

EFFECT OF VARIOUS CONCENTRATIONS OF CHITOSAN AND SILICA FOR SUPPRESSING DISEASE INTENSITY ON MELON PLANTS

By: Regina Valeria Barus

Supervised by: Mofit Eko Poerwanto

ABSTRACT

Chitosan and Silica can be alternatives to prevent plant diseases with dual mode of action through direct and indirect mechanisms, leads to improve productivity and quality melon cultivation in greenhouse. The objective of this research was to assess the optimal concentrations combination of Chitosan and Silica that effective against phytopathogens for suppressing disease intensity on melon plants. This research used completely randomized design (CRD) with one factor, using six treatments combination of Chitosan and Silica plus one control. The treatments are control, Chitosan at 3 mL/L, Silica at 0,3 gr/L, Chitosan at 1 mL/L + Silica 0,2 gr/L, Chitosan at 2 mL/L + Silica 0,1 gr/L, Chitosan at 3 mL/L + Silica 0,3 gr/L, and Chitosan at 1,5 mL/L + Silica 0,15 gr/L. The parameters observed were disease intensity, number of leaves, fruit weight, and fruit sweetness level. The collected data was analysed using analysis of variance (ANOVA) with a significance level of 5%, followed by Duncan's Multiple Range Test (DMRT) at the same significance level. The result showed that Chitosan 3 mL/L + Silica 0.3 g/L significantly suppressed disease intensity of downy mildew up to 41,67% at 9 WAP and intensity of CMV 33,33% at 9 WAP compared to the others treatment. In terms of plant growth, Chitosan 3 mL/L + Silica 0.3 g/L showed the best result on number of leaves, weight and sweetness level of melon. As an alternative plant disease management strategy, the use of Chitosan 3 mL/L and Silica 0.3 g/L has been shown to reduce disease intensity when compared to the other treatments.

Keyword: *melon, Chitosan, Silica, disease, biological control*