

Effect of organic and inorganic fertilizers on growth, yield and quality of tomato (*Lycopersicon esculentum* Mill.)

B.M. RODGE AND S.S. YADLOD

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See end of the article for authors' affiliations

Correspondence to:

B.M. RODGE

Department of Horticulture,
College of Agriculture, Dr.
B.S. Konkan Krishi
Vidyapeeth, Dapoli,
RATNAGIRI (M.S.) INDIA

The field experiment "Effect of organic and inorganic fertilizers on growth, yield and quality of tomato" was undertaken in the Department of Horticulture, Marathwada Agricultural University, Parbhani (M.S.) in Randomized Block Design with 15 treatments on 'Parbhani Yashshri' variety. The treatment consisted of 100% recommended dose of fertilizers (RDF) + 25% through organic sources (Celrich, FYM, Teracare or vermicompost), 50% RDF + 50% through organic sources and 25% REF + 75% through organic sources. No fertilizer or organic source was applied in control. The treatment 50% RDF + 50% FYM (T-8) significantly increased the height of plant, number of primary branches and number of leaves at 105 days after transplanting which was followed by the treatment 50% RDF + 50% vermicompost. Maximum number of fruits per plant, heaviest fruit, yield per plant and yield per plot were significantly more in case of treatment 50% RDF + 50% FYM which was followed by the treatment 50% RDF + 50% vermicompost. The fruit juice, TSS and ascorbic acid content was the highest in the treatment 50% RDF + 50% FYM and the shelf life of fruit was maximum in the treatment 50% RDF + 50% vermicompost.

Key words : Organic, Inorganic, Growth, Quality, Vermicompost

Tomato is one of the most important 'protective foods'. Both because of its special nutritive value and also because of its wide spread production. It is one of the world's largest vegetables. It responds well to external application of nutrients. The recommended dose of inorganic fertilizers for tomato is 100:50:50 kg NPK/ha (Anonymous, 1991). If this does is applied continuously, it deteriorates the soil and causes the soil problems (Warade *et al.*, 1995). Production of vegetables through organic farming has high demands in export. Very little work has been reported on the effect of organic fertilizers on tomato in Maharashtra State, especially under Marathwada conditions. Therefore, the present studies were undertaken at the Department of Horticulture, Marathwada Agricultural University, Parbhani during *rabi* season of 2000-2001.

MATERIALS AND METHODS

The experiment was laid out in randomized block design. There were fifteen treatments and three replications. The treatments consisted of: 1) T₁ 100% RDF (recommended dose of fertilizers), 2) T₂ 75% RDF + 25% Celrich, 3) T₃ 75% RDF + 25% Teracare, 4) T₄ 75% RDF + 25% FYM, 5) T₅ 75% RDF + 25% vermicompost, 6) T₆ 50% RDF + 50% Celrich, 7) T₇ 50% RDF + 50% Teracare, 8) T₈ 50% RDF + 50% FYM, 9) T₉ 50% RDF + 50% vermicompost, 10) T₁₀ 25% RDF + 75% Celrich, 11) T₁₁ 25% RDF + 75% Teracare, 12) T₁₂ 25% RDF + 75% FYM, 13) T₁₃ 25% RDF + 75% vermicompost, 14) T₁₄ 100% organic (25% each of FYM,

Teracare, Celrich and Vermicompost) and 15) T₁₅ Control. The plot size was 3 m x 3 m and spacing 60 cm x 60 cm. The variety was used Parbhani Yashshri.

The recommended dose of fertilizers @ 100:50:50 kg NPK/ha was considered as 100% RDF. The Celrich was applied @ 2.0 t/ha while Teracare was applied @ 2.5 t/ha before 10 days of transplanting of seedlings. The FYM and vermicompost were applied @ 25 t/ha 10 days prior to transplanting.

The biometric observations on the height of plant, number of primary branches and number of leaves were taken at 15 days interval commencing from 30 days after transplanting (DAT) upto 105 DAT. The number of fruits per plant was counted. The fruit weight, yield per plant and per plot were recorded. In quality parameters TSS of fruit juice, ascorbic acid content and shelf life of fruit were studied.

RESULTS AND DISCUSSION

Results obtained are summarized in Table 1. Analysis of variance revealed that different level of organic and inorganic fertilizers had significant effect on growth, yield parameters and quality parameters.

Height of plant:

The data presented in Table 1 indicated the maximum height of the plant at 105 DAT was recorded on T₈ treatment where 50% RDF were given alongwith 50% recommended dose of FYM. The next best treatment on this regard was T₉ where 50% RDF and 50%