

**FOLIAR FERTILIZATION OF COTTON
IN SOUTHEAST ARKANSAS
J.S. McConnell and R.C. Kirst, Jr.
University of Arkansas
Southeast Research and Extension Center
Monticello, AR**

Abstract

Nitrogen (N) fertilization and N nutrient management are crucial components of economically successful cotton production. The efficacy of foliar N applications and the timing criteria for foliar N applications have been debated by cotton producers and scientists. The objective of this research was to use established soil-applied N experiments to evaluate foliar-applied N applications for increasing cotton yields in Southeast Arkansas, and petiole NO_3^- -N as an indicator of N status of the crop. A long-term, soil-applied N rates experiment was utilized in these studies. The test consisted of a furrow irrigated and a dry land blocks of plots. Soil-applied fertilization rates tested within each block ranged from 0 to 150 lb N acre⁻¹ and N treatments were applied to the same plot each year of the study. The plots (8 rows; 30 ft long and 25.3 ft wide) were divided and half of each plot received three foliar N treatments (10 lb N acre⁻¹ treatment⁻¹) on two week intervals beginning at first flower. Foliar N treatments most frequently increased lint yield when soil-applied N-rates were low (0 to 60 lb N acre⁻¹). Lint yield increases due to foliar fertilization tended to be greater under irrigated production conditions than under dry land conditions. Yield decreases were sometimes found due to foliar-applied N when the rate of soil-applied N fertilizer was high (90 to 150 lb N acre⁻¹), although differences were not significant. Higher soil-applied N treatments resulted in higher petiole NO_3^- -N throughout the growing seasons, although not all differences were significant. Foliar N treatments were found to significantly increase petiole NO_3^- -N in 13 of 38 year-irrigation-sample date combinations. The interaction of foliar N and soil N fertilizer treatments was found to significantly influence petiole NO_3^- -N in only one sampling date during one year of the study.