Utilizing Florida Best Management Practices While Evaluating Grain Corn Varieties

Grain corn remains to be an important commodity in the Suwannee River Valley of North Florida despite increased regulatory measures to reduce nitrogen and irrigation inputs. In 2024, approximately 30,000 acres of corn were harvested in counties surrounding the North Florida Research and Education Center-Suwannee Valley (NFREC-SV). Each year, grain corn producers must choose a corn variety when making planting decisions. With several available options from multiple companies this can be a daunting task. In the past producers have depended on yield data generated from similar trials conducted by industry and Extension from regions with differing environmental and soil conditions using nitrogen rates not compliant with Florida regulations. In Florida, Section 373.4595(2)(a) of the Florida Statutes, it states that Best Management Practices (BMP) for agricultural discharges must reflect a balance between water quality improvements and agricultural productivity. The Florida Department of Agriculture and Consumer Services' (FDACS) BMP program is regulatory and is currently monitoring BMP adoption of grain corn producers. For the past six years a BMP grain corn variety trial at the NFREC-SV has been conducted by University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) Specialists and Extension agents. Area corn producers were encouraged to attend meetings and interact with these specialists and agents to determine an appropriate plan to remain sustainable in the corn industry.

Educational Objectives

- At least 90% of producers attending corn production meetings in the Suwannee River Valley will increase knowledge of new grain corn varieties. Knowledge gain will be measured by post meeting evaluations.
- At least 90% of producers attending corn production meetings in the Suwannee River Valley will increase knowledge of Florida Best Management Practices. Knowledge gain will be measured by post meeting evaluations.

Program Activities

UF/IFAS Extension Agents Keith Wynn, Emily Beach, Kevin Korus and UF/IFAS BMP Outreach and Education Coordinator Joel Love have collaborated with the staff at the NFREC-SV near Live Oak, Florida to provide a randomized and replicated grain corn variety trial. This irrigated trial was approximately 7 acres. Grain corn seed companies provided two varieties that are recommended for the North Florida area along with $400 to help encumber the cost of incorporating this trail at the NFREC-SV. Current recommended production practices are followed during the production season to manage fertility and irrigation to remain in compliance with FDACS BMP's. Harvest data is collected and statistically analyzed by UF/IFAS Associate Professor and Extension Specialist Dr. Nicholas Dufault to create fact sheets and presentations that are distributed or presented at local and regional production meetings in North Florida. This research allowed Extension agents an opportunity to provide producers with timely information about the efficacy of currently recommended grain corn varieties. Because of these trials, producers have seen the benefit of incorporating new varieties with increased disease and insect resistance into their management programs and have made changes to their management plans. Extension agents also received hands-on training with grain corn fertility management and variety selection. This increased their confidence when interacting with producers and encouraged peer interaction in the field.

Teaching Methods

This corn production program provided producers the opportunity to gain knowledge and created a venue for expertise and information exchange about grain corn production. The exchange of information not only helped producers make decisions that aided their production systems but also allowed county and state educators an opportunity to enhance their efforts through collaboration. The research trial and results were discussed at production meetings throughout the state over the past six years. PowerPoint presentations, poster displays, factsheets, and field days have each been utilized to disseminate research data and educational information obtained from conducting the trials. Producers had an opportunity to receive this information from the following meetings held throughout the Suwannee River Valley area: Hamilton County Annual Grain Corn Production Meetings, Suwannee Valley Annual Grain Corn Field Days, Alachua/Columbia County Annual Field Corn and Peanut Meetings, Agronomic Crop Update, and the NFREC-SV Corn/Peanut Field Days. Participating agents have also had an opportunity to discuss the programs impact utilizing oral and poster presentations at state and national Extension conferences as well as statewide Extension in-service trainings.

Results

Over the past six years approximately 1,100 corn producers, farm managers, allied industry, crop consultants, and stakeholders from the Suwannee River Valley have attended corn production events throughout the area. Each year exit evaluations demonstrated that producers have increased their knowledge of grain corn variety selection and FDACS BMP implementation after attending these meetings. The table below reflects the evaluation results from the Hamilton County grain corn production meetings along with producer interviews that were conducted during field visits throughout the growing season.

2020–2025 Evaluation Results from Hamilton County		
	Knowledge Gain/Production Meeting Likert Evaluations	**Behavior Change/ Producer Interviews During Field Visits.**
I increased my knowledge in field corn cultivar selection.	94% (244 of 260)	NA
I increased my knowledge in field corn fertilizer application options.	88% (229 of 260)	NA
I increased my knowledge in field corn Best Management Practices.	92% (239 of 260)	NA
Adopted new grain corn varieties demonstrated in UF/IFAS variety trials.	NA	92% (42 of 46)
Adopted production practices to remain compliant with Florida BMP’s.	NA	100% (46 of 46)

Impact Statement

At annual regional and Hamilton County field corn production meetings harvest data are presented to local producers from the grain corn variety trial conducted at the NFREC-SV. Popular field corn varieties only stay in demand 2 to 3 years before being replaced by others that are higher yielding or more disease resistant. These producers use this information to determine what new varieties should be implemented in the upcoming planting season. Varieties that have performed well in these trials were adopted in Hamilton and Lafayette Counties increasing yields by 23 bushels per acre, generating an additional $747,500. Additionally, the team continues to conduct the trial due to the consistent interest and support from the industry partners. The fact that the same companies continually participate in the trial and that emerging companies reach out to the team to be a part of the trial proves that industry supports its efforts.

Florida BMPs which focus on reducing the nutrient load while increasing efficiency of nutrients and irrigation were integrated into these trials. The Basin Management Action Plan (BMAP) has been enacted which mandates that production practices follow Florida BMPs to remain compliant with the Florida Department of Environmental Protection. In a recent interview survey with growers across the Suwannee River Valley area, producers reported a reduction of 40 pounds Nitrogen from their nutrient applications over the past 5 years. This indicates a reduction of 1.2 million pounds of nitrogen saving producers $888,000 while supporting the Florida BMAP.

Evaluation

Each year qualitative and quantitative evaluations were used to determine the corn programs' significance and was used to determine topics for discussion at future meetings. Knowledge gain was assessed with traditional exit evaluations using a Likert scale. Adoption and implementation were evaluated through producer farm visits and follow up conversations. In summary, the results and impacts prove that the variety trial has value due to the knowledge gained by the producers and the improved efficiency of nutrient and irrigation use.