

Potential of Entomopathogenic Nematodes to Control Woolly Apple Aphid (*Eriosoma lanigerum*)

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Abstract : Woolly apple aphid (WAA), *Eriosoma lanigerum*, is an important pest of apples worldwide. The aphid feeds above ground on buds and leaf axils and the roots of apple trees. Entomopathogenic nematodes (EPNs) of the two families, Steinernematidae and Heterorhabditidae, and their symbiotic bacteria have generated extensive interest as inundative applied biological control agents of insects. With the development of the resistance of WAA to chemicals, export restrictions, and the inability of parasitoids to control the aphid successfully early in the season, considering EPNs as an alternative biocontrol agent is important. Seven EPN species were tested for their pathogenicity against WAA. Laboratory bioassays identified *S. yirgalemense* and *H. zealandica* as being the most virulent against the subterranean stage of the WAA, with a mortality rate of 48% and 38%, respectively. Studies on the effect of WAA size showed that the last instar is most susceptible to infection, whereas smaller instars appear to be too small for nematode penetration and infection. Neither increasing the exposure period of the aphids nor increasing the nematode concentration affected the infection rate positively. The haemolymph of WAA showed an inhibitory effect on the development of the symbiotic bacteria, preventing the completion of the nematode's life cycle.

Keywords : apples, biocontrol, entomopathogenic nematodes, woolly apple aphid

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