

**ASSESSING PHYSIOLOGICAL AND AGRONOMIC RESPONSES OF COTTON TO NITROGEN
FERTILITY IN SOUTHERN GEORGIA**

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Abstract

The cotton crop is highly responsive to N fertility, especially on coarse-textured soils of the coastal plain, and established N recommendations exist for lint yield goals up to 1,500 lbs/acre in Georgia. However, the near constant release of improved, higher-yielding Upland cotton varieties necessitates a reevaluation of yield response to N fertility and of the underlying physiological processes that influence yield response to N management. The current study addressed the physiological and agronomic responses of cotton to N fertility rates of 0, 75, 94, 112, 131, and 150 lbs N per acre. Measurements included plant height, number of total mainstem nodes, nodes above white flower (NAWF), net photosynthesis, photosynthetic electron transport rate, chlorophyll content, and seedcotton yield. Physiological parameters such as photosynthetic responses and leaf chlorophyll content increased with higher rates of N fertility by the last sample date of the year (August 17). Differences in seedcotton yield, NAWF, plant height, and total nodes were only observed between the 0 N rate treatment and all other N rate treatments. Specifically, N deficiency in the 0 N treatment decreased seedcotton yields, limited plant height, and hastened cutout relative to all other N rates.