

EVALUATION OF AN AG LEADER™ COTTON YIELD MONITOR IN LARGE PLOTS AND FIELD SITUATIONS

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Abstract

An Ag Leader™ PF 3000 cotton yield monitor was evaluated in normal cotton field situations and in harvesting large research plots at the Tennessee Valley Research and Extension Center at Belle Mina, Alabama in 2000. The yield monitor was installed on a John Deere model 9920 two-row cotton picker. This picker has four cotton shoots that deliver cotton to the basket. Cotton flow sensors were installed on all four shoots. Other sensors installed were a fan speed sensor and a header height sensor. Ground speed was determined through a Trimble™ GPS system installed on the picker. The objectives of this study were to determine: (1) picker modification and user knowledge needed to operate the Ag Leader™ cotton yield monitor, (2) accuracy of the Ag Leader™ monitor in farm cotton field conditions, and (3) feasibility of the Ag Leader™ monitor use in cotton research plot areas.

Installation of the yield monitor was fairly straightforward. The most difficult task was cutting each side of the cotton shoots for installation of the flow sensors. This picker had two curved shoots, which made alignment more difficult. Technical support in installation and trouble shooting problems was excellent.

Early season evaluations were done in large fields located on the research and extension center. Yield predictions by the Ag Leader™ system were compared to weights measured by dumping into a boll buggy equipped with scales. In most cases, early season yield predictions by the Ag Leader™ system were 1 to 6 percent greater than actual weights measured. We noted that this variance increased as more baskets were picked. The problem was due to cotton stringers developing over the flow sensors in the curved shoot. Very little cotton stringer development was found in the straight shoots. A quick brushing of the sensors in the curved shoots after each dumping eliminated the problem. After this predicted yields measured by Ag Leader™ system became more consistent and were generally within 5 percent of measured yield.

The yield monitor was also evaluated in a drip irrigation test area that had plots that measured two rows wide and 340 feet long. Each plot was picked and weight measured in a boll buggy. This weight was compared to that predicted by the yield monitor. Weights measured ranged from 77 to 208 pounds per plot. In this test, the Ag Leader™ system very accurately predicted yields. Measured yield and Ag Leader™ predicted yields varied only from -1.0 to +4.1 percent.

Overall evaluations of the Ag Leader™ PF 3000 cotton yield monitor was very favorable. With only limited knowledge of the system we were able to install and operate the system with minimal difficulties. Yield prediction by the Ag Leader™ system were generally within 5 percent both in field and large plot situations.