INFLUENCE OF HYDROGEL APPLICATION IN THE GERMINATION OF ONION SEEDLING PRODUCTION USING STYROFOAM TRAYS AT DIFFERENT MOISTURE LEVELS

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ABSTRACT

BEREBER, NICONEIL S., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Munñoz, Nueva Ecija, Philippines, **JUNE 2023, INFLUENCE OF HYDROGEL APPLICATION IN THE GERMINATION OF ONION SEEDLING PRODUCTION USING STYROFOAM TRAYS AT DIFFERENT MOISTURE LEVELS.**

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The application of hydrogel technology in the field of agriculture is one of the successful methods for enhancing water management since it can retain moisture in the soil for a period of time. The experiment was conducted to evaluate the effective dose of hydrogel application for increasing the seed germination, productivity and water use efficiency of onion seedling production in different amount of irrigation water. The experiment was done in split plot design with 3 main-plots for irrigation level, viz. A1: 100 ml, A2: 200 ml, A3: 300 ml and 3 sub-plots for hydrogel doses, viz. B1: 0 g (control), B2: 6 g, B3: 8 g and were laid out in randomized complete block design with 4 replications. Among all treatments, soil with hydrogel application increase seed germination rate 300 ml of irrigation water with 6 grams of hydrogel promotes better seed germination rate with a mean percentage of 96.5%. The water balance and moisture conservation were determined by measuring the excess water dripped in the soil during irrigation. 2.Hydrogel application use lesser irrigation compare to with the soil without hydrogel. High dose of hydrogel can save 72.22% irrigation water. Onion seedling height and root growth shows a significant effect with hydrogel application however, level of irrigation only a significant effect at the late stage of germination. The highest mean obtained in crop height and root

growth at 28 DAS was 21.64 cm and 6.24 cm at higher dose of hydrogel and irrigation water. With 4 days irrigation interval, moisture content of soil with 8 grams of hydrogel has higher MC % at all level of irrigation with an average value of 27.34%, 31.28%, and 34.59% respectively. Hydrogel application shows lower bulk density which dictates that hydrogel application lessen soil compaction and make the soil more porous that allows proper soil drainage and aeration to the plants. Using a breakeven point analysis, a project similar to this has to produce 59.56 kg/year of the potential yield per year.

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