

**ANALYSIS OF UNR AND CONVENTIONALLY SPACED COTTON YIELD  
AT VARYING NITROGEN FERTILIZER RATES**  
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**Abstract**

Ultra narrow row (UNR) cotton is a production system utilizing high plant populations grown in close row spacings. Because of this, the environment in the field differs from that of conventional rows, leading to uncertainty as to the required level of nitrogen fertilizer for UNR cotton as well as the nature of its responses to this input. To investigate these issues, a 3-year study (2000, 2001, and 2002) was performed at the Texas A&M Agricultural Experiment Station in Burleson County (near College Station), Texas, comparing UNR and conventionally spaced cotton across a series of nitrogen rates. The experimental design was a split plot, with nitrogen fertilizer rates of 0, 45, 90, and 135 lb/A as the whole plots and row spacings of 7.5, 15, and 30 inches as the split plots. Data was taken on lint yield as well as yield components (seedcotton per boll on reproductive branches, and number of bolls per square foot). Reliable data for bolls per square foot was not available in 2000.

Higher nitrogen rates resulted in increases in seedcotton per boll in 2000 and 2002, (significant only in 2000) and caused higher numbers of bolls per square foot in 2001 and 2002 (significant only in 2002). Reduced row spacings (below 30 inches) caused reductions in seedcotton per boll in each year, which were significant only in 2000, and nonsignificant increases in bolls per square foot in 2001 and 2002. Differences in bolls per square foot were greater than in seedcotton per boll, and differences in both yield components were larger by nitrogen than by row spacing.

Combined over years, no nitrogen by row spacing or year by nitrogen by row spacing interactions were observed for lint yield, showing that each row spacing responded similarly to nitrogen. Lint yields were significantly increased by each additional increment of nitrogen fertilizer up through 90 lb/A in 2000 and 2001, and through 135 lb/A in 2002. There were no significant differences in lint yield by row spacing in any year. For the row spacings of 7.5, 15, and 30 inches the respective lint yields were 1006, 1167, and 1153 lb/A in 2000; 793, 712, and 737 lb/A in 2001, when higher insect pressures were experienced as well as weather-related difficulties; and 1295, 1304, and 1287 lb/A in 2002.

The similar response of the lint yield for each row spacing to nitrogen implies that UNR cotton nitrogen fertilizer requirements do not differ from those of conventional rows. The lack of significant yield differences by row spacing in any year is important to the decision of whether to produce UNR cotton. In cases such as this, the merits of the system will depend on the economic consequences of other factors such as costs of production or any price discounts received for lint.