

Bermuda Control Advances

By John Willis and Shawn Askew

Some love it, others hate it. Common bermudagrass is an aggressive warm-season grass that is well-adapted in areas where cool-season turf species are desirable. It spreads and reproduces by seed production, stolons and rhizomes. Once bermudagrass invades cool-season turf, it is persistent and very difficult to control. Bermudagrass negatively impacts aesthetics of a cool-season rough or fairway by disrupting uniformity due to its coarse texture and its dormant tan to brown color after frosts.

Bermudagrass that infests tall fescue or Kentucky bluegrass usually exists in irregular clumps. If left unchecked long enough, it becomes a solid mat with cool-season remnants and winter annual weeds. Bermudagrass is a desirable turfgrass in the South, but it is a great nuisance to cool-season turfgrass managers. Common bermudagrass is the subject of much frustration for those managing cool-season turfgrasses in the transition zone.

Recommended management

Managing for high quality and competitive cool-season turfgrass year round is the first step toward limiting bermudagrass encroachment. Mowing heights above 3 inches for roughs, controlling brown patch and summer patch diseases, and proper cool-season fertility programs are some cultural practices that can limit bermudagrass invasion. However, the stresses of summer often limit cool-season grasses' competitive ability allowing bermudagrass to out-compete the weakened turf.

Probably the most reliable and consistent way to control common bermudagrass is using sequential applications of glyphosate at 5 pounds of active ingredient per acre (lbs ai/A) leading up to fall renovation and reseeding. This method is obviously very time-consuming and labor-intensive, and

leaves the area without turf and unusable until establishment from seed or sod.

The selective control program that is most commonly recommended uses the combination of fenoxaprop-P (Acclaim, Bayer ES) and triclopyr (Turflon, Dow AgroSciences) or fluazifop (Ornamec, PBI Gordon) and triclopyr sprayed four times at monthly intervals throughout the bermudagrass growing season. Long-term control with this program varies and depends on many factors. Most often, bermudagrass is only suppressed and managers are forced to deal with significant populations the following season.

New chemistry

Several turfgrass researchers have concluded that mesotrione (Tenacity, Syngenta) controls several problem weeds without injuring tall fescue, perennial ryegrass, or Kentucky bluegrass. Mesotrione has pre- and postemergent activity on several annual weeds. Mesotrione will be the first marketed product to selectively control the perennial weeds nimblewill and bentgrass in cool-season turfgrass. In research at Virginia Tech, two to three sequential applications of mesotrione at 4 fluid ounces per acre (fl oz/A) at three-week intervals is best for controlling nimblewill and bentgrass. While the same program injures bermudagrass, it quickly recovers. This activity indicates potential for additive effects when mixed with other chemistry, potentially improving current bermudagrass control programs.

Our results

Our application schemes that avoided summer applications on stressed turf seemed to avoid injury to both Kentucky bluegrass and perennial ryegrass. Perennial ryegrass was more sensitive to mesotrione containing treatments than Kentucky bluegrass. We did note more severe injury during drought conditions. Even though the most severe injury was at levels slightly above 30 percent — the line we draw as "acceptable injury" — the turf was only injured for about one week and completely recovered by three weeks after treatment.

For all herbicide treatments, applying six total applications (three spring and three fall) controlled bermudagrass better than four herbicide treatments (two spring and two fall). Of the three herbicides that we included in combinations, no single product seemed to stand out as the most important to include in the tank mixtures. Of the two-way tank-mixes, fenoxaprop-P plus triclopyr controlled bermudagrass slightly better than mesotrione plus triclopyr, but both treatments

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PHOTO 1



Tenacity alone bleaches susceptible plants, turning any young and new growth completely white, while Tenacity plus Turflon does not.

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were very effective.

The best treatment was fenoxaprop-P plus triclopyr plus mesotrione. This combination reduced bermudagrass cover from 71 percent when the study started to 2 percent when evaluated mid-summer in the next season. The majority of the plots treated with this combination were completely free of bermudagrass. No previous selective bermudagrass control program has reduced bermudagrass populations this much in one growing season. Although this strategy does not affect bermudagrass in summer for about two months, we speculate that spring applications provide enough initial suppression to limit active growth through most of the summer, and then fall applications completely deplete energy reserves in rhizomes and stolons. Bermudagrass then succumbs to the combination of herbicide effects and winter kill.

There are disadvantages to this program. One is cost. Another problem is that the 4 oz/A rate of mesotrione and 32 oz/A rate of Turflon Ester (triclopyr) that we used would exceed annual use rates if the products are broadcast applied to the target area. Obviously, being a six-application program, simply treating six times will not be cheap or easy. Data suggest that stretching application intervals or missing applications will greatly reduce the effectiveness of these treatments. So sticking to the timings outlined above is a necessity. These treatments would be more economical and likely less injurious when spot applied instead of broadcast applied. Our future efforts will combine more herbicides to avoid exceeding annual use rates. We will target the herbicides with least effects on turf for summer treatments and more aggressive herbicides for spring and fall treatments. We will also test tank mixtures of even more than three products in an attempt to find the holy grail of single treatment, selective bermudagrass control.

Mesotrione is a new herbicide to turfgrass markets. Applications of mesotrione produce extremely bleached bermudagrass, essentially turning bermudagrass white, significantly reducing turf color ratings for plots treated with mesotrione. This is because mesotrione inhibits carotenoid biosynthesis in susceptible plants. Another interesting finding was that mesotrione plus triclopyr combinations did not have this character-

istic effect on bermudagrass and had higher turf color evaluations than mesotrione alone. Further research with this combination found that there were similar effects toward several other species including nimblewill, crabgrass, bentgrass, and several broadleaf species. Additionally, mesotrione plus triclopyr is outstanding for general weed control. The combinations control perennial broadleaf weeds that mesotrione alone does not control well like white clover, broadleaf plantain, and wild violet while controlling nimblewill, bentgrass, and crabgrass when applied in sequence. So if you chose to use mesotrione and triclopyr in programs for bermudagrass, nimblewill or bentgrass control, you will more than likely not have other weeds to worry about in the treated areas.

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QUICK TIP

With spring just around the corner, it's time to think about the inevitable nuisance: weeds. To assist in prevention, use a selective pre-emergent herbicide for control of annual grasses and broadleaf weeds in turf and ornamentals. For more information on weed control, contact your John Deere Golf agronomic sales representative, or visit www.johndeere.com

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