

Bermudagrass Control Programs in Kentucky Bluegrass

J. B. Willis and S. D. Askew
Virginia Polytechnic and State University

Objectives:

1. Develop effective bermudagrass control programs utilizing multiple active ingredients, avoiding summer stress, and targeting bermudagrass throughout its growing season.

Start Date: 2008

Project Duration: one year

Total Funding: \$3,000

Common bermudagrass is a troublesome weed in cool-season roughs and fairways. Several programs have been recommended for common bermudagrass suppression in cool-season turfgrass, however complete control is rarely achieved and highly variable in field situations.

Four treatments of fenoxaprop-P plus triclopyr applied monthly provided acceptable suppression of common bermudagrass in trials in North Carolina and California. Researchers in Georgia suppressed bermudagrass in tall fescue with fenoxaprop and ethofumesate combinations. None of these programs resulted in complete control, only suppression.

Research at Virginia Tech found that concentrating herbicide applications in spring and fall at three-week intervals controlled bermudagrass and avoided herbicide treatment during summer when injury to cool-season turf is more likely. This



Treatment combinations containing ethofumesate and triclopyr applied in summer significantly injured Kentucky bluegrass.

research also incorporated mesotrione as a tank mix partner to fenoxaprop-P and triclopyr. The addition of mesotrione improved bermudagrass control over the products alone, and all three products tank-mixed controlled bermudagrass 98%.

The limitation of Virginia Tech's findings is that better performing programs exceed labeled maximum annual product use restrictions. Combinations that maximize bermudagrass control and do not exceed these annual use limits are needed. There are only five herbicides that can selectively suppress bermudagrass in Kentucky bluegrass. These include

fenoxaprop (Acclaim Extra), ethofumesate (Prograss), siduron (Tupersan), triclopyr (Turflon), and mesotrione (Tenacity).

The experimental location is Kentucky bluegrass rough that was infested with 'Vamont' common bermudagrass sod 4 years ago. Experimental design is randomized complete block with 3 replications and 6 by 10 ft. plots. Data collected will include bermudagrass and other weed control and cover, turfgrass injury, color, and quality. The duration of this trial will be from spring 2008 to summer 2009 to evaluate treatment effects 1.5 years after treatment initiation.

Preliminary results indicate that several treatment scenarios have significantly reduced bermudagrass cover while increasing Kentucky bluegrass cover. Very few treatments significantly injured Kentucky bluegrass. However, treatment 3 controlled bermudagrass greater than 97%; this treatment exceeds label restrictions for annual usage rates. The modified Virginia Tech programs (Treatments 6 and 7) have also controlled bermudagrass equivalent to treatment 5. Treatments 5, 6, and 7 all control bermudagrass significantly better than the industry standard (treatment 4).

Herbicide Treatments

- 1) Nontreated control no herbicides applied.
- 2) Negative control for bermudagrass industry standard treatments for broadleaf and summer annual grass weed control, three-way plus crabgrass preemergence control product both at labeled rates and timings.
- 3) Industry Standard Renovation fall renovation using glyphosate spot-treatment according to label recommendations (2 apps. at 5 qt/A each at 3 wk interval and reseed).
- 4) North and South Carolina recommendation 4 applications of fenoxaprop-P at 28 fl oz/A plus triclopyr at 32 fl oz/A applied at monthly intervals starting June.
- 5) Virginia Tech top 3-Way 3 applications of mesotrione at 4 fl oz/A plus triclopyr at 32 fl oz/A plus fenoxaprop-P at 28 fl oz/A at 3 week intervals both spring and fall.
- 6) VT modified 1 2 applications of fenoxaprop-P at 28 fl oz/A plus triclopyr at 32 fl oz/A applied at 3 week intervals both spring and fall, with mesotrione at 4 fl oz/A at 3 week intervals throughout summer (not to overlap with fenoxaprop-P plus triclopyr applications)
- 7) VT modified 2 2 applications of fenoxaprop-P at 28 fl oz/A applied at 3 week intervals both spring and fall, with mesotrione at 4 fl oz/A plus triclopyr at 16 fl oz/A at 3 week intervals throughout summer (not to overlap spring and fall applications).
- 8) 5 herbicide combo fenoxaprop-P at 28 fl oz/A plus triclopyr at 32 fl oz/A plus ethofumesate at 64 fl oz/A plus siduron at 24 lbs/A plus mesotrione at 4 fl oz/A applied 2 times spring and fall at three week intervals.
- 9) 5 herbicide sequence 1 fenoxaprop-P at 28 fl oz/A plus ethofumesate at 64 fl oz/A plus siduron at 24 lbs/A applied 2 times spring and fall at three week intervals, and triclopyr at 32 fl oz/A plus mesotrione at 4 fl oz/A applied 4 times in summer at 3 week intervals (not to overlap spring and fall applications).
- 10) 5 herbicide sequence 2 fenoxaprop-P at 28 fl oz/A plus ethofumesate at 64 fl oz/A plus siduron at 24 lbs/A applied 4 times in summer at three week intervals, and triclopyr at 32 fl oz/A plus mesotrione at 4 fl oz/A applied 2 times spring and fall at 3 week intervals.
- 11) 4 herbicide combo same as #6 but drop siduron to save costs.
- 12) 4 herbicide sequence 1 same as #7 but drop siduron.
- 13) 4 herbicide sequence 2 same as #8 but drop siduron.

Herbicide treatments used in the bermudagrass control study at Virginia Tech.

Summary Points

- Treatment combinations containing ethofumesate and triclopyr applied in summer significantly injured Kentucky bluegrass.
- Several treatment combinations were shown to control bermudagrass better than the current industry standard.