

Effects of Entomopathogenic Nematodes, *Heterorhabditis bacteriophora* and *Steinernema kariii*,
on Population Dynamics of Flower Thrips, *Frankliniella occidentalis* and *Megalurothrips*
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ABSTRACT

Flower thrips, *Frankliniella occidentalis* Pargande and *Megalurothrips sjostedi* Trybom (Thysanoptera: Thripidae) are ranked as major pests among the arthropod pests of French beans *Phaseolus vulgaris* L. and have been known to cause over 60% yield loss of the marketable fresh pods. The problem that this study sought to address is that over the years farmers have relied on chemical pesticides as the main strategy for controlling pests on French beans which has resulted in environmental damage, pest resurgence, resistance and lethal effects on non-target beneficial organisms. At the same time use of chemical pesticides, Such as confidor^R 70WG, as the major strategy for the control of thrips is increasingly becoming inaccessible to farmers, particularly in developing countries due to the high cost of insecticides. Effective alternatives are needed for incorporation into Integrated Pest Management of pests in order to alleviate the problems posed by chemical pesticides. The overall objective of this study was to evaluate the potential of *Steinernema kariii* and *Heterorhabditis bacteriophora* Poinar in the management of foliar dwelling stages of the flower thrips, *M. sjostedi* and *F. occidentalis* in French beans. In the laboratory experiment, the parameter used to determine infectivity of the two nematode species on the foliar dwelling stages of the flower thrips was the percentage mortality of the adults of either of the thrips species and their larvae (L1 and L2 combined) following an exposure to different densities of either of the two EPN species. Both nematode species were found to be infective to the adults and larvae of the two species of the flower thrips with significantly high percentage mortalities of the thrips compared with the control. The percentage mortality of the thrips was found to vary significantly with the percentage mortality increasing with increase in

density of the nematodes. In the screen house experiment, different concentrations of the nematodes were tested against thrips infesting French beans. Application of the *S. karii* or *H. bacteriophora* did not result in significant reduction in the number of thrips compared to control treatment. The study demonstrated that the nematode sprays led to insignificant reductions in the populations of thrips compared to the control. However it showed that the nematodes were infective to the foliar dwelling stages of the flower thrips and therefore, further studies were recommended in order to establish ways of increasing the effects of the EPNs on the flower thrips under screen house conditions and also in the field. One of the suggested studies was establishment of the effects of using adjuvants to the spray suspensions to increase the available time for the nematode to search for the host and to establish the different effects of more than one spray with the nematodes over the cropping period.