

**RESPONSES TO ULTRA NARROW ROW COTTON TO
NITROGEN FERTILIZATION**

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Abstract

Recent developments in cotton (*Gossypium Hirsutum* L.) production technology in the Delta include drill planting. Drill planted or ultra narrow row (UNR) cotton is a low input production system designed to maximize economic returns. Research providing information on production parameters is scant. Optimum nitrogen (N) fertilization rates are unknown. The objectives of these studies were to determine how UNR cotton would respond to N fertilization.

Studies of responses to N fertilization were begun in 1997. Fertilizer treatments ranged from 0 to 150 lb urea-N/acre, and were surface applied without incorporation near the two true leaf stage at the University of Arkansas -Southeast Branch Experiment Station near, Rohwer, AR. The test was expanded in 1999 to include a second study site at the Northeast Research and Extension Center (NEREC) near Keiser, Arkansas.

Measurements taken on the UNR cotton included node development, yield, plant height, plant population, boll load and boll weight. All data were analyzed using the Statistical Analysis System (SAS). F-tests and least significant differences (LSD) were calculated at the $\alpha=0.05$ level of probability.

Boll load and boll weight were both greatest and not significantly different for the UNR cotton that received N fertilizer. Boll load and weight were lowest for the unfertilized cotton SEBES in 1997 and 1998. No significant differences were observed in boll loads at NEREC or SEBES in 1999.

Plant height increased with increasing N fertilization up to 100 lb N/acre at SEBES in 1997 and 1998, but only up to 75 lb N/acre at NEREC. Plant height differences were not significant during the drought stressed growing season of 1999 at SEBES.

Fertilization with more than 50 lb N/acre, regardless of N source, did not significantly increase yields during 1997 and 1998 at SEBES or 1999 at NEREC. Trends of higher yields were sometimes observed with greater N rates, but the differences were either not significant or too small to be economically consequential. Cotton receiving no N fertilizer was significantly lower yielding than cotton that received N fertilizer. Severe drought conditions masked the impact of N fertilization on yields at SEBES in 1999.