How to protect grapevine using

new *Ampelomyces*-based biofungicide products

Experiments carried out within the BCA_ grape project showed that the new *Ampelomyces*-based BCAs can be successfully used in a sanitation strategy, i.e., reducing the overwintering inoculum and then disease pressure in the next season.

The BCA_grape sanitation strategy:

- **a precise target**: powdery mildew fruiting bodies at the "yellow stage" of maturation;
- **a reasoned schedule**: two applications of *Ampelomyces*-product at the peak of yellow chasmothecia (usually in late-Summer to mid-Autumn), at 2-3 week interval;
- **a right application**: apply the product in water, by wetting abundantly the grape leaves, when the weather is moist and mild, preferably at dusk.

Benefit

Reduce the overwintering inoculum and then disease pressure of powdery mildew in the next season.

In high-risk vineyards, increase the control of powdery mildew to acceptable levels.

In low-risk vineyards, reduce the use of chemicals (or use less expensive fungicides) in spring, in full accordance with the IPM principles.

In organic vineyards, increase the disease control level achieved by the spring applications of sulfur.

The BCA_grape partnership

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New Biocontrol Agents for Powdery Mildew on Grapevine

BCA_grape

Research for SMEs
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The aim of the BCA_grape project is to develop new commercial products based on Biological Control Agents to be used against the powdery mildew disease of grapevine.

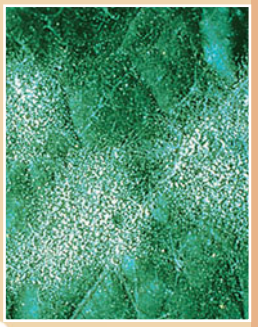
Grapevine powdery mildew

Powdery mildew is caused by a parasitic fungus, named *Erysiphe necator*.

This fungus survives the winter mainly as fruiting bodies (called chasmothecia). They mature in late summer on the infected green tissue and are washed off onto the vine bark with rainfall.

In spring, chasmothecia release ascospores which infect the leaves and initiate the powdery mildew epidemics.
Initial symptoms appear on leaves, as pale yellow spots on the lower leaf surfaces.
These symptoms frequently remain undetected.

Later, typical powdery mildew colonies develop on leaves and clusters.



Powdery mildew control

• today

Powdery mildew can reduce the size and sugar content of grape berries. Scarring and cracking of berries can be very severe and these make fruit unsuitable for any purpose.

Fungicides are repeatedly applied to protect grapevine foliage from primary infection from early shoot growth until after bloom.

Afterwards, fungicides are applied every 7 to 14 days until grapes begin veraison.

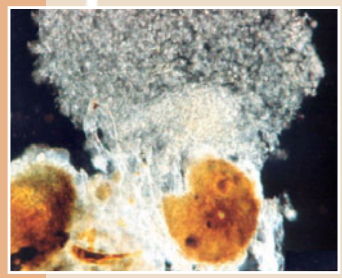
• in the future

The new European policy on the Sustainable Use of Pesticides requires the implementation of Integrated Pest Management (IPM) principles, that will become mandatory as of the year 2014.

In IPM, pesticides should be used only when there are no other ways of controlling and limiting the damage caused by pests.

Ampelomyces

Ampelomyces spp. are hyperparasitic fungi of powdery mildew fungi infecting grapevine and many other plant species.



Ampelomyces hyphae grow internally in the hyphae, conidia and fruiting bodies of the powdery mildew fungi, reducing the growth, sporulation and spread of the powdery mildew colonies and finally killing them.

The spores of *Ampelomyces* are produced in pycnidia that develop inside powdery mildew conidiophores and fruiting bodies. Spores are released from powdery mildew colonies, and dispersed on plant surfaces, by rain-splash or dew. Soon after their release, the spores germinate and invade new powdery mildew colonies in their vicinities.