



Research Article

Effect of INM for pre-seasonal sugarcane on growth, nutrient uptake, biochemical composition and soil properties

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Summary

A field experiment was conducted on vertisol during the year 2005-06 at Mahatma Phule Agriculture University, Rahuri, to study the effect of integrated nutrient management on growth and biochemical properties of sugarcane (Cv.Co. 86032). The use of biofertilizers (PSB, *Azotobacter*, *Acetobacter* and *Azospirillum*) either individually or in combinations alongwith FYM (25 t ha⁻¹) and RDF (500:170:127 N, P₂O₅ and K₂O kg ha⁻¹, respectively). These treatments of integration of nutrient supply were found to be superior in improving the growth of sugarcane and also superior in enhancing the total leaf chlorophyll content, NR activity of sugarcane leaves and nutrient uptake as compared to organic or chemical treatment only. The results indicated that the integrated use of chemical fertilizers alongwith FYM and biofertilizers (*Azotobacter*, *Acetobacter* and *Azospirillum*) enhanced the plant growth, total chlorophyll content and NR activity of sugarcane.

Key words : Biofertilizer, Integrated nutrient management, FYM

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Introduction

The role of organic manures and biofertilizers in plant nutrition is now attracting the attention of agriculturists and soil scientists through out the world. Chemical fertilizers no doubt have boosted the crop growth and yield but to a large extent these have contributed to deterioration of soil organic matter content, soil structure, declined in activity of soil earthworm, loss of vitamins and protein contents of certain crops and proliferation of new weeds. The results of the experiment conducted under the All India Co-ordinated Agronomic Research Project (AICARP) programmes have already indicated that sustaining the productivity at high level without impairing soil environment is beyond the capacity of a single type of nutrient source. Integration of chemical, organic and biological sources and their efficient management has shown promising trend not only in sustaining the productivity and soil health but also in meeting a part of chemical fertilizer requirement of crops (Rabindra *et al.*, 1990). Keeping above factors in view, present investigation was

conducted to study the effect of organic, inorganic and biological sources of INM on the growth, biochemical properties of sugarcane crop and soil properties.

Resources and Research Methods

The experimental trial on field was conducted during the year 2005-06 at Post Graduate Institute Farm Mahatma Phule Krishi Vidyapeeth, Rahuri (Maharashtra) to study the effect of integrated nutrient management on the growth, biochemical properties of sugarcane (cv. Co-86032) and soil properties. The soil of experimental site was well drained clayey in texture and 100-150 cm in depth. The initial properties of the experimental soil was pH 8.1, EC 0.312 dSm⁻¹, available N, P and K were 160, 15 and 349 kg ha⁻¹, respectively.

The nine integrated treatments were given to three replication plots in a randomized block design were as follows

- T₁ -Control
- T₂ -RDF (AST)
- T₃ -RDF + FYM+PSB