

A SPLIT-FIELD COMPARISON OF TRADITIONAL AND NEW CROPPING PRACTICES

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Interpretive Summary

A research-education-extension program was initiated at Clemson University's Pee Dee Research and Education Center near Florence, SC in 1997. The program consists of numerous satellite experiments investigating aspects of conservation tillage, site-specific management, and optimizing use of new genetic technology. Information from these experiments are used to design management practices for a large (14 acre) split-field study where new technologies are compared to the traditional technologies that were used by growers in South Carolina in 1995. Crops grown on the split field were wheat and soybean (double crop) in 1997-98, corn in 1999, and cotton in 2000. Conservation tillage, narrow row spacing (for soybean and corn), herbicide and/or insect resistant crop genotypes, and site-specific application of P and K were used on the side of the field designated to receive the new technologies. Conventional tillage, wide row spacing, and non-transgenic crop genotypes were used on the traditional side of the field. Three runoff plots (approximately 1/8 acre in size) were installed on each side of the field. These runoff plots were equipped to measure runoff volume and to collect runoff water for nutrient and sediment analysis. Each half of the field was grid sampled after each crop for soil chemical properties and nematode populations. Soil organic matter was measured on specific soil types within the field, and the number and size of fire ant mounds were determined. Yield monitors were used on the combine and cotton picker to provide site-specific analysis of yield. Yields on the new technology side were not always higher than those on the conventional practices side. Yields on the traditional side of the field were 36 bu/ac for wheat, 26 bu/ac for soybean, 85 bu/ac for corn, and 530 lb lint/ac for cotton. On the new technology side of the field, yields were 38 bu/ac for wheat, 21 bu/acre for soybean, 91 bu/ac for corn, and 682 lb lint/ac for cotton. Results of the project are posted on a website (<http://agroecology.clemson.edu>) and provided to farmers throughout South Carolina in a semi-annual newsletter.