COTTON (*GOSSYPIUM HIRSUTUM*) VARIETY RESPONSE TO VARYING RATES OF NITROGEN IN MISSISSIPPI

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Abstract

An experiment was conducted in 2019 to evaluate the effect of multiple nitrogen fertilizer application rates on multiple cotton varieties. Optimizing nitrogen fertilizer performance is essential in order to maximize yield and prevent excessive input cost. Choosing the best performing cotton variety is the most important decision a grower can make as variety selection greatly influences management and overall profitability. Many nitrogen fertilizer application rates are employed throughout Mississippi; therefore, research was conducted to evaluate the effect on nitrogen fertilizer application rate and variety on cotton performance.

Experiments were conducted in 2019 at the R.R. Foil Plant Science Research Center near Starkville, MS. Experiments were arranged in a factorial arrangement of treatments within a randomized complete block design. Nitrogen applications consisted of four rates: 0 kg ha^{-1}, 67 kg ha^{-1}, 134 kg ha^{-1}, and 202 kg ha, along with five NexGen cotton varieties: NG5711 B3XF, NG4936 B3XF, NG 3930 B3XF, NG3994 B3XF, and NG 3729 B3XF. All nitrogen applications were made at pinhead square and stand counts were taken at twenty-one DAP, along with a height, node, and node above white flower (NAWF) at first bloom. Prior to harvest, height, node, node of first fruiting branch (NFFB) and node above crack (NACB) data was collected. Yields were collected using a spindle picker modified for small plot research.

An interaction between variety and nitrogen fertilizer application rate was observed. A Nitrogen fertilizer application rate of, and 134 kg ha^{-1} consistently produced the greatest yields. Nitrogen rates of 202 kg ha^{-1} produced the tallest plants, total node count, and NACB. NG 3930 B3XF receiving a nitrogen fertilizer rate of 202 kg ha^{-1} produced the highest seedcotton yield.