

Search for Excellence in Crop Production Entry
D. Eddie McGriff
Improving Crop Yields and Profitability in NE Alabama

Educational Objectives

Northeast Alabama farmers annually plant 86,000 acres of corn; 95,000 acres of soybeans; 87,000 acres of cotton and 30,000 acres of other row crops including wheat, grain sorghum, peanuts, canola, and other small grains in the ten counties I cover. I, as the regional Extension agent for agronomic crops (row crops), am responsible for the educational programs and on-farm research to aid growers in making not only higher yields but, more importantly, to be more profitable and sustainable.

Teaching Methods

I accomplish these goals through field visits; production meetings; on-farm research trials (the Alabama Wheat & Feed Grain Commission; the Alabama Soybean Producers; and Alabama Cotton Commission funded my research for \$58,210 in 2020); scout schools and field days; Extension publications, newsletters and e-mail updates; and producing crop scouting, as well in-studio and on-farm programs videos entitled "*On The Farm in Alabama*".

I have taught the beneficial insects and occasional pests in cotton at our statewide crop scouting schools for the last three years. I surveyed nineteen cotton entomologists across the cotton belt to rank the top beneficial insects in cotton. The Cotton Grower magazine followed up with my article on the importance of beneficial insects in cotton and how they reduce the need for insecticides along with a five issue insert with beneficial insect photos and the pests they target, method of attack, and how to identify them (see supporting material).

Program Activities

Several years ago, I asked corn world record yield holder Randy Dowdy if he would be willing to plant soybeans with an early planting system and fertility program that I was working on with retired Extension agronomist Dr. John Woodruff. He would go on to produce two world record soybean yields (190.23 bushels per acre surpassing his 171 bushel per acre yield). He invited me to the RFD-TV Fort Worth, Texas studio in 2019 to tape a show honoring his accomplishment for my assistance. I have for the last three years been refining the system in North Alabama with on-farm replicated trials and my experience in working with Randy Dowdy.

I conducted multi-year on-farm corn research to develop the Alabama corn audit which is twenty-five production practices to increase corn yield and profits. I go over the corn audit in group meetings and with individual farmers. It takes me almost two hours to go over the corn audit. Growers usually do not adopt all practices in one year but pick the practices that will be most profitable for their operation immediately.

Annual on-farm corn research includes two variety trials; seeding rate study (four varieties at four different seeding rates); planter speed effect on yield study; harvesting high moisture corn study (increased yields by almost 1% per percent of moisture); corn fungicide trials; and a corn nematode trial. This research helped validate the production practices in my corn audit.

I have done corn production meetings statewide at the request of fellow REAs since we have not had a corn specialist for the last three years. I have also done the corn production presentation at our zoom meeting for CCAs at 2020 Auburn winter crop meeting. I have also been called on to help troubleshoot corn problems statewide by other REAs.

I have conducted on-farm trials to use the Thrips Infestation Predictor (TIP) in cotton model to base thrips' control applications on when the thrips pressure is high rather than an automatic applicator.

I have authored the Alabama wheat audit (21 production practices to increase yields and profitability).

Results

Alabama farmer, Nick McMichen, who also farms in an adjoining county in Georgia came within five bushels of breaking the Georgia record for wheat yield. He credited the wheat audit for his high yields and increased profitability (see supporting material).

A grower following the early-planted soybean production system and fertility program made the first 100+ bushel per acre yield in Alabama in the fall of 2017 which earned him a \$10,000 prize in the Alabama Soybean Producers' yield contest. The next year another grower I was working with broke the 100+ bushel per acre barrier. Another grower set a non-irrigated soybean yield record in Alabama at 94 bushels per acre.

My replicated fertility trials showed an increase in yield and bean size by making a potassium and nitrogen application at R1. Hundreds of tissue samples showed we were depleting the leaf of potassium and if we could maintain the potassium level near adequate levels of 1.75%, we could increase bean size and yield. Our soybeans averaged around 2,100-2,200 beans per pound compared to normal yielding soybeans of 2,800-3,200 beans per pound which greatly increased yields.

One spray based on the TIP model made the grower 170 more pounds and \$106 more profit per acre compared to the cotton not sprayed.

Impact Statement

The corn fertility trials were conducted on both irrigated and non-irrigated fields. The seven treatments were replicated three to four times, hand harvested and shelled to obtain a yield. Tissue samples were taken weekly from each treatment. Hundreds of tissue samples showed that the two nutrients that were inadequate were sulfur and magnesium. Our KMag plots showed a significant economic yield increase in all trials. Growers rapidly adopted applying KMag at planting and adding sulfur to their nitrogen applications (using 28-0-0-5 instead of 32-0-0).

The Alabama Wheat and Feed Grain Commission asked me to include an Auburn University soil lab versus private lab fertilizer recommendations in all my fertility trials to validate the Auburn soil lab recommendations since they did not recommend as much fertilizer. The three year's data from the corn fertility trials showed growers lost \$90 per acre per year when following the

private soil lab versus Auburn University's fertilizer recommendations. This portion of the research alone could add \$90 per acre to a grower's bottom line.

The impact from the corn audit has led to huge yield and profit increases for growers (see supporting material). Alabama's yields in the National Corn Growers Association annual yield contest have increased over 26% over the last three years. A state record of 355 bushels per acre was set in 2019. Alabama, for the first time, had four growers I work with place nationally in the top ten yields in their categories in 2020.

Evaluation

Growers have credited the corn and wheat audits for higher yields and profits. Alabama growers have readily adopted the corn and wheat audits along with the early planted soybean production system which have led to record yields and increased profits as documented in the results and impact statement along with the supporting material. This year the Alabama Cotton Commission has increased my research funds for the benefits of TIP model to Alabama growers.

My e-mail updates and newsletters are regularly published by the national media including Southeast Farm Press, AgFax, Corn South magazine, along with Cotton Grower magazine so I field numerous questions from growers across the nation. I started a video series on scouting and crop production with the specialists due to not being able to have face-to-face meetings in 2020. The twenty YouTube videos have over 3,000 views.