

EFFICACY OF SOME BIOAGENTS, CHITOSAN COMPOUNDS AND ORANGE PEELS EXTRACT IN CONTROLLING *MELOIDOGYNE HAPLA* ON STRAWBERRY IN EGYPT

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ABSTRACT: *Five treatments (Bacillus subtilis, Trichoderma harzianum, chitocar product, soft guard and orange peels extract) with different concentrations were used to control root-knot nematode, Meloidogyne hapla under laboratory as well as greenhouse and field conditions on strawberry. Also, application number of the treatments were studied under both greenhouse and field conditions.*

The most effective treatment in controlling root-knot nematode was soft guard, while Bacillus subtilis, Trichoderma harzianum, chitocar product occupied an intermediate position in the effectiveness whereas, the least effective one was orange peels extract under both laboratory and greenhouse conditions. So the treatment of orange peels extract was neglected under field conditions. The most effective treatment under field conditions in controlling Meloidogyne hapla was soft guard, whereas the least effective was Trichoderma harzianum.

Under laboratory conditions the five treatments were used to study their effect on percentage of juveniles mortality. All treatments led to high percentage of juvenile mortality especially at the highest concentration and after 72 hours exposure.

Under greenhouse conditions using soft guard and Bacillus subtilis were more effective in reducing numbers of developmental stages, females, galls, egg-masses and eggs/ egg-mass as well as number of 2nd stage larvae in soil, whereas, the least effective was orange peels extract.

Adding the treatments as soil drench led to increase the fresh weights of both the root and shoot system of strawberry seedlings at all used concentrations especially at the highest concentration. Using three times of addition from each treatment achieved high decrease in nematodes in both roots and soil.

Also, all the treatments individually as soil drench decreased the number of nematodes in both roots and soil. In addition the fruit yield of strawberry

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increased after adding the treatments at all three times and at high concentration under field conditions.

Key Words: *Non chemical control, root-knot nematodes, Meloidogyne hapla, Bacillus subtilis, Trichoderma harzianum, chitocar product, soft guard, orange peels extract and strawberry.*
