# *Effect of Plot Size and Warm-season Grass Species on Turf Chemical Runoff*

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**Objectives:**

1. Develop and employ a standardized protocol to measure turf chemical runoff in different regions of the United States.
2. Determine the "scalability" of turf runoff events from field plot areas.
3. Determine if grass species impacts pesticide runoff for warm-season grasses.

**Start Date:** 2003
**Project Duration:** three years
**Total Funding**: $90,000

With input from USEPA and industry representatives, a field protocol has been nearly completed. Principle investigators from the University of Maryland and Mississippi State University, project collaborators, and industry researchers met twice in second half of 2002 to draft the field protocol.

The protocol, to be finalized soon after a meeting is held among researchers in association with the American Society of Agronomy meetings in November, 2003, will be used to standardize the application conditions and runoff generation techniques between the University of Maryland and Mississippi State University. Additional researchers at the University of Oklahoma and the University of Minnesota are now part of the larger Turf Umbrella Project and will also use the standardized protocol.

In April, 2003, approximately 2.5 acres of land at the Blackbelt Experiment Station located at Brooksville, MS was laser-leveled to obtain a slope of 3% having no measurable cross-slope. In order to minimize the amount of earth moved, three separate earthen pads were prepared.

Similar to the University of Maryland study site, excessive rainfall during the spring and early summer slowed field operations required for this project. As a result, plot establishment has been slower than anticipated. As weather permitted, a Hunter-brand irrigation system was installed at the runoff site. Off of a 6-inch mainline, a 3-inch line was buried around the perimeter of the entire plot area. Use of the 3-inch line will permit rainfall intensities up 1.5 inches per hour at our facility.

Bermudagrass (Mississippi Pride) was sprigged at the study site in early August, 2003.

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Bermudagrass (Mississippi Pride) was sprigged at the study site in early August, 2003. We are currently in the grow-in phase with approximately 60% surface coverage. The bermudagrass plots will be used to determine scalability of runoff and represent the bulk of the study area. The smaller (12 x 30 ft) zoysiagrass and bermudagrass (overseeded with perennial ryegrass) plots will be established in late fall, 2003 or early spring, 2004.

A prototype runoff collection trough and flume are under construction. Runoff collection troughs will be install throughout the winter months, weather permitting.

Batch soil equilibrium (slurry) experiments using the Brooksville silty clay soil found at the study site are underway using a variety of turf herbicides (e.g., trifluralin, 2,4-D, simazine). The soil-water partition coefficients derived from these experiments are necessary for modeling pesticide runoff from turfgrass.

## Summary Points

- In April, 2003, approximately 2.5 acres of land at the Blackbelt Experiment Station located at Brooksville, MS was laser-leveled to obtain a slope of 3% having no measurable cross-slope.
- Bermudagrass (Mississippi Pride) was sprigged at the study site in early August, 2003.
- A prototype runoff collection trough and flume are under construction.
- Batch soil equilibrium (slurry) experiments using the Brooksville silty clay soil found at the study site are underway using a variety of turf herbicides (e.g., trifluralin, 2,4-D, simazine).