EFFECTS OF MACRO AND MICRO NUTRIENTS ON GROWTH AND YIELD PERFORMANCES OF TOMATO (LYCopersicon esculentum MILL.)

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Tomato (Lycopersicon esculentum Mill.) is a major horticultural crop with an estimated global production of over 120 million metric tons and ranks first as a processing crop. The average tomato productivity in Sri Lanka (11 metric tons/ha) is much lower than the world average (24 metric tons/ha). To meet the tomato demand for an increasing population, the productivity has to be intensified through the agronomic techniques. Nutrition is one of the main factors which govern the growth and yield of tomato. Accordingly, nutrient availability in the soil affects plant growth and quality of the produce. Continuous cropping and improper fertilizer usage cause widespread nutrient deficiencies. Therefore, synthetic fertilizers and organic manures were introduced to enhance plant growth and maximize the crop yields. In this study, effects of macro and micronutrient supplementations on improvement of growth and yield of tomato (var. Thilina) were investigated. Plants were grown at the Regional Agricultural and Research Centre Makandura under the Department of Agriculture (DOA) recommended macro nutrients and various combinations of Ontario recommended dosages of secondary and micronutrient fertilizer supplementations (ORSMD) for tomato. Other than the DOA recommendation, five combinations of Ontario recommended dosages of essential secondary and micronutrients for tomato were also used as treatments. The treatments were arranged in a Randomized Complete Block Design. The mean data was subjected to statistical analysis using SAS software (ANOVA and Duncan’s Multiple Range test at 5 % probability level) procedures. Treatments containing secondary and micronutrient treatments significantly increased most of the growth parameters such as plant height, plant girth, number of leaves, leaf area index etc. Fruits harvested from treatments amended with macro, secondary and micro nutrients performed best in terms of total yield and yield quality in comparison to pots amended with the DOA recommended dosage of fertilizer for tomato. It could be due to the application of all essential macro and micro nutrients that increases photosynthetic activity, efficient translocation and utilization of photosynthates causing rapid cell elongation and cell division in actively growing region of the plant leading to stimulation of growth and yield. The experiment highlighted the requirements of essential macro, secondary and micro nutrient fertilizer supplementations for tomato farming. The study indicated that, macro and micro nutrient supplementation practices can influence growth and yield performances of tomato fruits and it is a promising approach to achieve the yield potential of Sri Lankan tomato varieties.