



Research Article

## Yield and nutrient status of Bt cotton hybrids under site specific nutrient management (SSNM) approach

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**ABSTRACT :** A field experiment was carried out at MARS, UAS, Dharwad to study the yield and nutrient status of transgenic cotton hybrids under SSNM approach. The field trial was laid out in RCBD with four Bt cotton hybrids and three target yield levels. Among the transgenic cotton hybrids, MRC-6322 recorded significantly higher seed cotton yield (3286 kg ha<sup>-1</sup>) and nutrient uptake (N-141.13, P-20.18 and K-174.30 kg ha<sup>-1</sup>) over MRC-6918 Bt cotton hybrid. Plant height (103.52cm) and number of square (29.72) recorded significantly higher in MRC 6918 Bt cotton. Significantly higher LAI (2.61), number of sympodial branches (20.69) and number of bolls (67.69) per plant recorded in MRC 6322 over MRC-6918 Bt cotton hybrid. Significantly higher available nutrients were recorded with MRC 6918 and in F<sub>3</sub> (N-231.25, P-52.16 and K-352.44 kg ha<sup>-1</sup>) level targeted for 3 t ha<sup>-1</sup>. Seed cotton yield increased with increase in fertilizer level targeted from 2 to 3 t ha<sup>-1</sup>. Improvement in seed cotton yield was in the order of 63.90, 15.60 and 7.30 per cent over their respective target yield levels. Significantly higher seed cotton yield was recorded with F<sub>3</sub> level (3219 kg ha<sup>-1</sup>) over F<sub>1</sub> (2738 kg ha<sup>-1</sup>) level and at par with F<sub>2</sub> (2891 kg ha<sup>-1</sup>) level. Growth and yield components increased with increase in fertilizer levels. Significantly higher yield and growth components and nutrient uptake (N-141.75, P-19.23 and K-166.28 kg ha<sup>-1</sup>) was recorded in 3 t ha<sup>-1</sup> (F<sub>3</sub>) targeted yield level.

**KEY WORDS :** SSNM, Targeted yield, Bt-cotton, LAI

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### INTRODUCTION

Cotton (*Gossypium* spp.) is a natural fibre of vegetable origin, composed of cellulose and often referred as 'white gold' or 'queen of fibres'. It enjoys a predominant position amongst cash crops in India and world as well and makes up 75 per cent

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of the raw material needs of the Indian textile industry and provides employment to 60 million people. Today, China is the largest producer of cotton (33 million bales), whereas India ranks second in global cotton production (27 million bales). India's cotton production to surpass China by 2015 based on the growth trend in last one decade. To fulfill the projected requirement, the cotton production increment has to come mainly from increased productivity. India has the largest area under cotton cultivation with relatively low productivity. The primary reasons for the low productivity of cotton in India are; cultivation of crops predominantly under rainfed condition, use of less efficient cultivars, predominance of pests on the crop and inadequate supply of nutrients, besides other reasons.

Bt Cotton is a genetically engineered form of natural cotton. The Bollgard-I with a single (Cry 1 Ac) Bt gene, Bollgard-II with two (Cry 1 Ac and Cry 2 Ab) Bt genes. From a low initial uptake in 2002 has spread to over 85 per cent of the area and