VALIDATION OF COMPUTERIZED COTTON WEED CONTROL RECOMMENDATIONS IN MISSISSIPPI

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Abstract

Weed control continues to be an integral part of cotton production. The introduction of computerized decision aides may allow growers, consultants, and pesticide applicators to make more accurate weed control recommendations. These applications are designed to help the user select the most efficacious and most economical product available. Herbicide Application Decision Support System (HADSS), developed by North Carolina State University, is one such product. HADSS selects the best treatments on a cost to benefit basis, which can be very economical and environmentally beneficial to the producer.

Successful validation has been completed in Mississippi for use in soybean. The purpose of this study was to modify and validate the accuracy of postemergent recommendations by HADSS in cotton production. Herbicide ratings and crop competitiveness have been taken from data collected from university trials. These data were manipulated by WeedEd, a database editor, to enable HADSS to predict the most beneficial treatment.

Studies were conducted in 1999 and 2000 at four locations across Mississippi. Treatments were arranged as a split-split-plot in a randomized complete block design with four replications. Main plots were comprised of Roundup Ready, BXN and a conventional cotton variety. Sub-plots were no-preemergence or 1.25 lbs ai/A Cotoran (fluometuron) PRE and sub-sub-plots consisted of an early postemergence (early-POST) HADSS recommendation, a mid-postemergence (mid-post) HADSS recommendation, a weedy check, and a weed free check. These treatments were evaluated for efficacy, crop safety, and yield. Treatments included: 1) Prowl (pendimethalin) at 1 lb ai/A plus Cotoran at 1.25 lb ai/A followed by (fb) an early season postemergence HADSS recommendation (PRE fb early POST (HADSS)); 2) Prowl at 1 lb ai/A plus Cotoran at 1.25 lb/A followed by (fb) a mid-season postemergence HADSS recommendation (PRE fb mid-POST (HADSS)); 3) early postemergence HADSS recommendation (early-POST) only; 4) mid- postemergence HADSS recommendation (mid-POST) only; weed free and untreated check for both PRE and POST only treatments. Weed populations were quantified, recommendations were generated by HADSS and treatments were applied at the 2-4 and 6-8 leaf stages.

HADSS recommendations containing preemergence treatments provided better than 90% control. Treatments void of a preemergence application gave at least 80% control except for a single recommendation in the BXN system. The weed free plot did not yield significantly more than the two herbicide recommendations. Thus these data indicate that yields were optimized when utilizing the HADSS recommendations. The use of this decision-aid should facilitate the use of the most efficacious and economical treatment in Roundup Ready, BXN, and conventional cotton varieties.

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 2:1229-1230 (2001)
National Cotton Council, Memphis TN