

MISSISSIPPI SOYBEAN PROMOTION BOARD



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#### **MSPB-FUNDED RESEARCH: BY THE NUMBERS**

The Mississippi Soybean Promotion Board (MSPB) invested more than \$2.2 million in production research in 2016, including projects studying insect management, disease-resistance breeding, weed control, irrigation timing and scheduling and more. Below is an overview of how MSPB invested your checkoff dollars.

#### 2015 MISSISSIPPI SOYBEAN BOARD FINANCIAL REVIEW

INCOME	
Collections	\$4,605,636
Transferred to USB 50%	\$2,284,982
Interest Income	\$26,329
Miscellaneous Income	\$3,416
EXPENSES	
Research and Education	\$1,520,386
Farmer Communications	\$428,560
Administration	\$165,616
Collection Fees	\$52,774
TOTAL EXPENDITURES	\$2,167,336
Unallocated FY 2014 Collections	\$183,063

Miscellaneous

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Communication



20%

Insect & Disease Management

Soil

Irrigation
15%

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Farmer

18%

## USING AUXIN HERBICIDES? CLEAN THE TANK.

With the increased prevalence of herbicide-resistant weeds, it's important for farmers to diversify their weed-management plans to incorporate more modes and sites of action. Doing so requires farmers to be more attentive in applying these diverse herbicides that will be used to achieve this goal. Auxin herbicides applied to auxin-resistant crops offer new control options for farmers who are battling glyphosate-resistant weeds. It's important to note that when using one spray apparatus to apply auxin herbicides to auxintolerant crops and non-auxin herbicides to auxin-susceptible crops that the spray rig must be thoroughly cleaned after applying auxin herbicides.

An **MSPB-funded** project evaluated the sequestration potential of dicamba by five agricultural hose types when cleaned with different procedures. Results related to tank cleanout include: • A no-cleanout procedure will result in visual injury to and height reduction of soybeans regardless of hose type.

• Using either water or ammonia for cleanout of dicamba from the hose system will reduce injury to soybeans when the sprayer is used to apply non-auxin herbicides to auxin-susceptible soybeans.

• The blue/polyethylene blend (John Deere PMA 4086-08) hose with its smooth internal surface showed the least retention of dicamba following cleanout.

• Rinsate from the blue hose type showed the least visual injury to height and yield reduction of soybeans, and the lowest analyte retention after cleanout.

 Results suggest that a polyethylene hose type may facilitate a more thorough cleanout following dicamba use prior to using the same sprayer system to apply other herbicides to auxin herbicidesensitive crops.

### **OYBEAN ARIETY** LECTOR **TOOL** ASSISTS FARMERS IN PLANTING DECISIONS

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When it comes to variety selection, soybean farmers have constant, free access to MSPB's Variety Selector. This easy-to-use online tool features searchable data from variety trials conducted around Mississippi and Arkansas, on various soil types and in irrigated and non-irrigated fields. Results from the variety trials are accessible by visiting:

#### http://mssoy.org/variety-selector

With the Variety Selector, farmers can access trial data from 2011 to 2016 and search for varieties based on yield, maturity group, soil type, location and much more. The tool allows farmers to efficiently compare varieties and export the data to a spreadsheet for later use. MSPB partners with Mississippi State University to conduct the MSU Agricultural and Forestry Experiment Station's Soybean Variety Testing Program. These trials test nearly 250 soybean varieties and breeding lines to evaluate their pest resistance, agronomic characteristics and yield across the state. MSPB also partners with the Arkansas Soybean Promotion Board and the University of Arkansas Division of Agriculture Research & Extension, who test between 350 to 380 varieties each year. These trials screen for different disease reactions such as whether they are susceptible or resistant to specific diseases, like frogeye leaf spot, or pests like root knot nematode.

# NO SUCH THING AS TMI FOR TRD

Taproot decline (TRD) eluded researchers for years, hiding behind symptoms similar to sudden death syndrome, stem canker and red crown rot. Unlike other diseases that affect the crop during specific times in the growing season, soybean TRD is something farmers will have to watch for year-round.

Through an MSPB-funded project,

MSU researchers established the uniqueness of this fungus-based disease that has reduced yields in several soybean fields across the state. They found one distinct symptom associated with TRD observed as a darkened, black stroma on the taproot and, in some cases, the lateral roots of affected plants. The organism that causes this produces a dry rot that rots the taproot away, making the base of the stem look black, indicating fungal growth. Over the past two years, field trials have been conducted to determine if any available soybean cultivars are more susceptible to the fungus than others. At present, no information is available on whether or not infurrow fungicides or seed treatment would be beneficial to manage taproot decline. However, after the completion of the 2016 field trials, research results indicate that commercial sources of resistance may currently be available for soybean farmers.

### FOR SOYBEAN INSECT MANAGEMENT, PLANTING DATE AND MATURITY (GR(O) MATTER

Soybeans have the largest planting window of any crop grown in Mississippi, and planting early (late March through mid-April) has become the common practice in the Mid-South.

Because of the weather in the Mid-South region, farmers must treat numerous insect pests to maintain yields.

A good insect-management-based approach combines cultural methods, such as planting date, with chemical control. An <u>MSPB-funded project</u> evaluated two maturity groups, seven planting timeframes and multiple insect management strategies that included simulated Bt insect management strategy, a threshold insect management strategy, a bugonly insect management strategy and an untreated insect control.

Results related to this research are outlined below:

• Throughout the small plot studies that were conducted from 2013-2016, the only insect pests that reached action threshold were stink bugs, soybean looper and bean leaf beetle. Stink bugs reached action threshold more often than soybean looper or bean leaf beetle.

• Maximum yield occurred in the April 20 plantings. Yields increased by 0.51 bu./acre/day in plantings made before April 20. However, yields significantly decreased by 0.39 bu./acre/day in plantings made after April 20.

• Late-planted soybeans were more vulnerable to high populations of insect pests late in the growing season, and generally required 1 to 1.5 insecticide applications. • A significant interaction between planting date and insect management strategy was also measured for yield in this study. No insect management strategy significantly affected yield until the mid-May planting. Yield for all insect management strategies increased from the late March through the mid-April plantings before decreasing through the rest of the plantings.

• Through the four years of evaluating the potential of Bt soybeans, it was determined that soybeans planted from mid-to-late May will benefit the most from Bt soybeans. In all cases except the late-March planting, the simulated Bt insect management strategy had an average of \$21.30/ acre greater economic return than the threshold-based insect management strategy.

 Using Bt soybeans to control caterpillars was more profitable than using a threshold-based system for control. In the absence of caterpillar pests, there was no benefit from Bt soybeans.

• During the 2015-2016 growing season, there was a decrease in population of soybean looper with the automatic applications of Prevathon to simulate Bt soybeans. With increased difficulty to control soybean looper, these results suggest that a Bt soybean could be a useful tool in combating this yield-limiting pest.