BIOFRUITNET
Boosting Innovation in ORGANIC FRUIT production through stronger networks

Versuchszentrum
Centro di Sperimentazione
Research Centre
LAIMBURG

PRACTICE ABSTRACT

Codling moth (C*ydia pomonella):* Control methods in organic fruit production

Problem

Codling moth (*Cydia pomonella*) is the primary pest in organic fruit growing. It damages pear, quince, rowan, medlar, walnut and kaki (photo A-D). Generations/years vary depending on the soil and climates zones.

Solution

Several control methods can be applied in organic farming depending on the infection rate, but plant protection products and mating disruption are the most common.

Benefits

Choosing suitable methods may reduce the time for intervention in the field. In the following season, precautionary measures can significantly reduce the spread of this pest.

Practical recommendation

- Precautionary measures: Remove woodpiles from the orchard and the affected fruit during thinning.
- Mating disruption with pheromone dispensers (passive dispensers and aerosols): Effective if used on a large scale and if the impact of the attack is limited. It is recommended to combine with other measures. Monitor the presence of the pest with traps set up in the orchard (Picture F). (Link N.9 by FOKO)
- Granulosis virus (CpGV): Generally effective when the attack is mild and not sufficient to contain spreading in the case of stronger attacks. Treatments are best conducted during the twilight hours.
- Spinosine: The most effective plant protection product available. It can be applied a maximum three times per year (Link N8. By IO).
- Alt'Carpo nets: Involves netting the plants with a mesh tighter than the average anti-hail nets. The netting can be done using a single-plot or single-row system. It is the most effective method to prevent adults from fleeing (Picture E).
- Entomopathogenic nematodes of the species *Steinernema feltiae* can parasitise codling moth larvae during the overwintering phase with an efficiency of up to 50%. Apply entomopathogenic nematodes with a high-water supply and high moisture content and a temperature (during treatment and the following 3 hours) of at least 10°C. On the day of treatment, the minimum temperature must not go below 0°C.

Applicability box

Theme

Crop production, disease and pest control

Keywords

Temperate fruits, plant protection, pest control, biological control, plant protection product, preventive measures, mating disruption, physical barriers.

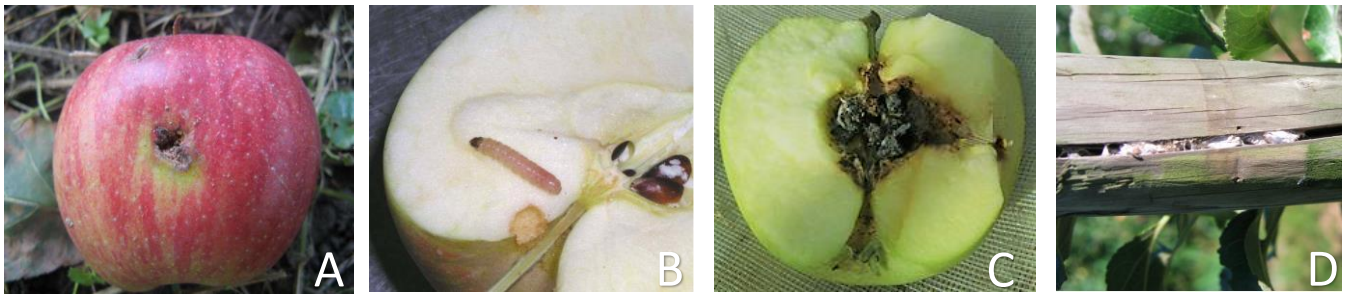
Context

Northern and central Europe.

