

ABSTRACT

The demand for shallots were increased along with the population in Indonesia. To achieve these goal, farmers began to plant shallots outside planting season. However, unfavorable environmental conditions and pest attacks are the obstacles that need to be faced. The use of Biological Control Agents (BCA) is the way to improve plant growth and protect plants from plant pathogens even abiotic stresses. The purpose of this study was to evaluate the response of shallot plants after application of BCA (*Bacillus* spp. and Mycorrhizae) to twisted disease in off-planting season. This research was conducted by preparing BCA isolates, application of BCA in the field, calculating the incidence and intensity of disease, observing the growth development of plants, analyzing phenol content, and analyzing phosphate content. Based on the results, it was found that BCA *Bacillus* spp. and Mycorrhizae could not inhibit *Fusarium* spp. infection. The agronomic results showed that there was no significant difference in crown weight and root weight, but isolate B8 could significantly increase the number of leaves, while isolate M significantly decreased plant height. Isolates B6, B7, and M significantly reduced the total phenol content in shallot plants. Phosphate analysis on isolate M did not have a significant effect on shallot plants, as the result the effect of APH *Bacillus* spp. and Mycorrhizae couldn't suppress twisted disease, Nevertheless B8 treatment has the potential to increase the growth of shallot therefore further research must be conduct.

Keyword : Shallot, *Bacillus* spp., *Fusarium* spp., Indole-3-Acetic-Acid , Phenol.