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Response of Bt-cotton hybrids for targated yield under northern transitional zone of Karnataka

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ABSTRACT

A field experiment was carried out at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad, during the growing season of 2006-07 to assess the performance of 'Bollgard' Bt cotton hybrids under northern transitional zone. The field trial was laid out in randomized complete block design with four (MRC-6322, MRC-6918, MRC-7351 and MRC-7201) Bt cotton hybrids and three target yield (2.0, 2.5 and 3.0 t ha^{-1}) levels. Among the different Bt cotton genotypes, MRC-6322 recorded significantly higher yield (3286 kg ha^{-1}) over MRC-6918 (2578 kg ha^{-1}), and MRC-7351 (3051 kg ha^{-1}) and MRC-7201 (2881 kg ha^{-1}) was at par with it. MRC-6322 cotton hybrid recorded significantly higher gross returns, net returns and B:C ratio.

Key words : Bt cotton, Leaf area index (LAI)

INTRODUCTION

Cotton (*Gossypium* spp), the queen of fibres or white gold, enjoys a predominant position amongst cash crops in India and world as well. Cotton is an important raw material for the Indian textile industry contributing about 65 per cent of its requirements. The Indian textile industry occupies a significant place in the Indian economy with over 1500 mills, 1.7 million power looms, and thousands of garments, hosiery and processing units, providing an employment directly or indirectly to around 35 million people (Ashok *et al.*, 2004). In India, around 45 per cent of pesticides used in agriculture are on cotton only even though its share in gross cropped area ever exceeded five per cent. The transgenic cotton era has dawned in our country with the approval accorded by GEAC for the commercial cultivation of Bt cotton hybrids in southern and central zones form 2002 crop season onwards. Today, Bt cotton is becoming popular among the forming community because of its ability to ward-off bollworm menace. The area under transgenic cotton in India has already exceeded 90 lakh ha (James, 2006). Performance of Bt-cotton also varies from region to region with changing agro-climatic conditions, nutrient requirement, pest pressure and management.

The important issue that needs to be addressed in crop production is nutrient usage. Cotton, particularly hybrids being exhaustive, draw plenty of soil nutrients and thus under continuous cropping pattern nutrient management assumes importance. Nutrient recommendation varies with crop response, soil condition and hence targeted yield levels to be realized. Therefore, it is necessary to test validity of Bt cotton production technology for a location to harvesting its full potential.

MATERIALS AND METHODS

The field experiment was conducted at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad, during growing season of 2006-07 (one year study). The soil of experimental plot was medium deep black soil. Maize crop was taken up during *Kharif*-2005, while in *Rabi* the land was fallow. The experiment consists of four Bt cotton (MRC-6322, MRC-6918, MRC-7351 and MRC-7201) hybrids and three fertilizer levels. The field experiment was laid out in a Randomized Complete Block Design, with three replications. The land was ploughed once before commencement of experiment with mould board plough and later harrowed twice to bring the soil to fine tilth. The different cotton genotypes were dibbled at 90 cm apart with intra row spacing of 60 cm on 29th June 2006, two seeds per hill dibbled to a depth of 4 cm on flat bed. Gap filling was done 10 days after sowing. Different fertilizer levels calculated based on soil nutrient availability (F_1 - 145:39:99 NPK kg ha^{-1}, F_2 -181:49:124 NPK kg ha^{-1} and F_3 - 217:59:148 NPK kg ha^{-1}). The 50 per cent of recommended dose of nitrogen and full dose of P_2O_5 and K_2O were applied at the time of sowing and the remaining 50 per cent of N was top dressed at 45 DAS. Biometric

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