Mississippi Corn Promotion Board
2012 Progress Report

Project Title: Corn Verification Program

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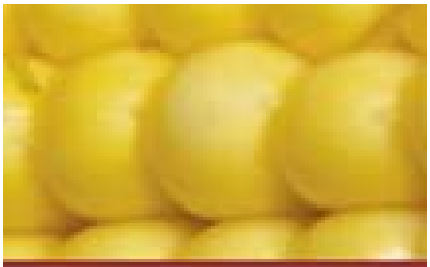

Project Summary (Issue/Response)

Corn is an integral component of Mississippi's agricultural production systems. During the last few years, corn has become the second most popular Mississippi row crop based upon planted acreage and value. Although corn productivity has increased more than any other Mississippi row crop during the past twenty years, we believe there is potential to substantially improve our production systems. Thus, the Mississippi State University Extension Service has established a Corn Verification Program supported by the Mississippi Corn Promotion Board using your checkoff funds designed to assist with the implementation of better management practices and technology and to identify limitations in our corn production systems. We do so while keeping the foremost objective of increasing profitability of Mississippi's corn production systems – not just trying any and all methods, some of which may have little scientific merit and considerable economic risk. We seek to accomplish these goals through the gracious cooperation of producers who grant us an opportunity to execute management practices in a field, which differ from their normal production system. Thus, we develop a management plan uniquely tailored for each individual field and cooperator. We also thoroughly evaluate Verification fields on a weekly basis to monitor crop response, potential limitations and ensure timely and prudent implementation of in-season practices.

Project Results/Outcomes

Evaluation of numerous Corn Verification fields has often shown considerable variance in the plant stand. Issues can be related to uneven plant spacing as well as delayed seedling emergence. These issues sometimes develop when planting extremely early or during adverse environmental conditions. Thus, we developed guidelines which also monitor soil temperature and moisture, rather than relying solely on calendar date for initiating corn planting. Field measurements have shown good, uniform spacing produced corn yields up to 19% higher than uneven-spaced plants. Implementation of trials in Verification fields has shown reducing planting speed from 5 to 4 mph improves plant uniformity and increases corn yield 2-5 bu/a. The type of seed-metering system may affect plant uniformity and productivity as well.

Glyphosate and ALS resistant ryegrass populations have rapidly developed over the past few years throughout the Delta and other crop producing areas. We documented ryegrass's intense competitiveness with the crop and our inability to control it after corn emergence. Ryegrass present in a corn field at emergence and during early vegetative stages was measured to reduce corn grain yield 27% for one ryegrass plant per seven square feet, compared to no competition. Thus, a cooperative team of MSU scientists developed a multi-faceted strategy employing fall-applied residual herbicides, and alternative burndown herbicides to restrict further development of herbicide resistance, eliminate competition prior to corn

Project Results

emergence and limit the weed seed bank for future crops.

Substantial insect damage has been documented in Corn Verification fields during early vegetative stages, particularly from Sugarcane beetles in the hills. Plant damage has occurred, despite the presence of insecticide seed treatments designed to limit seedling injury. MSU research has discovered the primary commercial seed treatments, Poncho and Cruiser, differ considerably in Sugarcane beetle control with Poncho offering better control. However, seed treatment availability was normally restricted because of marketing contracts between companies. However, our research findings and outreach activities have prompted the availability of more choices and the discovery of alternative control measures for Mississippi limitations. Our findings also indicate enhanced levels of insecticide seed treatment (>250 level) have merit for many areas of Mississippi, particularly where Sugarcane beetles are likely.

Figure 1. This program offers tremendous opportunity to identify yield limitations and develop more productive cropping sys-

Project Impacts/Benefits

The Corn Verification Program provides first-hand opportunity to identify many factors limiting corn productivity in Mississippi, so that we can better direct research efforts and develop strategies or implement new technologies pertinent to our region and specific systems. Each of the issues identified in the previous section have developed into major research projects conducted by Mississippi State researchers training graduate students. Of course, an on-farm verification program also is a tremendous method to demonstrate value associated with adoption of improved or management practices and new technology. For example, implementation of HPPD inhibitor herbicides, such as contained in Halex GT or Lexar, in Corn Verification fields has proven to greatly improve weed control, particularly for glyphosate resistant species. Thus, Mississippi corn growers have rapidly adopted this technology and by doing so, crop rotation is the most effective tool for effectively managing our Palmer amaranth resistance issues. Also, this program has demonstrated that through intensive management and scouting we can significantly improve crop response to many expensive inputs, such as nitrogen and pesticides, reduce risk associated with unfavorable weather or events, and avoid unproductive practices.

Project Deliverables

Professional Presentations and Outreach

MSU Row Crop Short Course, MSU, MS 12/5-7/2011

Delta Agricultural Exposition, Cleveland, MS 1/17-18/2012.

Mississippi Farm Bureau Winter Commodity Conference, Jackson, MS 1/23/2012.

Alabama Corn and Soybean Association Conference, Atmore, AL 1/24/2012.

National Conservation Systems Corn and Soybean Conference, Robertsdale, MS 1/31-2/1/2012.

Mississippi Agricultural Consultants Association Annual Conference, MSU, MS 2/12/2012.

National Corn Growers Association Commodity Classic – Extension Specialists' Roundtable, Nashville, TN 3/1-2/2012

National Corn Growers Association – Corn Utilization and Technology Conference, Indianapolis, IN 6/4-6/2012

Mississippi State University Row Crops Field Day, MSU, MS 7/19/2012

Mississippi State University Delta Research and Extension Center Row Crops Field Day, Stoneville, MS 7/19/2012

Mississippi Agricultural Industry Council Certified Crop Advisor Training Session, Orange Beach, AL 7/25/2012

Mississippi Farm Bureau Commodity Corn, Wheat and Feed Grains

Project Deliverables (continued)

Summer Commodity Conference, Stoneville, MS 8/1/2012

Louisiana Agricultural Consultants Association Certified Crop Advisors Program, Alexandria, LA 10/10/2012.

Published Materials

Published regularly on www.Mississippi-Crops.com

Educational Training

Research Associate John Wallace assists with the Corn Verification Program in conjunction with his training associated with pursuing a Master's degree at Mississippi State University

Three students at Mississippi State University work part time to assist activities in the Corn Verification Program

Figure 2. Our efforts documented the extreme competitiveness of Ryegrass and thus, the vital need to control this weed prior to corn emergence.