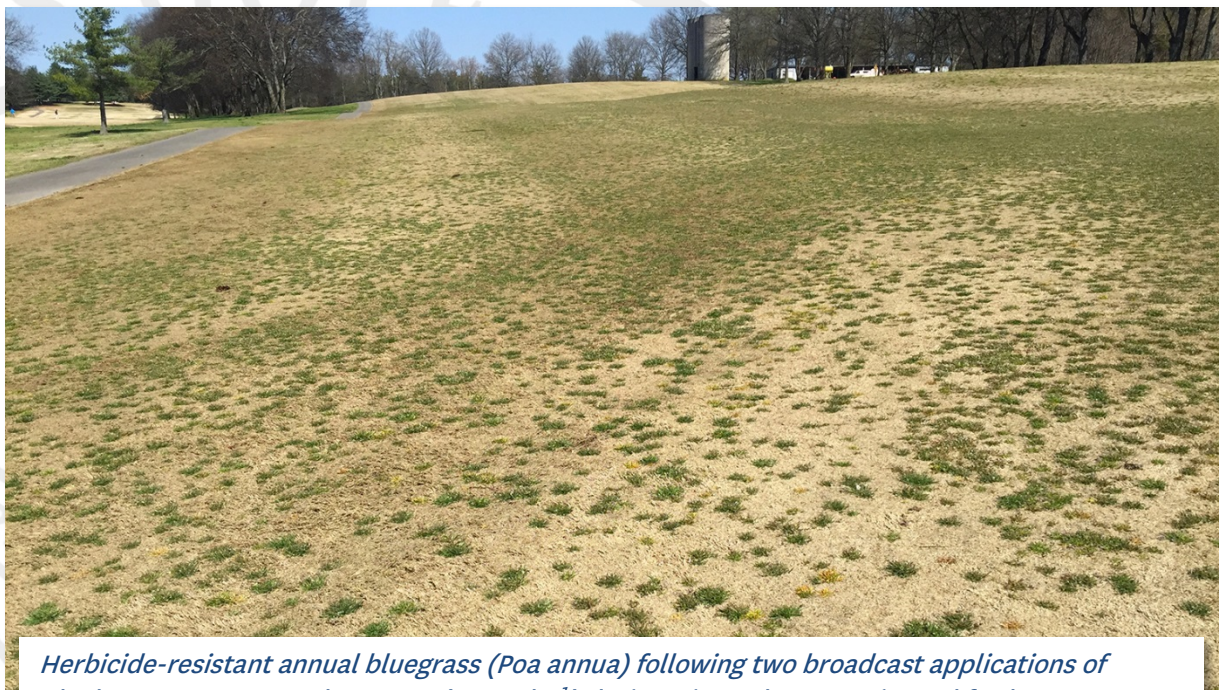




Diagnosing Herbicide Resistance in Annual Bluegrass



*Herbicide-resistant annual bluegrass (*Poa annua*) following two broadcast applications of glyphosate at 1.0 pound per acre (1120 g ha⁻¹) during winter dormancy in Rockford, Tennessee.*

Reports of herbicide resistance in annual bluegrass (*Poa annua* L.) are greater than any other weed species commonly found in turfgrass. Annual bluegrass resistance to herbicides has been identified on golf courses following continued use of the same preemergence or postemergence herbicides in lieu of diversified weed management programs.

Traditional means of testing annual bluegrass for herbicide resistance can be labor intensive, costly and time consuming. At the University of Tennessee, research was conducted to determine if agar-based rapid diagnostic tests could be used to confirm herbicide resistance in annual bluegrass harvested from golf course turf. Separate experiments were conducted using annual bluegrass plants resistant to ALS (acetolactate synthase) inhibiting herbicides and glyphosate. Single tiller plants were washed free of growing media and transplanted into small plant culture boxes filled with agar media amended with glyphosate (0, 6, 12, 25, 50, 100, 200 or 400 μM) or trifloxysulfuron (6.25, 12.5, 25, 50, 75, 100 or 150 μM).

Mortality in agar was assessed 7 to 12 days after treatment, depending on herbicide, and compared to responses observed after treating 98 individual plants of each resistant annual bluegrass with glyphosate at a rate of 0.5 pounds per acre or 560 g ha⁻¹ or trifloxysulfuron at a rate of 0.4 ounces per acre or 27.8 g ha⁻¹ in an enclosed spray chamber. A statistical test determined that mortality in agar with 100 µM glyphosate was not significantly different from treating whole plants via traditional spray application. Similarly, mortality in agar with 12.5 µM trifloxysulfuron was not significantly different from spraying whole plants with the herbicide.



*A polycarbonate plant culture box used to diagnose annual bluegrass (*Poa annua*) resistance to herbicides in agar culture.*

While work is on-going to determine if this agar-based test can be used to assess resistance to other herbicide modes of action, current findings indicate that this method can reliably diagnose annual bluegrass resistance (or susceptibility) to glyphosate or trifloxysulfuron in 12 days or less.

Source: James T. Brosnan, University of Tennessee

Additional Information:

[Glyphosate resistance in Turf: A problem on the horizon](#)

[Herbicide Resistance - University of Tennessee](#)