

**EFFECT OF N RATE AND PLACEMENT
ON NO-TILLAGE COTTON
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Abstract

Information on nitrogen (N) application methods and rates for no-tillage (NT) cotton (*Gossypium hirsutum* L.) production is limited. Research was initiated in 1994 and continued through 1996 on a Loring silt loam at the Milan Experiment Station. Research was begun in 1996 on a Collins silt loam at the West Tennessee Experiment Station and on a Memphis silt loam at Ames Plantation. Surface residues were different on the three sites. Old cotton stalks and spring killed weeds were the cover on the Loring soil, killed wheat on the Collins soil, and corn residue on the Memphis soil. The experimental design was an RCB with treatments replicated five times. N rates of 0, 30, 60, 90, and 120 lb/A were broadcast, injected, and broadcast in split applications. The cultivar D&PL 50 was planted by early May. The broadcast and injected N rates were applied immediately after planting along with 60 lbs N/A applied to the split rate plots with the remaining rate applied a month later. Ammonium nitrate was the broadcast N source and UAN was the injected N source.

Increases in 3-year average NT lint yields with increased broadcast N rates on the Loring silt loam were expressed by $Y = 605.53 + 9.15 N - 0.06 N^2$. The 1996 yields on the Collins soil were expressed by $Y = 1285 + 5.22 N - 0.04 N^2$ while increases on the Memphis soil were expressed by $Y = 579 - 2.3 N$. Method of N application did not affect yields at any of the three locations. A year-by-N rate interaction affected lint yields on the Loring soil. In 1994, yields on the Loring soil were increased with N rates through the 120 lb/A rate. The 1995 and 1996 yields were increased with N through the 60 lb/A rate but were reduced by applying 120 lbs/A. The primary reason to inject N is to reduce immobilization by surface residues. These data indicate that N immobilization by the surface residues (winter weeds, killed wheat, and corn) in this research was insufficient to affect yields.