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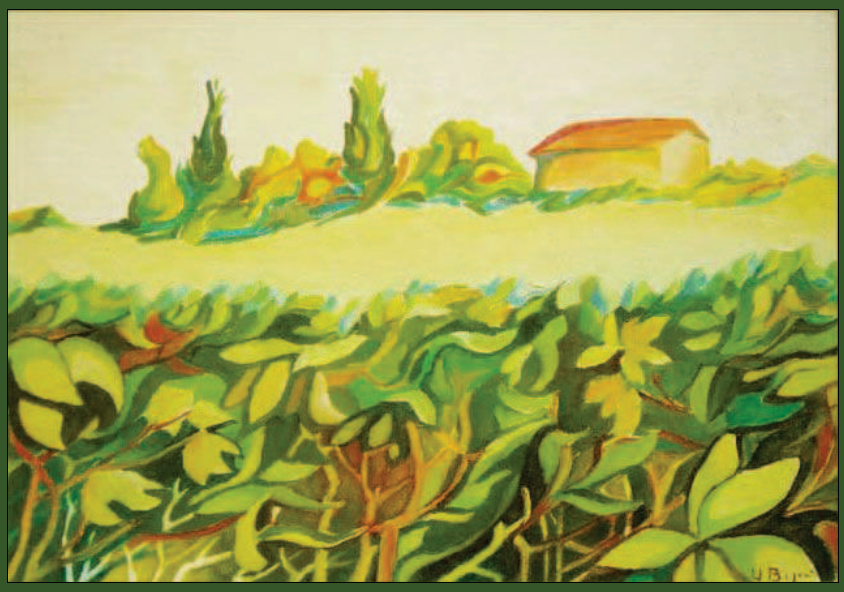

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EFFICACY STUDY OF PERMETHRIN-CONTAINING STRIPS AS REPELLENT AGAINST THE AMBROSIA BEETLE *XYLEBORUS DISPAR* IN APPLE ORCHARDS

Ambrosia beetles (Coleoptera: Curculionidae: Scolytinae) are a polyphyletic group of insects defined by living in nutritional symbiosis with ambrosia fungi. They bore into the trunks or branches of trees and inoculate them with ambrosia fungi, causing limb and, in extreme cases, tree dieback. During the last few years population outbreaks of ambrosia beetles were observed in several apples orchards of Trentino-South Tyrol. In this Region the most abundant and dangerous species has been *Xyleborus dispar* F. (Coleoptera: Curculionidae: Scolytinae). The beetle is normally present in forest ecosystems, having a wide range of hosts. However, in outbreak situations *X. dispar* tends to colonised new habitats surrounding forest edges, which in Trentino-South Tyrol are often cultivated with apple orchards. Usually *X. dispar* attacks weak or stressed trees, but in case of high density it can also attack healthy trees. In Trentino-South Tyrol up to 70% of apple tree death was observed, particularly in case of young trees (1-4 year old). In this research we aimed to find an alternative strategy to reduce *X. dispar* damages on apple trees, by studying the repellent efficacy of pyrethroid impregnated nonwoven strips (PINS) against *X. dispar*. PINS Experimental investigations were conducted in laboratory, semi-field and field settings. Y-tube olfactometer bioassays were performed to assess the repellent effects of PINS. Semi-field experiments were conducted by artificially infesting confined trees. Field investigations were performed in the spring and early summer 2012 by monitoring *X. dispar* population levels of untreated apple orchards and apple orchards where PINSs (1 x 0.15 m) were applied every second tree. Y-tube olfactometer bioassays showed a repellence effect of PINS, inducing a significant number of insect to avoid the arm where PINS was placed. However, both semi-field experiments as well as field experiments did not show significant differences of treated *vs*. untreated apple trees. Our results suggest that the tested PINS are able to repel *X. dispar*, but their pyrethroid content may not be sufficient to prevent infestations in open field conditions.

Parole Chiave: Coleoptera, Insect Outbreaks, Apple Trees, Bioassay

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