Control of summer fruit tortrix (Leafrollers)

Problem

The larvae of many species of leafrollers (tortrix), feed on the leaves and fruits of apples and pears (Pictures 1 and 2). The leafrollers are polyphagous, meaning they can feed on various kinds of food. Most species hibernate as larvae and damage flowers and fruitlets in May and fruits short before harvest.

Solution

Pheromone disruption can decrease the reproduction of leafrollers and prevent damage to fruits. However, not all relevant species are included in the pheromone, these species larvae must be controlled on a warm, dry, cloudy day just before or during flowering using Bt-products. To control the summer fruit tortrix, the selective granulovirus (Capex 2) can be used in combination with disruption to reduce the infestation pressure.

Benefits

Pheromone disruption, eventually in combination with Bt-products (*Bacillus thuringiensis*) or Capex, are important to reduce fruit damage by leafroller larvae and thereby increase the saleable yield and storability of the fruits.

Applicability box

Theme

Crop production, Horticulture, Temperate fruits

Keywords

Pest control, biological control, leafrollers

Context

Northern Europe

Application time

Just before flowering or during flowering

Required time

4-7 hours/ha to hang up dispensers

Period of impact

One growing season

Equipment

Pheromone dispensers, delta traps, Isomate CLR, Capex, Turex (BT), Working platform (nice to have)

Best in

Orchards bigger than 3-4 ha

Practical recommendations

- Look at the level of damage on harvested fruit from the previous season to estimate the potential damage (Picture 3).
- Establish 800-1000 Isomate dispensers/ha as high in the orchard as possible. The high location is important for an optimal distribution of the pheromones by the wind in the orchard, and thereby optimises the effect of the treatment (Pictures 4 and 5).
- The optimal distribution of the dispensers in the orchard are evenly in a square pattern of 3.5 x 3.5 meters over the entire treated area.
- In the outermost twenty meters of the orchard, the distribution of pheromones is especially affected by the wind. Therefore, it is necessary to conduct an edge treatment by hanging one dispenser in each end tree in each row, as well as to double the number of dispensers in the outermost rows.
- When treating areas that are smaller than 3-4 ha, there is a considerable risk of the infestation from mated females from untreated neighbouring areas.
- If the initial infestation with summer fruit tortrix is high, use additional application of Capex in spring.
- Monitor the occurrence of the leafroller species in spring. If you find relevant species that are not covered by the pheromone disruption Isomate CLR, such as *Hedya nubiferana* and *Spilonota ocellana*, apply *Bacillus thuringiensis*.

Monitor the effect of the mating disruptions

- Hang delta traps with pheromone capsules for the most common tortrix in apples and pear. *Archips podana, Archips rosana, Pandemis heparana, Adocophyes orana, Hedya nubiferana* and *Spilonota ocellana*. Inspect the traps weekly to monitor if the pheromone disruption is active (Pictures 6, 7).

- Isomate CLR, a controlled release dispenser, has no effect on *Hedya nubiferana* and *Spilonota ocellana*.

Direct control measurements

- Bacillus Thuringiensis (Bt) is a biological insecticide that works as a stomach poison in specific insects and is usually applied with a sprayer. Bt is extracted from a soil bacterium that occurs naturally in the environment. If the damage level on harvested fruit is too high or the catch of specific tortrix in the delta traps is too big, it is important to control the larvae using Bt-products.

- The best timing for Bt-product application is just before flowering on a warm, cloudy, not rainy day. If the problem tortrix is *Archips rosana,* the Bt timing must be at late flowering. These treatments also control larvae from *Operophtera brumata* and *Noctuidae,* if present.

- If the problem tortrix is *Adocophyes orana,* control the virus with Capex or Bt-product application. Check if Capex is allowed in your country. The species have two generations. The treatments must be carried out in April, June, and late August. *Do not apply Capex together with Bt-products since Bt reduces food uptake and, therefore, also the uptake of Capex.*

Picture 1. Leafroller damage on fruitlets. Photo: M. Bojesen, Hortiadvice.

Picture 2. Leafroller damage shortly before harvest. Photo: M. Bojesen, Hortiadvice.

Picture 3. Typical leafroller damage on harvested fruits. Photo: M. Bojesen, Hortiadvice.

Picture 4. Pheromone dispenser high in tree. Photo: H. L. Pedersen, Hortiadvice.

Picture 5. Hanging pheromone dispenser on the top wire in a pear orchard. Photo: M. Bojesen, Hortiadvice.

Picture 6. Delta trap on the top wire. Photo: H. L. Pedersen, Hortiadvice.

Picture 7. Catch of *Archips podana* on the sticky plate in delta trap. Photo: H. L. Pedersen, Hortiadvice.

Further information

Further reading

- <u>Isomate CLR against winders</u> (Danish)
- <u>Pheromone traps</u> (Danish)
- <u>Wrappers (Tortricidae)</u> (Danish)
- <u>Combination strategy of biocontrol measures and antagonists for the control of leafrollers in organic apple orchards in Germany</u>. Ecofruit 2020.
- <u>Effects of biodiversity measures on insects, birds, and vegetation in organic apple orchards in Germany</u>. Ecofruit 2022.

Weblinks

- Check the Organic Farm Knowledge platform for more practical recommendations, including those for <u>organic pest and disease management.</u>

About this practice abstract

Control of summer fruit tortrix (Leafrollers). HortiAdvice. BIOFRUITNET practice abstract.