

EVALUATING THE EFFECT OF SELECTED SUPER WATER ABSORBENT POLYMER RATES AND DIFFERENT WATERING INTERVALS ON GROWTH AND DEVELOPMENT OF TOMATO (*LYCOPERSICON ESCULENTUM* MILL.)

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Super Absorbent Polymers (SAPs) have been used as water retaining materials in agricultural and horticultural fields. When incorporated in to soil, they can retain large quantities of water and nutrients. The stored water and nutrients are released slowly if required by the plants to improve their growth, and therefore, applicable under water scarcity conditions. The present study focused to identify the effectual best watering interval on growth of tomato by applying two levels of SAPs named GAM-sorb, imported from Vietnam.

Two-factor factorial experiment was carried out with Completely Randomized Design. Treatments consisted of two levels of SAPs (Intermediate high level [M] 2.25 g/1 kg of soil and Double High level [DH] 3 g/1 kg of soil). These SAP levels were decided according to the results obtained from the preliminary experiments. Five watering regimes, daily (control) and 1 day, 2 day, 3 day and 4 day intervals were practiced. Treatments were replicated three times. Pots were filled with 3.5 kg of sterilized sandy loam soil and one seedling was transplanted to the each pot. Best irrigation volume (75% field capacity- 291 ml) was added to each pot/day. Number of flowers/plant, yield, leaf area, amount of chlorophyll in plant leaves (SPAD values), Relative Water Content (RWC), plant height and percentage of Dry Weight (DW) / Fresh weight (FW) were measured. Statistical analysis was carried out using Minitab software version 14.

Result indicated that measured parameters were not significant with respect to the levels of SAP ($p>0.05$) other than leaf area. Except plant height and (DW/FW) %, other measured parameters were not significant ($p<0.05$) with respect to the five watering intervals. Interaction was not significant for measured parameters. Except SPAD values and percentage of (DW/FW) Least squares (LS) means of number of flowers per plant, plant height, RWC of plant leaves and leaf area were highest in treatment number 6, which was with the addition of SAP (DH): daily watering. At the same time, lowest LS means of number of flowers/plant, plant height and (DW/FW) % were observed in treatment 5, SAP (M): 4 days watering interval. Tomato fruits were obtained in treatment combination of SAP (DH) and (M): daily watering, while the highest amount of yield was obtained in SAP (DH): daily watering. Blossom end rot was not recorded. Best moisture retaining ability and growth parameters in sandy loam soil were prominent in SAP (DH), water rate (75% FC) and when daily water was added to tomato plants. Plants subjected to other watering intervals exhibited wilting, however recovery was observed when water was added after four days.