

# Epidemic in turf management: Herbicide resistance in annual bluegrass

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Annual bluegrass is one of the most common weeds of turfgrass on golf courses, and it has developed resistance to common herbicides, threatening the profitability of the turfgrass industry that serves golf courses, sports fields and sod farms as well as commercial and private landscapes. Credit:G. Breeden, courtesy UTIA.

Annual bluegrass is one of the most common weeds of turfgrass on golf courses, sports fields and sod farms, not to mention residential and commercial lawns. Unfortunately this nemesis of pristine landscapes has also developed resistance to many common herbicides. Researchers with the University of Tennessee Institute of Agriculture are participating in a national effort to address what many landscape managers call an epidemic of herbicide resistance in annual bluegrass plaguing managed turf systems.

As part of a \$3.2 million, 15-state USDA Specialty Crop Research Initiative grant, UTIA turfgrass researcher Jim Brosnan will lead a team of Tennessee weed scientists in sampling annual bluegrass populations across the state. The team will travel the state's three grand divisions to take samples from [golf courses](#), [sports fields](#), both residential and commercial lawns, as well as sod production farms. The sampled specimens will then be propagated in a controlled laboratory setting and tested for [resistance](#) to commonly used herbicides. The goal is to quantify the scope of [herbicide resistance](#) in annual bluegrass populations across Tennessee. Additionally, Brosnan's team will also be developing new diagnostic assays to detect herbicide resistance in annual bluegrass, researching annual bluegrass seed persistence in soil, as well as the effects of turfgrass cultural practices on annual bluegrass infestation.

"This is a landmark study bringing together weed scientists from across the United States to address the important issue of herbicide resistance in annual bluegrass. It is exciting for UTIA to be involved in an effort that will provide such comprehensive and valuable information to turfgrass managers," said Brosnan.

In Tennessee, turfgrass is big business, contributing \$5.8 billion to the state's economy in 2013, the latest year for which measurements are available. In a survey of Tennessee turfgrass industry managers

conducted by UTIA researchers including Brosnan, nearly all of the state's golf, sports field, lawn care and sod production professionals indicated that weed control was an important and problematic issue influencing the profitability of their businesses. Nationally, the turf industry has been valued to exceed \$62 billion, but that figure dates to the mid 2000s in an industry that is notoriously difficult to quantify. Weeds, however, are everybody's problem.



Specimens of annual bluegrass are being collected across Tennessee and propagated in a controlled laboratory setting at the UT Institute of Agriculture to test for resistance to commonly used herbicides. The goal is to quantify the scope of herbicide resistance in annual bluegrass populations across Tennessee. Credit: J. Brosnan, courtesy UTIA.

Brosnan says the UTIA efforts will amount to \$425,000 in funds from the National Institute of Food and Agriculture (NIFA) over the course of the next four years. The overall grant - \$3.2 million spread across 15 different land-grant universities—is being coordinated by Muthukumar Bagavathiannan, a weed scientist at Texas A&M University.

The UTIA studies should result in optimized annual bluegrass management plans that integrate both cultural and chemical techniques to mitigate [herbicide](#)-resistance in Tennessee and beyond. "We will also be involved in extension and outreach activities to communicate findings to turfgrass managers across the United States," said Brosnan.

Details about the study can be found online at the USDA-NIFA website: USDA-NIFA: 2018-51181-28436. Research and Extension to Address Herbicide Resistance Epidemic in Annual Bluegrass in Managed Turf Systems.

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Provided by University of Tennessee Institute of Agriculture

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