A055 AGSC

EFFECT OF FOUR BACTERIAL ENDOPHYTES ON TOMATO BIOMASS PRODUCTION

Abstract

This research was carried out to test the effect of bacterial endophytes in promoting tomato plant growth. Four isolates of bacteria in *Bacillus* species were previously selected as plant endophytes that have potential to control fungal diseases. In this study, tomato seeds were surface disinfected using 10% Clorox® bleach for 30 seconds and rinsed with deionized water. The seeds were then soaked in sterile deionized water and kept in a refrigerator (4oC) for 24 hours to allow seed to imbibe. The seed were treated with the selected endophytes by soaking in bacteria suspension for one hour using a 72-hour old suspension of a 106 Colony forming units (CFU). The treated seeds were sown in sterilized soil and grown in growth chamber for 4 weeks and then seedlings were transplanted to the greenhouse. A total of 10 treatments consisted of four bacteria in which each bacterial isolate was tested with and without the presence of a fungal pathogen *phytophthora capsici,* with two controls. The study used a randomized complete block design (RCBD) with eight replications with each biological replication consisting of individual plant. At the end of the study, plants were oven dried for 72 hours at a temperature of 90oC. Plant biomass was determined by shoot dry weight and root dry weight. Analysis of variance (ANOVA) was carried out at alpha 0.05. Shoot dry weight showed significant differences between treatments but no significant differences were observed from root dry weight or root/shoot dry weight ratio. The results showed that endophyte IMC8 was most effective in promoting tomato plant growth in the presence or absence of the pathogen, while endophyte PS had the least impact on growth promotion. This study will be followed by a study on the effect of these endophytes on tomato growth and yield in field environment.