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Interactive Effect of Nitrogen and Boron on Cotton Yield and Fiber Quality

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Abstract: This study aimed to determine the effect of application rates of N and B on cotton yield and fiber quality. Suregrow 125 (Gossypium hirsutum L.) was grown on a clay soil having an average 0.38 mg kg^{-1} B concentration. Analysis of leaf tissue taken at early bloom and before the nutrient application indicated that N and B concentrations were sufficient. Nitrogen was applied to the soil at rates of 0, 80 and 160 kg ha^{-1}, and B was applied to the foliage 3 times for totals of 0, 0.56 and 1.12 kg B ha^{-1}. Foliar-applied B significantly increased leaf blade B concentration in both years. Foliar-B sprays significantly increased boll number, boll weight, seed cotton and lint yield. The application of 1.12 kg ha^{-1} B and 160 kg ha^{-1} N resulted in the highest number of bolls. B increased boll weight from 5.93 to 6.92 g $boll^{-1}$ and boll bearing from 15.9 to 18.5 bolls $plant^{-1}$ in 2003. Consequently, B application resulted in 15.5% increased crop yield over the control. Neither N nor B treatments had any significant effect on fiber properties. This study demonstrated that cotton needed supplemental B when the soil B concentration was low.

Key Words: Cotton, foliar-B treatment, N rates, yield

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