INTERACTIVE EFFECTS OF SULPHUR AND NITROGEN FERTILIZER ON GROWTH AND YIELD OF COTTON

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ABSTRACT

Field experiments were conducted on cultivar NIAB-78 for two seasons involving four rates of nitrogen (0, 75, 150, 300 kg N ha^{-1}) and four rates of sulphur (0, 15, 30, 60 kg S ha^{-1}) at Central Cotton Research Institute, Multan. Nitrogen fertilization showed significant increase in seed cotton yield, number of bolls per plant and boll weight. The addition of 150 kg N ha^{-1} seemed sufficient in silt loam soils for optimum cotton production. There were no differences in seed cotton yield due to sulphur fertilization. Similarly no improvement in yield was observed where sulphur was applied in combination with nitrogen fertilizer. The seed cotton yield ranged from 2051 to 2840 kg ha^{-1} in different treatments. Cotton plant maintained a nitrate-sulphate ratio at about 4.0 with varying doses of nitrogen and sulphur. The concentration of SO_4-S at ≅ 2000 mg kg^{-1} and NO_3-N at ≅ 11500 mg kg^{-1} petiole d.wt. at flowering seemed sufficient for normal cotton growth and optimum yield. The fruiting efficiency decreased with excessive nitrogen and sulphur supply. Seed cotton yield was not directly correlated to dry matter yield. Cotton crop may respond to nutrients in terms of biological yield but it may not be reflected in economic yield. Lint quality was not affected by nitrogen and sulphur fertilizer application. The relationships between seed cotton yield and nitrogen doses could be described by the regression equation $Y = -0.00005X^4 + 0.0021X^2 + 6.0946X + 2066.6$ *and has a 0.67 co-efficient of correlation.*