

1180 Bt cotton offers planting at higher planting densities in India

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Cotton is the most important commercial crop of India and accounts for the largest area under cultivation ~9 m.ha., and third in production in the world. The production and productivity remained low until recent years. With the introduction of Bt cotton in cultivation, the productivity has gone upto 467 Kg lint/ha (2005 – 06) compared to around 300 Kg lint /ha (2001-02) resulting in quantum jump in production from 16 million bales to 24 million bales. Further improvement in cotton yields are possible only through changes in agronomic management and cropping systems with Bt cotton. Cotton is cultivated in India by growing at wider spacing at 120 x 120 cm to 90 x 90 cm with only 6944 to 12356 plants per ha., limiting yields. Bt cotton by virtue of built in resistance to bollworms, retains higher number of bolls from early stages of crop growth. Due to mobilization of nutrients to the developing bolls the vegetative growth is restricted and the canopy size reduced, offering scope for planting cotton at higher planting densities in India, with some genotypes. Thus the recent advances in Biotechnology helps in cultivating Bt cotton at higher planting densities, since pest management is critical under high density planting. Cotton hybrids with tall, erect and open plant type having with shorter sympodia appears suitable for planting at higher densities. The Cotton improvement programme at Nuziveedu Seeds Limited, India is aimed on reconstructing such plant architecture. Studies on Bt cotton at higher planting densities viz., 35879 plants/ha (90 x 30 cm), 23919 plants/ha (90 x 45 cm), 18000 plants/ha (90 x 60 cm) against 12345 plants/ha (90 x 90 cm) were conducted both at the Agricultural Research Stations and in farmers fields during 2005-06 and 2006-07 with NCS 145 Bt, NCS 207 Bt, NCS 913 Bt and NCS 138 Bt hybrids. The results obtained from the experiments conducted at 12 State Agricultural Universities representing the three cotton growing zones of India and from hundreds of onfarm trials across the country indicated that Bt cotton offers, an opportunity for high density planting and gives more than 40% additional yields without affecting the boll size and fibre quality parameters. Closer planting of Bt cotton utilizes the land and nutrients effectively, covers up early with better sun light interception. The Bt cotton crop at higher density grew more upright and have higher harvest index. The increase in yields were more pronounced especially on poor soils and when sowings were delayed in the semi arid tropics of India. The performance of Bt cotton hybrids at various planting densities, is discussed.