COTTON GROWTH AND YIELD RESPONSE TO SLOW-RELEASE NITROGEN

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Abstract

While nitrogen (N) source, rate, placement and timing of application are important considerations for cotton production, so is the impact of N on water resources. Slow-release N fertilizers and urease-nitrification inhibitors have potential to improve N use efficiency in several crops including cotton, and thus reduce N losses to the environment. A first-year field study was conducted on a Wesswood silt loam soil with a moderate residual N level for cotton as determined by deep soil sampling. Fertility treatments included a control or 0 N added and 40, 60, 80 and 100 pounds of N per acre applied using liquid urea ammonium nitrate (UAN). Two urease-nitrification inhibitors and four slow-release N products were blended at recommended ratios with liquid UAN fertilizer and applied at 80 and 100 pounds of N per acre. At second true leaf, treatments were initiated by side dress placement of fertilizer six inches below the soil surface. Experimental plots were arranged in a randomized complete block design and replicated five times. Nodes above white flower at four weeks after first flower was similar in plots that received UAN alone, urease-nitrification inhibitor or slow-release N:UAN blends. Compared to either rate of N from application of UAN, differences were not observed in lint yield, gin turnout and fiber quality related to urease-nitrification inhibitor or slow-release N:UAN blends. Repeating this study should help identify the impact that seasonal changes and levels of residual soil N fertility have on the response of cotton to slow-release N sources.