

Soil Microbial Population And Tomato Yield As Influenced By Plant Nutrient Sources

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ABSTRACT

Under plant nutrients sources, inorganic, organic and soil microbial counts. Recommended dose of inorganic sources alongwith 20 t FYM showed their promise towards plants height, fruit weight and yield but ascorbic acid content was more with the combination 30 t FYM + 5 kg Azospirillum /ha while total bacterial counts, phosphate solubilising bacteria and fungi were more with organic sources.

Key words : Tomato, Phosphate solubiling bacteria, total bacterial count, Phosphate solubilising micro-organism count, FYM, Poultry manure, Vermicompost.

INTRODUCTION

Among the solanaceous vegetables tomato occupies important position. Its productivity and quality is greatly affected by plant nutrient sources. Chemical fertilizers are quite expensive input and the destruction in soil health is due to improper and indiscriminate use of chemical fertilizers. Therefore, harvesting nutrient energy from biological sources is of prime importance. Moreover, due to the storage and high cost of chemical fertilizers in the market, growers are bound to find out the alternative sources for supplying essential plant nutrients without reducing the crop yield. Integrity soil fertility management using manures, fertilizers and biofertiliser will facilitate restoration; improvement and maintenance of soil fertility with good quality produce as well (Kumaraswami, 2002).

MATERIALS AND METHODS

The experiment was carried out at Vegetable Research Farm Maharajpur, Deptt. of Vegetable Crops and Floriculture, J.N.K.V.V., Jabalpur (M.P.) during 1998-99. The soil of experimental field was sandy clay loam with available nutrient status: 245.38 kg/ha N, 61.09 kg/ha P₂O₅ and 321.68 kg/ha K₂O, organic carbon (0.58%) with 6.5 pH and 0.39 m mhos/cm EC. The experiment was replicated thrice in Randomised Block Design. The variety Jawahar Tomato -99 was planted with the spacing of 60 and 45 cm between the rows and plant respectively. The data were recorded from five randomly selected plants for plant height at 90 days after transplanting total number of fruits and their weight per plant, and fruit yield. Fruit quality was assessed by estimating vitamin-c content by using

the method proposed by Gupta and Vershaney (1989). Soil microbial estimation for total bacterial count, phosphate solubilising bacteria and fungi were done in the initial and after harvesting by using dilution plate method (Subba Rao, 1975).

RESULTS AND DISCUSSION

There was no consistency in the result with regards to different observed parameters amongst different treatments. Recommended NPK along with FYM gave the maximum plant height (95.67 cm), fruit weight (591.0 g/plant) and fruit yield (196.43 q/ha) which shows the promise of inorganic fertilizers. But the fruit yield was not related to number of fruits per plant because it was maximum with 20 tonnes poultry manure along with 5 kg of *Azospirillum* and PSB each. Maximum ascorbic acid content was observed with the treatment 30 t FYM + 5 kg *Azospirillum* which confirm that quality of the agricultural produce improves through organic manures and plant growth promoting rhizobacteria. Antipchuk et al. (1982) observed higher vitamin-c content in fruits by using *Azotobacter* and *Lacatus* et al. (1994) produced good quality tomato by using FYM. This is because of the supply of all the growth principles like enzymes, hormone, growth regulators etc. beside all the essential plant nutrients. Combination of FYM and *Azospirillum* might have contributed towards production of more plant growth regulating substances (PGRs). Rao, (2003) also advocated that the *Azospirillum* acting as plant growth promoting rhizobacteria (PGPR) in rice and ground nut.

Soil microbial count was higher after harvest of crop

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