BIOFRUITNET
Boosting Innovation in ORGANIC FRUIT production through stronger networks

Versuchszentrum
Centro di Sperimentazione
Research Centre
LAIMBURG

PRACTICE ABSTRACT

Apple scab *(Venturia inaequalis)*: Control strategy for organic pome production

Problem

Apple scab is the primary fungal disease in apple cultivation affecting entire harvests as well as the following year's production (Picture A-C). The damage can occur both in the plant and during storage.

Solution

In organic farming, scab control is mostly carried out using precautionary measures. Plant protection products are used for direct control before the onset of rain and during spore germination as "scab stop".

Benefits

Combining robust and resistant varieties with the proper agronomic practices and forecasting methods to optimise treatments reduces the need for biological plant protection.

Applicability box

Theme

Crop production- Disease & pest control

Keywords

Apple scab, precautionary measures, direct control, preventive control, scab stop, sanitary measures, resistant varieties

Context

Northern and central Europe

Application time

From vegetative restart until the autumn period

Period of impact

During the whole growing season

Practical recommendations

Precautionary measures[3,4]

- Use resistant varieties, e.g., Topaz, Inored story, GoldRush.
- Use sanitary measures, e.g., rake up fallen leaves in late autumn and shred them with a mulcher to promote leaf degradation.
- Use forecasting models to estimate ascospore flight and calculation of degree-hour (Picture D).
- Use drip irrigation systems; if overhead irrigation is used, avoid plants to remain wet for more than eight hours.
- Set up the tree structure open to light and with limited vegetative development.

Direct control

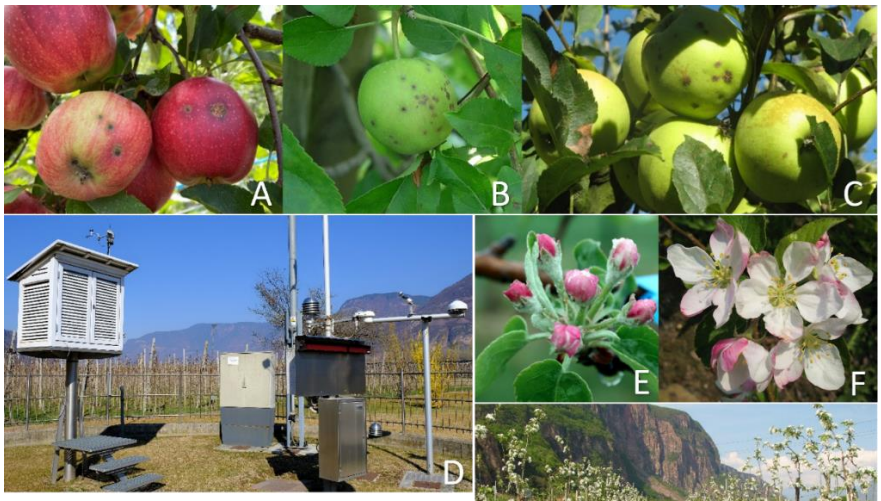
Preventive control[1]

- Preventive treatment should be carried out immediately before the onset of rainfall.
- For susceptible varieties, it is always recommended to cover all rainfall from the red bud stage until full flowering (Picture E-G).
- In case of strong spore propagation, treat with sulphur or copper. Alternating copper and calcium polysulphide application increases the risk of fruit russeting even with non-susceptible varieties. After flowering, continue treatments with calcium polysulphide as it is less phytotoxic.

Early control (Scab stop)

- Treatment is carried out during the spore germination phase on wet leaves.
- Calculate treatment based on forecasting models (e.g., RimPro[2]) (Picture D) or calculating degree hours (average temperature from the start of rainfall by the hours of wetting).
- Use 250-degree hours for early intervention. Repeat treatment if rainfall occurs.

- Calcium polysulphide is the most effective product. Use the same dosages as for preventive control. Alternatively, use bicarbonates in combination with wettable sulphur.
- Copper-based products are not recommended because of their phytotoxic effects on the leaves and fruit.



Pictures A-C: apple scab-affected fruits. **Picture D:** weather station at Research Centre Laimburg.

Picture E: red bud stage- apple tree. **Picture F:** flowering stage- apple tree. **Picture G:** rows of apple trees in full bloom.

© A-C: Claudio Casera, D: Alfredo Mora V., E-G Lardschneider Ewald. Organic farming team- Research Centre Laimburg (RCL).

Further information

Further reading

- Kelderer, M., Casera C., Lardschneider, E. 2008. Formulated and unformulated carbonates to control apple scab (Venturia inaequalis) on organic apple. Germany.
- Ecofruit: 13th International Conference on Cultivation Technique and Phytopathological Problems in Organic Fruit-Growing.
- Kelderer, M., Casera, C., Torre, A. L. 2010. Preventative and curative applications of carbonates against apple scab (*Venturia inaequalis*) in organic apple orchards. Semantic Scholar.

Weblinks

1. Adolphi, C., Oeser, N. 2022. Practice abstract Apple scab: Preventive measures in organic pome fruit production. FÖKO, BIOFRUITNET.
2. Boutry, C., Ludwig, M., Schärer, H. J. 2022. Practice abstract Apple scab: Direct control using decision support systems. FiBL, BIOFRUITNET.
3. Oeser, N. 2022. Practice abstract Apple scab: Robust cultivars for Central Europe. FÖKO, BIOFRUITNET.
4. Lindhard-Pedersen, H. and Bojesen, M. 2022. Practice abstract Apple scab: Robust cultivars for Northern Europe. Hortiadvice, BIOFRUITNET.

- Check the Organic Farm Knowledge platform for more practical recommendations.

About this practice abstract

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