

YIELD AND QUALITY OF TOMATO FRUIT AS INFLUENCED BY BIO-FERTILIZERS

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ABSTRACT

A field experiment was conducted during *Kharif* 2002-03 at Central Campus, MPKV., Rahuri in randomized block design with three replications. The ten treatment consisting absolute control, recommended dose (100:50:50 kg N,P₂O₅ and K₂O ha⁻¹), recommended dose of fertilizer along with farm yard manure (100:50:50 kg N,P₂O₅ and K₂O ha⁻¹+10 t FYM ha⁻¹) recommended dose of fertilizer with individual biofertilizer (*viz.*, *Azotobacter*, *Azospirillum* and phosphate solubilising bacteria) and their combinations. The recommended dose of fertilizer + phosphate solubilising bacteria produced the highest fruit yield (35.85 t ha⁻¹). The combined use of recommended dose and biofertilizers are beneficial for nutrient uptake of tomato. Fruit quality of tomato was improved by recommended dose + *Azospirillum* and phosphate solubilising bacteria.

Key words : Tomato, Yield, Nutrient uptake, Quality.

Tomato (*Lycopersicon esculentum* Hill) is one of the most important commercial vegetable crop grown all over South Asia and India for its nutritive value and remunerative price amongst the vegetables. Tomato is grown in all the states in India, tomato occupies an area of 0.3 million acres with annual production of 3.1 million tones (Yadav *et. al.*, 1999). Maharashtra ranks fourth in tomato production occupying an area of 30,000 ha., with annual production of 5,20,147 MT with an average yield of 18.09 MT/ha. Considering the importance of tomato in daily diet, there is a growing demand of tomato fruits, which warrants for boosting its yield per unit area. The integration of organic, inorganic and biological sources of nutrients and their efficient management have been found effective in not only sustaining the productivity and soil health but also in substituting the part of mineral fertilizer. *Azotobacter*, *Azospirillum* and phosphate solubilizers are main biofertilizers for vegetables. The application of *Azotobacter* and *Azospirillum*, supported by judicious use of organic matter ensures nitrogen fixation up to 30 kg ha⁻¹ and good seed germination. Phosphate solubilizing bacteria play an important role in solubilizing insoluble phosphate.

Considering the importance of biofertilizers, the experiment was conducted to study the effect of biofertilizers on yield and quality of tomato.

MATERIALS AND METHODS

An experiment was conducted at Post graduate research farm of Department of Soil Science and Agricultural Chemistry, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist; Ahmednagar during *kharif* season of 2002-03 in randomized block design with three replications. The soil of experimental area is grouped under Inceptisol order belonging to Sawargaon (Pather) soil series which comprises of fine montmorillonite, *Hyperthermic* family of *Vertic haplustepts*.

The soil was clayey in texture having pH 8.03, EC 0.713 dSm⁻¹, organic carbon 0.99 per cent (Jackson 1967), available N 166.20 kg ha⁻¹ (Subbiah and Asija 1956), available P (15 kg ha⁻¹) and available K 275 kg ha⁻¹ (Jackson 1967).

The treatment details are given below.

Treatment details :

- T₁: Absolute control
- T₂: Control (100:50:50 kg ha⁻¹ N,P₂O₅ and K₂O only)
- T₃: Recommended dose (100:50:50 kg ha⁻¹ N, P₂O₅ and K₂O+10 t ha⁻¹ FYM)
- T₄: RD + *Azotobacter*
- T₅: RD + *Azospirillum*
- T₆: RD + Phosphate solubilizing bacteria
- T₇: RD + *Azotobacter* + *Azospirillum*
- T₈: RD + *Azotobacter* + Phosphate solubilizing bacteria
- T₉: RD + *Azospirillum* + Phosphate solubilizing bacteria