

Weed control guide:

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

The key 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, areas such as mowing, fertilization and irrigation should be designed to maximize the turf's competitive potential and minimize the most troublesome weeds.

Mowing

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. Adjust and sharpen mower blades to reduce potential stress on the turf.

Adjust mowing frequency to remove less than one third of the leaf blades, and to provide maximum turf regrowth.

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

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

Common Name	Trade Name	Common Name	Trade Name
2,4-D	AM-40; 2,4-D granular; 2,4-D LV. ester, solution (Riverdale); 2,4-D amine 4; 2,4-D LV4; SEE 2,4-D LV4 (Riverside/Terra International); Weedone LV4 (Rhône Poulenc);	2,4-D+MCPP+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+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+MCPP+MSMA+dicamba	Trimec Plus (PBI/Gordon)
2,4-D+dichlorprop	2D+2DP Amine; Turf D+DP (Riverdale); Fluid Broadleaf Weed Control (The Scotts Co.); Weedone DPC Ester; Weedone Amine (Rhône Poulenc)	2,4-D+triclopyr	Chaser (Turfgo/United Horticultural Supply); Turflon II; Turflon II Amine (Lesco)
2,4-D+dichlorprop+dicamba	Strike 3 (Riverside/Terra International); Super Trimec (PBI/Gordon)	DCPA	Dacthal (ISK Biosciences); Garden, Turf & Ornamental Herbicide 5G; Turf & Ornamental Herbicide (Bonide); HS-110 (NCH); Super Dacthal 686 (Rockland)
2,4-D+mecoprop	2D Amine + 2 MCPP (Riverdale); 2 Plus 2 (ISK Biosciences); MCPP-2,4-D (Cleary)	dicamba	Vanquish (Sandoz); K-O-G Weed Control (The Scotts Co.)
2,4-D+MCPP+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)	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.

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.

Cultivation

Core aeration, vertical mowing, spiking, or slicing pro-

vide a more conducive root-zone for turf growth. These allow the turf to better compete 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.

Herbicides

In a well-designed IPM 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

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+MCPP+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+MCPP+dichlorprop	Triamine II; Tri-Ester II (Riverdale)	Selective post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
mecoprop (MCPP)	Certi-CM; Chemweed 265; HS-167; Milpro 360 (NCH); MCPP (Cleary); MCPP-4 Amine (Riverdale); MCPP-4K (Turfgo/United Horticultural Supply); Mecomec (PBI/Gordon)	Selective post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
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; Monicide (Monterey)	Selective post-emergence control of annual grasses.
sethoxydim	Vantage (BASF)	Selective post-emergence control of annual grasses in fine fescues.

SOURCE: DR. FERMANIAN

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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 se-

lective 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 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. □

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DOWN SOUTH, control product tolerance a key

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

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

Properly-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-emergence herbicides that can be used to control weeds. (See table on page 46.)

Tolerance factors

The single most important factor in selecting a herbicide is the tolerance of the turfgrass to the herbicide. Generally, most pre-emergence herbicides can be used on all established

warm-season turfgrasses. There are exceptions. Ronstar is not labeled for use on centipede-grass or home lawns.

There is a dramatic difference in the tolerance of warm-season turfgrass species to post-emergence herbicides. Bermudagrass has good tolerance to MSMA and DSMA; however, carpetgrass, centipede-grass and St. Augustine-grass are severely injured by these herbicides.

Cultivars within a species may also respond differently to the same herbicide.

Post-emergence herbicides should be avoided when turfgrasses and weeds are stressed due to high air temperatures or drought. The tolerance of warm-season turfgrasses to post-emergence herbicides decreases at air temperatures greater than 90 degrees F., when turfgrasses are drought-stressed or when turfgrasses are growing under high soil moisture and high humidity.

Herbicides that contain 2,4-D, mecoprop, dichlorprop, imazaquin, MSMA and DSMA