



Research Paper

Absolute growth rate, relative growth rate, net assimilation rate as influenced on dry matter weight of Bt cotton

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ABSTRACT : The experiment was laid out in split plot design with three replications. There were twelve treatment combinations comprising three plant geometries viz., 90 cm x 60 cm, 120 cm x 45 cm and 180 cm x 30 cm and four nutrient levels viz., 80:40:40, 100:50:50, 120:60:60 kg NPK/ha and 75 per cent RDF + 5 t FYM/ha. The plant geometries are allotted to main plot and nutrient levels were accommodated in sub plots. Among growth parameters, the growth in terms of dry matter/plant was very slow during initial stage upto 30 DAS. At the end of this phase, the number of functional leaves and leaf area/plant were reduced considerably because of leaf senescence and thereby total dry matter/plant. Total dry matter accumulation per plant at all the crop growth stages was influenced due to different plant geometries. It was revealed from data that plant geometry of 180 cm x 30 cm recorded maximum dry matter accumulation per plant as against plant geometry of 90 cm x 60 cm. The more biomass production in 180 cm x 30 cm geometry might be due to wider inter row spacings. More accumulation of dry matter with wider inter row spacing may be attributed to utilization of available nutrients, sunlight and moisture at higher level because of more available space per plant. The increase in dry matter might be due to more availability of nutrients which in turn increased the plant height, number of leaves and leaf area which ultimately enhanced production of photosynthates and their subsequent accumulation in plant. Mean values of AGR based on dry matter (g/day) obtained at various crop growth stages during the crop period which indicated that AGR, RGR, NAR based on total dry matter accumulation per plant per day was very slow during 0 to 30 DAS and very fast during 61 to 90 DAS and slowed down thereafter.

KEY WORDS : AGR, RGR, NAR, Bt Cotton

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INTRODUCTION

Cotton (*Gossypium* spp.) is one of the important cash crops of India, which is sub-tropical crop grown with rainfall of 600 mm to 2500 mm. It tolerates high temperature upto 45°C to 46°C but temperature below 25°C is not conducive to this crop, temperature between 27°C to 32°C is optimum for boll development and maturation but above 38°C, yield is reduced. Its length of growing period varies from 150 to 240 days depending upon the genotype, soil and prevailing environment. Cotton is grown on wide range of soils but medium and heavy textured soils are preferred for cultivation of cotton crop. Cotton needs about 700 to 1300 mm water to meet its evaporative demand. With this preamble, a field experiment was designed and conducted on experimental Farm during *Kharif* season of

2009-2010 with the objectives of to know the absolute growth rate, relative growth rate, net assimilation rate as influenced on dry matter weight of Bt. cotton

MATERIALS AND METHODS

The details of materials used and the methods adopted during the course of investigation are given in this chapter under appropriate heads. The topography of experimental field was fairly uniform, leveled and had a good drainage. The soil samples from 0-30 cm soil strata were taken at random all over the experimental area after layout but before the application of fertilizers. A composite soil sample of about 1 kg from gross samples prepared and analyzed for various physico-chemical properties. The experiment was laid out in a Split Plot Design