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Boosting Innovation in ORGANIC FRUIT production through stronger networks

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PRACTICE ABSTRACT

Management strategies for the Brown Marmorated Stink Bug (BMSB)

Problem

The brown marmorated stink bug (*Halyomorpha halys,* Picture 1, 2 and 3) is a pest effecting a wide range of fruits and vegetables. Its control is especially difficult as it is extremely mobile and can cause damages in all developmental stages. Its sucking on fruits and leaves creates deformation (Picture 4 and 5) and discolorations (Picture 6), rendering the produce unmarketable. Damages are most severe in pears.

Solution

Management strategies to lower damages include physical barriers, release of natural enemies, traps and plant protection products. However, no sufficient control options are available yet.

Benefits

Increase in quantity and quality of marketable fruit.

Applicability box

Theme

Crop production, Horticulture, Temperate fruits

Keywords

Temperate fruits, Plant protection

Context

Invasive species: widespread in France, Italy, Slovakia, Switzerland, local distribution also in other European areas, climatic conditions in Northern Europe and mountainous areas unsuitable

Period of impact

BMSB overwinter in sheltered locations (e.g., buildings). They become active when temperatures rise above 15°C and invade crops thereafter. Damage can occur throughout the season.

Practical recommendation

- **Monitoring/detection:** visual monitoring, beat sampling or baited traps. Most reliable results from traps with pheromones and vibrational signals. Place traps outside of the orchard to avoid increased damages through trap spill over. Follow recommendations of extension officers for first plant protection measures.
- **Exclusion nets**: Fine exclusion nets hinder BSMB from entering the orchard and can lower damages. Nets need to be closed early in the spring.
- **Natural enemies**: Experimental releases of parasitoid wasps in several European countries (see Picture 7). Other natural enemies that prey on BMSB eggs are among others ground beetles (Carabidae), earwigs (Forficulidae), jumping spiders (Salticidae), and crickets (Gryllidae). They can be promoted by enhancing biodiversity, for example through inter-row perennial flower strips.
- **Direct control**
  - **Mass trapping** with sticky traps in combination with pheromones has limited influence on BMSB population. Bycatch can be reduced by using black sticky traps instead of yellow, as they are more attractive.
  - **Plant protection products:** Ready-to-use plant products have a low efficacy against adult BMSB, young stages need to get in direct contact with the product. Products include:
    - Pyrethrin (when allowed),
    - Spinosad (when allowed), and
    - Apply Kaolin (when allowed) to prevent damage: Trees need to be kept white starting at the time of fruit formation (see Picture 8).

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Picture 1. Adult BMSB (Photo: L. Reinbacher, FiBL)

Picture 2. Young BMSB: 4 out of 5 nymphal stages (Photo: L. Reinbacher, FiBL)

Picture 3. BMSB egg cluster (Photo: F. Cahenzli, FiBL)

Picture 4. Fruit deformation caused by early season feeding (Photo: L. Reinbacher, FiBL)

Picture 5. Depressions on the fruit surface caused by late season feeding (Photo: L. Reinbacher, FiBL)

Picture 6. Discoloration on apple caused by BMSB feeding (Photo: R. Reimann, FiBL)

Picture 7. Parasitoid wasp emerging from a stink bug egg, collected in a Swiss pear orchard (Photo: L. Reinbacher, FiBL)

Picture 8. Pear trees sprayed with Kaolin to prevent BMSB damage (Photo: L. Reinbacher, FiBL)

Further information

Video

- Check the following video (Management of BMSB, *Halyomorpha halys*) for further information (German).

Further reading

- Sostizzo, T., Vogler, U., Egger, B., Kehrli, P. Sauer, C., Zwahlen, D. 2018. Factsheet: Brown Marmorated Stink Bug – Halyomorpha halys. (available in DE, FR, IT)
- Cahenzli, F., Daniel, C. 2020. Kaolin for stink bug control. (German)
- Häseli, A. 2023. Factsheet: Plant protection in organic pome fruit production. (available in CZ, DE, FR, HU)

Weblinks

- Detailed review (DE, FR) and overview of biology and management of BMSB with a collection of symptoms on various fruits (DE, IT, FR)
- Check the Organic Farm Knowledge platform for more practical recommendations.

About this practice abstract

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