

Research
Paper

Yield and nutrient uptake of *Kharif* Bt cotton as influenced by conjoint use of FYM and chemical fertilizers

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ABSTRACT

The field experiment was conducted on vertisols at Rahuri to study the effect of conjoint use of FYM and chemical fertilizers on yield and nutrient uptake by *Kharif* Bt cotton (NCS-207, Mallica) during 2007-08 in fractional factorial randomized block design with 21 treatment including 3 control treatment replicated thrice. The result revealed that increasing trend in yield of Bt cotton with increase in FYM and similar trend was also observed with respect to N, P and K uptake by Bt cotton.

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Key words : Bt-cotton, Yield, Nutrient uptake, FYM, Chemical fertilizers

INTRODUCTION

Cotton is mainly a *Kharif* season crop. Bt cotton is one of the important commercial cash crops playing a key role in economic, political and social affairs of the world. Cotton is an important cash crop of Maharashtra in general and Marathwada in particular.

The fertilizer use in cotton has tremendously increased since 1960s in the country. Balanced fertilization *i.e.* appropriate quantity of nutrients in required proportions at right time, applied through right method. It is very essential to bring economy in the use of inorganic fertilizer by their judicious use in combination with organic manures for improving yield potential of the crop. It is also required to provide the crop with secondary and micronutrients in order to maintain high yield and nutrient uptake by Bt Cotton grown in vertisols.

It will be always better than the soil fertility and crop requirement should be based on fertilizing the crops.

MATERIALS AND METHODS

A field experiment based on inductive-methodology

was conducted in vertisols of Rahuri during *Kharif* 2007-08 with Bt cotton (var. Mallica NCS-207). The soil of the experimental field was clayey in texture with pH 8.1 and EC 0.30 dSm⁻¹. The initial KMnO₄-N – Olsen – P and NH₄OAC – K status were 191.6, 17.69 and 449.8 kg ha⁻¹, respectively. Following the inductive methodology, three fertility gradients were created by dividing the experimental field into three equal strips which were fertilized with N₀P₀K₀, N₁P₁K₁ and N₂P₂K₂ levels. The recommended fertilizers (N₁P₁K₁) were 200, 150 and 150 kg ha⁻¹ of N, P₂O₅ and K₂O, respectively. An exhaust crop of fodder maize was grown so that the fertilizers could undergo transformations in the soil with plant and microbial agencies.

By growing the exhaust crop, the operational range of soil fertility was created in the fertility strips which was evaluated in forms of variations in fodder yield uptake and soil test values. After the harvest of the exhaust crop, each fertility strip was divided into 24 plots, out of which there were 21 treatments with three levels of N (100, 200 and 300 kg ha⁻¹), three levels of P₂O₅ (75, 125 and 150 kg ha⁻¹), three levels of K₂O (100, 150 and 200 kg ha⁻¹) and