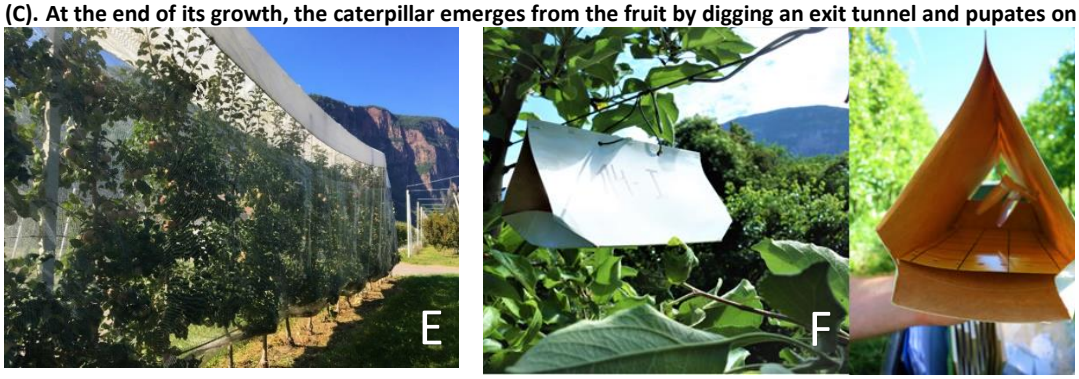
Time of application and index of use

Index of use is the weighted average between time, cost and effectiveness expressed within a range of 0-5.

-Mating disruption: before start of flight of first-generation; start of petal dropping.
(Index of use: 4.5)
- Granulosis-virus: during the first generation, when the first eggs begin to hatch.
(Index of use: 2)
-Spinosad: during first larvae detection.
(Index of use: 2.5)
-Nematodes: during autumn from September to October.
(Index of use: 3)
-Alt-carpo nets: during flowering.
(Index of use: 3)



Picture A-D. The caterpillar starts to penetrate the epidermis of the fruit (A) by digging tunnels into the pulp (B) until it reaches the central area where the seeds are located. As a result of the trophic activity of the larvae, the fruits are filled with redness and excrement (C). At the end of its growth, the caterpillar emerges from the fruit by digging an exit tunnel and pupates on the woody organs (D).



Picture F: To determine the percentage of damage before mating disruption treatments are applied, traps are placed into the orchard. Picture E: Alt'Carpo nets, a single-row system is shown. © A-D: Claudio Casera, E: Thomas Holtz, F: Josef Telfser. Laimburg.

Further information

Further reading

- Kelderer, M., Casera, C., Lardscheider, E., Rainer, A. 2010. Controlling codling moth with different netting structures and their influence on crop yield and quality.
- Fritsch, E., Undorf-Spahn, K., Kienzle, J., Zimmer, J., Benduhn, B., Adolphi, C., Zebitz, C.P.W., Jehle, J.A. 2020. Monitoring codling moth resistance to Cydia pomonella granulovirus (CpGV) in organic fruit growing in Germany.

Weblinks

- Adolphi, C., Oeser, N. 2023. Practice abstract Decision support systems to improve direct control methods of codling moth. FÖKO. BIOFRUITNET.
- Adolphi, C., Oeser, N. 2023. Practice abstract Mating Disruption: Key element of a successful building block strategy against Cydia pomonella in organic apple production. FÖKO. BIOFRUITNET.
- Piotrowski, W., Tartanus, M. 2022. Practice abstract Novel pheromone delivery system to reduce cod-ling moth (Cydia pomonella L.) damage in organic pome fruit orchards. InHort. BIOFRUITNET.
- Adolphi, C., Oeser, N. 2023. Practice abstract Beneficial nematodes against codling moth in organic apple production. FÖKO. BIOFRUITNET.
- Adolphi, C., Oeser, N. 2023. Practice abstract Bamboo and deadwood: Get them out! Preventive measures to reduce codling moth in organic orchards. FÖKO. BIOFRUITNET.
- Adolphi, C., Oeser, N. 2023. Practice abstract Use of Carpovirusine products against codling moth in organic fruit cultivation to prevent resistance. FÖKO. BIOFRUITNET
- Warlop, F., Kienzle, J. 2022. Practice abstract Codling moth prevention: Preserve antagonists in organic apple and pear orchards. GRAB. BIOFRUITNET.
- Brouwer, G. 2023. Practice abstract Measures to control codling moth (*Cydia pomonella*) in organic pear production. Delphy. BIOFRUITNET.

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