



Mississippi Corn Promotion Board 2018 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 as it has become the second or third most popular row crop based upon acreage and value during the past ten years. Although corn productivity has increased more than any other Mississippi row crop during the past twenty years, we believe there is tremendous potential to improve our production systems. Thus, Mississippi State University Extension has established a Corn Verification Program supported by the Mississippi Corn Promotion Board using your checkoff funds. This is an outreach program designed to identify limitations and integrate research findings into better, more profitable corn production systems. Both of these program priorities are essential to the outcome derived from implementing state of the art technology and quality of future research we produce. We do so while keeping the foremost objective of increasing profitability of Mississippi's corn production systems, using innovative, sound principles and technology which are proven or have practical merit. We seek to accomplish these goals through the gracious cooperation of producers who grant us the opportunity to provide guidance and implement improved practices in a field on their farm. We develop a management plan uniquely tailored for each field and cooperator. Verification fields are regularly scouted to monitor crop response, potential limitations and ensure timely and prudent implementation of in-season practices. This process allows us to demonstrate value of new or improved management practices that are currently not being utilized.

Project Results/Outcomes

One of our focal areas is to improve corn water management working closely with our irrigation team. We have found a vast majority of growers apply far more irrigation than necessary while growing corn. This leads to incessant soil saturation, which has negative impacts on corn growth and development. Therefore, we have integrated soil moisture information with corn physiological needs to develop new irrigation strategies which address this issue and improve corn productivity. For example, corn is very tolerant to water deficit during vegetative stages, when crop water needs are relatively low. Conversely, as corn approaches the critical tassel and early reproductive stages, corn irrigation should be scheduled much more generously in order to fully support increasing crop needs when the crop is most sensitive. Consequently, we developed an innovative variable irrigation schedule which mirrors corn water demand through the season. A conservative irrigation threshold until just prior to tassel is critical because it will encourage root development. This strategy is successful in our rainy climate because it promotes soil aeration, and improves nutrient availability, which boosts plant health and tolerance of adverse environmental conditions. Implementation of this strategy in Verification fields is improving corn yields 10-20 bushels per acre, as well as reducing irrigation water use and expenses about 40 percent. Our experience with Corn Verification Fields has identified three fundamental areas which principally establish corn yield and affect profitability: hybrid selection, stand development, and plant nutrition.



Project Results

Thus, we strive to improve these goals by annually evaluating corn hybrids for superior yield, and traits which enhance plant health, so we can recommend hybrids better adapted for specific culture. Our abundant rainfall often presents intrinsic problems for corn planting and stand development in the Mid-South. Not only will wet soils restrict and delay corn planting, but may also increase stand failure and growth disparity, which reduces yield. Therefore, we developed planting guidelines based upon soil temperature and moisture, rather than relying solely on calendar date for early planting. New efforts are focused upon methods to mitigate stand issues. Additionally, wet soils restrict plant nutrition by promoting nitrogen loss, and create soil compaction during various fields operations, which restricts root growth. Thus, we tailor nitrogen fertility programs to ensure fertilizer sources are applied using suitable methods and timing capable of improving crop availability and reducing loss. Crop nutrient needs also continue to change as yields rise, different crops are grown, and other conditions evolve. These activities allow us to stay abreast of needs through routine field scouting, sampling and crop reports.



The Corn Verification Program offers tremendous opportunity to identify limitations and enhance our cropping systems.

Project Impacts/Benefits

The Corn Verification Program provides first-hand opportunity to identify many factors limiting corn productivity, so that we can develop educational programs and collaborate with scientists and industry to better direct research to address pertinent limitations in our region. Many issues documented through this program have developed into major Mississippi State University research projects, which train graduate students and thoroughly investigate limitations. Furthermore, there is no stronger tool to encourage adoption of new technology and better practices than successful demonstration in the field. For example, our efforts with irrigation are improving corn yields 10-20 bushels per acre, as well as reducing irrigation water use and expenses about 40 percent. In summary, the cumulative adoption of progressive practices identified, developed and demonstrated through this program offer tremendous possibility to improve our systems and reduce risk. These activities will substantially improve profitability and sustainability of growing corn in Mississippi.

Project Deliverables

35 Professional presentations, field days, or outreach educational activities

15 Published articles on the Mississippi Crop Situation Blog

4 Mississippi Crop Situation Podcasts

108 tweets on Twitter creating 229,291 impressions