EFFECT OF APPLICATION OF SILICON ON YIELD AND QUALITY OF TOMATO GROWN UNDER LOW MOISTURE STRESS CONDITION

H.M.B.E. Wijerathna[1], N.R.N. Silva[2] and R.A.A.S. Rathnayaka[1]

[1]Department of Agricultural Engineering and Soil Science, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka.
[2]Horticultural Crop Research and Development Institute (HORDI) Gannoruwa, Sri Lanka.

This study was conducted in the selected Ultisol at Horticultural Crop Research and Development Institute (HORDI) to investigate the impact of Silicon (Si) application on growth, yield, fruit, and seed quality of tomato (*Solanum lycopersicum* L.) under the water stress condition. Both pot and field experiments were conducted in RCBD with four treatments (i.e., T1: 0 Si kg ha^{-1} + soil moisture at 40% of field capacity (FC), T2: 0 Si kg ha^{-1} + SM at FC, T3: 450 Si kg ha^{-1} + SM at 40% of FC and T4: 450 Si kg ha^{-1} + SM at FC). Inorganic N, P, and K were applied to all treatments according to Department of Agriculture recommendation. Compost was applied only to T1 and T2 at a rate of 10 t ha^{-1}. The selected growth, yield, and seed quality parameters of tomatoes were measured. In the pot experiment, plant height (66.80±3.73 cm), fruit length (5±0.1 cm), seed weight (3.4±0.15 g), seed germination percentage (SGP) (80±8%) and average number of flowers (11.2±0.40) and fruits (9.85±0.31) per plant, fruit weight (34.55±0.78 g) and K contents of fruits (4.55±0.19%) and leaf (4.44±0.08%) were significantly higher ($p<0.05$) in T4. However, pH of the fruits, total soluble solids, average yield and P content were not shown any significant differences ($p>0.05$) among the treatments. In the field experiment, plant height (48.40±4.33 cm), number of fruits (8.83±0.63) per plant and fruit length (4.87±0.07 cm) were significantly higher in T2 and SGP (60±10.06%) was significantly higher ($p<0.05$) in T4. However, seed weight and number of flowers per plant, K and P contents of leaf were not significantly different ($p>0.05$) among the four treatments. It can be concluded that application of Si has some positive impacts on the growth, yield, fruit, and seed quality parameters of tomatoes.

Keywords: Growth parameters, Fruit quality, Seed quality