

NITROGEN USE REQUIREMENTS OF MODERN COTTON CULTIVARS BASED ON SEED SIZE

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Abstract

Research was conducted at 10 locations across the cotton belt to investigate nitrogen use of cotton based on seed size (small seed >5500 seed per lb, medium seed 4400-5000 seed per lb, large seed <4400 seed per lb). Soil samples were collected from each site (either from each plot or by replication block) to a depth of 24 inches. Samples were divided into 0-6 inch and 6-18 inches subsamples for analysis nitrate analysis. Residual nitrate analysis indicated from 24-96 lbs of available nitrate in the 24 inch profile depending on soil type (sandy loam to clay loam) and environment (southeast, mid-south, and west). Nitrogen was applied at rates of 0, 40, 80, 120 lbs/ac as a factorial arrangement with seed size for a total of 12 treatments. Plant height, total number of nodes and nodes above cracked boll (as a maturity measure) increase as nitrogen rate increased. Lint percent decreased as nitrogen rate increased. When pooled across all location lint yields increased when 40 or 80 lbs of nitrogen were applied, but did not increase with 120 lbs of nitrogen. This was first year results from a multi-year study.