ANALYSIS OF THE HERBICIDE APPLICATION AND DECISION SUPPORT SYSTEM (HADSS) IN CENTRAL TEXAS COTTON CULTURES

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Abstract

Field studies were conducted during 1999 and 2000 to evaluate recommendations provided by the Herbicide Application and Decision Support System (HADSS) for weed control in cotton. This computer-based decision aid considers individual weed species, competitive indexes and population per 100 sq. ft. before making recommendations for control. Recommendations are presented to the user based upon effectiveness of the control measure and also the expected net economic return. Returns are based largely on forecasts for cotton crop yields and price as well as the cost of the herbicide treatment. Postemergence treatment recommendations from the HADSS software were compared to weed control recommendations made by these researchers (experts) under several preplant and preemergence herbicide treatment scenarios. These scenarios included a PPI Treflan (1.5 pts/A) application, a PPI Treflan plus PRE Cotoran (3.2 pts/A) application and total POST treatment options. Both years of the study included Roundup Ready and BXN cotton systems.

In the 1999 studies, HADSS recommendations for control of sharppod morningglory, smell melon and seedling johnsongrass were equal in effectiveness late-season to other recommendations within the given scenarios. Cotton yields from all treatments were equal to those produced by the hand-weeded check and significantly greater than the untreated check. In 2000, similar results were shown. HADSS recommendations for johnsongrass and Palmer amaranth were equal or greater in effectiveness to expert recommendations in the BXN and Roundup Ready cotton systems. Cotton yields were equal to the hand-weeded check from all HADSS treatments except the total POST recommendation where johnsongrass and Palmer amaranth were not adequately controlled season-long by Staple or Assure II, causing significant yield decline. Yield comparisons between the HADSS and expert recommendations were equal. All treatments significantly out-yielded the untreated plots.

Early evaluation of the HADSS system has generated positive results when comparisons are drawn between HADSS recommendations and those of an expert. The HADSS decision aid also provides cotton growers easy access to a list of treatment options for a given weed complex. Most importantly, it promotes early weed scouting and a management decision that considers both effectiveness and overall economics.

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