Turkish Journal

of

Agriculture and Forestry

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Turkish Journal of Agriculture and Forestry

Effectiveness of Bacillus thuringiensis var. kurstaki on Thaumetopoea solitaria Frey. (Lepidoptera: Thaumetopoeidae) Larvae in Laboratory Conditions

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Abstract: This study was conducted to determine the effect of Bacillus thuringiensis var. kurstaki on the larvae of Thaumetopoea solitaria in the search for an alternative control method with minimal undesirable side effects. Four larval stages were tested with various concentrations of the bacterium under controlled conditions by dipping pistachio saplings in relevant suspensions and feeding larvae on their leaves. The effect of B. thuringiensis var. kurstaki was significantly higher on the 1st instar larvae than on the 2nd and the 3rd instar larvae, and the effect was significantly higher on the 2nd instar larvae than on the 3rd instar larvae. LC_{50} for the 4th instar larvae was also greater than that for all the other larval stages and its confidence limits did not overlap with those of the other stages. High larval mortality (78%-100%) was attained in the first week after the treatment especially for the first 3 larval stages with the application of the highest 3 concentrations (10^4, 10^5, and 10^6 µg l^{-1}). The results show that B. thuringiensis var. kurstaki is a good candidate for suppressing T. solitaria populations in pistachio orchards and could be used as a biological control agent against the pest.

Key Words: Biological control, microbial control, biopesticide, entomopathogenic bacteria, dose-mortality test

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Turk. J. Agric. For., **31**, (2007), 255-261.
Full text: pdf
Other articles published in the same issue: Turk. J. Agric. For.,vol.31,iss.4.