Overview of the University of Tennessee Weed Diagnostics Center

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What is the Weed Diagnostics Center?

The Weed Diagnostics Center (WDC) is a new diagnostic arm of the University of Tennessee Institute of Agriculture to provide both the consumer and professional industries diagnostic tests of weeds of crop production systems, turf, ornamentals, and urban landscapes.

Why Have Weeds Tested ?

- Diagnostic results allow managers to implement optimal strategies for weed control.
- Resistance screening helps steward effective technologies for weed management.
- Testing allows managers to conserve labor, financial, and technological resources.
- All diagnostic test results are accompanied by a detailed report outlining research-based recommendations for managing weeds tested in the field.

Weed Identification

Weeds are identified based on morphological and botanical characteristics using fresh plant samples. Those not identified via traditional means will be recommended for molecular weed identification using internally transcribed spacer technology.

Bermudagrass Off-Type Assessment

Desirable and potential off-type samples are cultured until producing a minimum of five stolons with at least three nodes. Internode length, stolon diameter, leaf length, and leaf width are measured using digital calipers.

Services Provided

Specialists incorporate whole plant and molecular methods to provide a wide range of services including

- Basic and molecular weed identification
- Herbicide resistance screening
- Bermudagrass off-type assessment

Herbicide Resistance Screening

Herbicide resistance screens offered at the WDC include:

- Whole plant exposure to a discriminatory rate of herbicide compared to known resistant and susceptible standards that requires 16-20 weeks to complete.
- Rapid resistance screening using modified methods of Kaundun et al. (2014) in agar culture with known resistant and susceptible standards that requires 2-3 weeks to complete.

- Molecular analysis of plant tissue for target site mutations associated with herbicide resistance that requires up to 5 weeks to complete.

REFERENCES

Kaundun SS, Hutchings H-J, Dale RP, Bailly GC, Glanfield P (2011) Syngenta 'RISQ' test: a novel in-season method for detecting resistance to post-emergence ACCase and ALS inhibitor herbicides in grass weeds. Weed Res 51:284–293

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Initial Support for the Weed Diagnostics Center Provided By