EFFECT OF DIFFERENT FERTILIZERS ON GROWTH PERFORMANCE AND YIELD OF LANKA SOUR TOMATO (*solanum lycopersicum* L.)

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
In partial fulfillment of the requirements for the award of
Bachelor of Science in Export Agriculture

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2021

ABSTRACT

Tomato cultivation in Sri Lanka is an intensive and highly commercialized system. The continuous application of inorganic fertilizers leads to a decline of soil characteristics, accumulation of heavy metals in plant tissues, and harm to human health. Application of organic fertilizers a noble and eco-friendly practice to maintain sustainable soil fertility. Currently, there is an emerging trend towards the consumption of organically produced fruits and vegetables. The present study was performed to study the effect of different fertilizers on the growth and yield performance of Lanka Sour tomato, a traditional tomato variety, which has been poorly studied in Sri Lanka. Tomato was cultivated inside a protected house at Uva Wellassa University, Sri Lanka. The experiment was laid out in a Completely Randomized Design with five treatments and five replicates. The treatments consisted of control (No fertilizer) (To), inorganic fertilizers (Urea, TSP, and MOP according to Department of Agriculture recommendations) (T1), compost (T2), poultry manure (T3), and cow dung (T4). Topsoil and sand (1:1) were used as the potting mixture. The pH, electrical conductivity, available nitrogen (N), phosphorus (P), and exchangeable potassium (K) were analyzed in the potting media. The compost consisted of cattle manure, green manure, coir dust, dolomite, hay, and Gliricidia. The highest nutrient composition (N-3.3%, P-4%, and K-3.1%) was recorded in compost. Under growth parameters, plant height, number of leaves, number of branches, stem girth, chlorophyll content of leaves, root dry weight, and root length were measured. The number of flowers per plant, number of fruits per plant, fruit weight, fruit pH, and total soluble solid of fruits were taken as yield parameters. Significantly ($p<0.05$) highest growth performances {plant height (81.10±3.83cm), number of leaves/plant (841.4±81.0), stem girth (3.86±0.15cm), and root weight (28.04±10.12g)} were observed in compost treated plants. Moreover, the application of compost significantly ($p<0.05$) increased the number of flowers/plant (27.8±6.6) and fruit yield/plant (731.8±55.6g) in tomatoes. Results of the study indicated that Lanka sour tomato well responds to organic fertilizers, and compost application had promising effects on both growth and yield performances. Therefore, the present study suggested that there is a high potential to cultivate Lanka sour tomato under organic fertilizers.

Key words: Compost, Fertilizers, Growth, Organic, Tomato, Yield