

EVALUATION OF STARTER MATERIALS AND APPLICATION METHODS FOR NO-TILLAGE COTTON

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years on the Collins soil. The 1996 yields were increased by $\text{Ca}(\text{NO}_3)_2$ applied I-F at 4 and 8 lbs N/A.

Abstract

Starter fertilizers have increased no-tillage (NT) cotton (*Gossypium hirsutum* L.) yields. There are several methods of starter application each differing in equipment required and rate of fertilizer applied. Applying starters in-furrow (I-F) at planting has certain advantages over the other application methods. A primary advantage with the I-F application method is the need to apply low fertilizer rates when compared with the other application methods. Nutrient rates applied I-F need to be low to prevent germination damage and to avoid slowing the planting process through frequent refilling of the fertilizer hoppers. Additional information is needed evaluating rates and nutrient combinations for I-F applications. Research was initiated in 1994 and continued through 1996 on a Loring silt loam soil at Milan and on a Collins silt loam at Jackson evaluating $\text{Ca}(\text{NO}_3)_2$ and 11-37-0 applied either I-F or S-B as starters for NT cotton. The experimental design was an RCB with treatments replicated five times. Individual plots were 30 feet long and 4 rows wide. A total of 80-40-60 lbs/A of N, P_2O_5 , and K_2O , respectively, were either broadcast or applied as a combination of broadcast plus starter. The cultivar D&PL 50 was planted by mid-May at both locations. Treatments applied at planting included: $\text{Ca}(\text{NO}_3)_2$ applied at 2, 4, 8, and 12 lbs N/A I-F; $\text{Ca}(\text{NO}_3)_2$ applied at 10 lb N/A as a surface band over the planted row (S-B); 11-37-0 applied at 1.5 gal/A I-F; and 11-37-0 applied at 7.5 gal/A as a S-B. The S-B treatments were not applied at WTES.

Three-year average lint yields were increased in excess of 100 lbs lint/A on the Loring soil and 75 lb lint/A on the Collins soils. I-F applying $\text{Ca}(\text{NO}_3)_2$ at 2, 4, or 8 lbs N/A increased 3-yr yields relative to the check on the Loring soil. The ANOVA indicated a year-by-starter interaction affected yields. In 1994, yields were increased by $\text{Ca}(\text{NO}_3)_2$ applied I-F at lb N/A and by 11-37-0 applied S-B, whereas in 1995 all starter treatments increased yield relative to the check. Yield variability in 1994 may have been aggravated by seedling diseases that reduced plant populations. Starters increased the 1996 yields relative to the check except when 8 lbs N as $\text{Ca}(\text{NO}_3)_2$ was I-F applied or when 11-37-0 was applied as a S-B. Three-year yields on the Collins soil were increased by $\text{Ca}(\text{NO}_3)_2$ applied I-F at 2, 4, and 8 lbs N/A. A year-by-starter interaction also affected yields on this soil. Yields were significantly increased in only one of the three