

THE INFLUENCE OF SUPER ABSORBENT POLYMER ON SOIL WATER RETENTION UNDER ONION (*Allium cepa* L.) CULTIVATION

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Water scarcity is one of the most adverse constraints for crop cultivation in the dry zone of Sri Lanka. Super water absorbents (SWAs) have been employed in agricultural fields as materials that hold water. The SWAs can absorb water 400 times than its weight and gradually release the stored water and nutrients to the plants. This study was conducted to determine the best treatment combination for the growth of onion by examining the effects of various irrigation intervals and SWA levels. The experiment was conducted at the Field Crop Research and Development Institute at *Mahailuppallama*, on reddish brown earth soil. The MICLO1 was the selected onion variety and commercially available SWA was tested. The pot experiment was laid down based on a split-split plot design with five replicates. Three levels of irrigation intervals, 5, 10, and 15 days, and four levels of SWAs, 0, 0.2, 0.3, and 0.4 g kg⁻¹ of soil were the determining factors for T1 to T12 treatments. Plant height and number of leaves were determined at the time of each irrigation. The ANOVA was conducted at the 0.05 significance level to determine the effects of SWA ratios, irrigation intervals, and their interactions on plant parameters. Increment of plant parameters were reduced with decreased SWA ratios and with increased irrigation intervals. The results concluded that the SWA ratio of 0.4 g kg⁻¹ of soil with a 5-day irrigation interval was the best treatment combination. Further field experiments with cost-benefit analysis are required for concrete recommendations.

Keywords: Hold water, Water scarcity, Water use efficiency