

Effects of solar radiation on efficacy of *Cydia pomonella* Granulosis Virus

M. R. REZAPANAH; H. BAYAT ASSADY; M. ESMAILI and GH. NOURI
GHANBALANI

Plant Pests and Diseases Research Institute Tarbiat Modarres University and College of
Agriculture,

ABSTRACT

Cydia pomonella Granulosis Virus (CpGV) is a promising agent for controlling Codling moth and its damage, but the efficacy of CpGV preparations decreases in proportion to the exposure duration to the sunlight (natural ultraviolet source). So activity and persistence of a CpGV preparation Granupom were determined both in the laboratory and in the field.

The activity of Granupom in the laboratory decreased with a slope of 0.5 and its half-time was 18.5 seconds. The activity of Granupom in the field condition was determined by leaf disk method and bioassay. The slope of probit-line and the half-time were 1 and 4 hours respectively.

While the efficacy of CpGV slowly decreases in its application intervals, prevention of damage to the fruit requires maintenance of a lethal concentration of the virus on the surface of the apple.

REFERENCES

- BUSVINE, J. R. 1971. A critical review of the technique for testing insecticides. Slough. C. A. B. 344 pp.
- DISKLER, E. & HUBER, J. 1988. Das Apfelwickler-Granulosevirus im integrierten Obstbau: Von der Forschung zur Praxis. Gesunde pflanzen 40(6): 225-8.
- ESMAILI, M. 1963. Bioassay studies with DDT on Utah populations of codling moth.

- M. Sc. Thesis, Logan, Logan, Utah State University.
- ENTWISTLE, P. F. 1983. Control of insects by virus diseases. *Biocontrol News & Information* 4(3): 203-229.
- FALCON, L. A., KANE, W. R. & BETHELL, R. S. 1968. Preliminary evaluation of a granulosis virus for control of the codling moth. *J. Econ. Entomol.* 61: 1208-1213.
- FRITSCH, E. and HUBER, J. 1985. Inaktivierung von Apfelwickler-Granuloseviren durch UV-Strahlung und Temperatur. *Nachrichtenbl. Deut. Pflanzenschutzd.* 37(6): 84-8.
- HAGLEY, E. A. 1973. Timing sprays for codling moth (Lepidoptera: Olethreutidae) control on apple. *Can. Ent.* 105: 1085-1089.
- HUBER, J. 1981. Apfelwickler-Granulosevirus: Produktion und Biotests. *Mitt. dtsh. Ges. allg. angew. Ent.* 2: 141-3.
- HUBER, J. 1991. Current status of microbial control in practice and registration of insect pathogens and entomoparasitic nematodes in the federal republic of Germany. *Iobc/wprs bulletin* 14(1): 10-11.
- HUBER, J. & DICKLER, E. 1975. Freilandversuche zur Bekämpfung des Apfelwicklers, *Laspeyresia pomonella* (L.), mit Granuloseviren. *Z. Pflanzenk. Pflanzenschutz* 82: 540-6.
- JAQUES, R. P. 1967. The persistence of a nuclear polyhedrosis virus in the habitat of the host insect: *Trichoplusia*. I. Polyhedra deposited on foliage. *Can. Ent.* 99: 758-794.
- JAQUES, R. P. 1985. Stability of insect viruses in the environment. pp. 285-360. In: Maramorosch, K. & Sherman, K. E. (Eds.). *Viral insecticides for biological control*. New York. Academic Press. 809 pp.
- JAQUES, R. P.; LAING, J. E.; LAING, D. R. & YU, D. S. K. 1987. Effectiveness and persistence of the Granulosis virus of the codling moth, *Cydia pomonella* (Lep.: Olethreutidae). *Can. Ent.* 1063-1067.
- KRIEG, A.; GRÖNER, A.; HUBER, J. & MATTER, M. 1980. Über die Wirkung von Mittel- und langwelligen ultravioletten Strahlen (UV-B and UV-A) auf insectenpathogene Bakterien und Viren und deren Beeinflussung durch UV-Schutzstoffe. *Nachrichtenbl. Deut. Pflanzenschutzd.* (Braunschweig). 32:

- LIPA, J. J. 1991. Microbial pesticides and their use in the ERPS-IOBC region (Eastern Europe). *Iobc/wprs bulletin* 14(1): 23-32.
- REZAPANAH, M. R. 1995. Effects of solar radiation on efficacy of *Cydia pomonella* granulosis virus. M. Sc. Thesis, College of Agriculture, Tarbiat Modarres University, Tehran. Iran. 96 pp.
- SHEPPARED, R. F. & STAIRS, G. R. 1976. Effects of dissemination of low dosage levels of a Granulosis virus population of the codling moth. *J. Econ. Entomol.* 69(5): 583-6.
- TANADA, Y. 1964. A granulosis virus of the codling moth, *Carpocapsa pomonella* (Linnaeus) (Olethreutidae, Lepidoptera). *J. Insect. Pathology* 6: 378-80.
-

Address of the authors: Eng. M. R. REZAPANAH. Biological Control Research Department, Plant Pests and Diseases Research Institute, P. O. Box 1454, Tehran 19395, Iran.

Dr. H. BAYAT ASSADY. Plant Pests and Diseases Research Institute, P. O. Box 1454, 19395, Tehran Iran.

Dr. M. ESMAILI. College of Agriculture, Tehran University, Karaj, Iran.

Dr. GH. NOURI GHANBALANI. College of Agriculture, Ardabil University, Ardabil, Iran.