International); DSMA Slurry (Drexel); Methar 30 (Cleary)	Selective post-emergence control of annual grasses.
ethofumesate	Prograss (AgrEvo)	Selective pre- and post-emergence control of selected annual grasses and broadleaf weeds.
fenoxaprop	Acclaim (AgrEvo)	Selective post-emergence control of annual grasses.
glufosinate-ammonium	Finale (AgrEvo)	Non-selective post-emergence herbicide.
glyphosate	Avail (Lesco); HNS-220; Hoedown; Quick Claim; Trailblazer (NCH); Roundup Dry Pak; Roundup Pro (Monsanto)	Non-selective post-emergence herbicide.
halosulfuron	Manage (Monsanto)	Selective post-emergence control of sedges, such as yellow and purple nutsedge.
MCPA	MCPA-4 Amine (Riverdale)	Selective post-emergence control of annual grasses.
MCPA+MCP+dicamba	Eliminate (LESCO); Hat Trick (Turfgo/United Horticultural Supply); Tri-Power Selective Herbicide (Riverdale)	Selective post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
MCPA+MCP+dichlorprop	Triamine II; Tri-Ester II (Riverdale)	Selective post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
mecoprop (MCP)	Certi-CM; Chemweed 265; HS-167; Milpro 360 (NCH); MCP (Cleary); MCP-4 Amine (Riverdale); MCP-4K (Turfgo/United Horticultural Supply); Mecomec (PBI/Gordon)	Selective post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.

SOURCE: DR. FERMANIAN

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**TABLE 2. CONT.**

Common name	Trade Names	Uses
MSMA	Crabgrass Killer (Bonide); Daconate 6; Daconate Super (ISK Biosciences); Drexar 530 (Drexel); MSMA (Bonide); LESCO; MSMA Turf (Turfgo/United Horticultural Supply); 912 Herbicide; 120 Herbicide (Riverside/Terra International); Super Crabgrass Killer (Rockland); Weed Hoe (Monterey)	Selective post-emergence control of annual grasses.
MSMA+cacodylic acid	Broadside; Moncide (Monterey)	Selective post-emergence control of annual grasses.
sethoxydim	Vantage (BASF)	Selective post-emergence control of annual grasses in fine fescues.

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perennial grasses, non-selective materials such as Roundup Pro or Finale can be used effectively. These products will remove both the unwanted weeds and any underlying turf. They should be made only during periods of the year when the weeds are actively growing and ample opportunity is available for renovating or re-establishing the turf.

**General tips**

Post-emergence herbicides should be applied when temperatures are moderate (less than 85 degrees F.) and growing conditions are good for both weed species and turf. Ide-

ally, early fall applications are most effective. This is a time when weed species are actively transporting materials to below-ground portions of the plant. Late spring or early summer applications can also be very effective. These applications should be made when soils are still moist and the weeds are actively growing. With the summer heat and possibly drought, the effectiveness of post-emergence herbicides will be much reduced.

Apply most post-emergence herbicides—and materials which contain phenoxy—judiciously around sensitive ornamental plantings. In spring and fall, many sensitive species can be injured through drift

or volatilization of these materials. Follow label instructions carefully to reduce the potential for non-target injury.

Cultural weed control programs can be developed to minimize the potential for weeds. Make herbicides one part of a comprehensive turf care program. Follow manufacturers' labeled instructions closely for best control and maximum safety with any selected material. □

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# Down South, control product tolerance a key

by TIM R. MURPHY, Ph.D. / University of Georgia

*Proper turf nutrition and soil moisture will help you achieve maximum product efficacy.*

**P**roperly-maintained warm-season turfgrass is a good defense against strong weed competition.

Using correct fertility programs; following water requirements, mowing heights and schedules; and proper insect and disease control products all increase turfgrass vigor. They also improve the tolerance of warm-season turfgrasses to herbicides, and increase a weed control program's effectiveness.

Using herbicides without proper turfgrass management practices may control problem weeds, but will not produce high-quality turf.

Turfgrass managers in warm-season climates have a wide array of pre- and post-emergence herbicides that can be used to control weeds (Tables 1 and 2).

**Tolerance factors**

The single most important factor in se-

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