Susceptibility of codling moth,Cydia pomonella (L.) to tebufenozide in trentino apple growing area : results of a regional survey

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Trentino is one of the main Italian apple growing regions. The codling moth *Cydia pomonella* (L.) (Lepidotera: Tortricidae) is a key pest and insecticide-resistant populations have been recently detected. The early detection of insecticide-resistant populations is of paramount importance for the correct and effective implementation of integrated resistance management programs. Results of a regional survey by using the topical application of a discriminating concentration of tebufenozide on overwintering larvae permitted to state that most of the investigated populations were still highly sensitive. These results were confirmed by the enzymatic analysis carried out on some of the tested populations: according to the latest results only two populations (S. Michele and Roncafort) showed a significant increase in mixed-function oxidase (mfo) activity, frequently reported as a detoxifying system involved in insecticide resistance.

Because the diapausing stage is not the target of the insecticides and the relationship between the mfo detoxification mechanisms and resistance to tebufenozide is not proved yet, a more realistic bioassay using neonates larvae fed with thinning apples dipped in a discriminating concentration was performed. According to the baseline evaluated for a susceptible laboratory strain, a discriminating concentration of 1000 ppm (circa 5 fold the recommended field rate) was used for the purpose.

Results confirm that most of the CM populations collected in Trentino apple orchards are susceptible to tebufenozide. Significant reduced mortality has been found for the populations collected in S.Michele and Roncafort. Relationship between the results obtained with the time-consuming dipping method and with the more simple topical treatments are studied in order to validate the second one as standard method for detecting and defining resistance in codling moth.

Key words: *Cydia pomonella*, insecticide resistance, tebufenozide, test methods

INTERNATIONAL ORGANISATION FOR BIOLOGICAL
AND INTEGRATED CONTROL OF NOXIOUS
ANIMALS AND PLANTS
WEST PALEARTIC REGIONAL SECTION

Working Group "Integrated Plant Protection in Orchards"

WORKSHOP ON ARTHROPOD PEST PROBLEMS IN POME FRUIT PRODUCTION

Lleida (Spain), 2006, September, 4th – 6th

Local organisers:

UNIVERSITAT DE LLEIDA (UdL)
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INSTITUT DE RECERCA I TECNOLOGIA AGROALIMENTÀRIES (IRTA)
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