



Redefining Pest Management - a Holistic Approach

Practice Abstract N° 18

BMPs for Vineyard Downy Mildew control

Grape downy mildew, caused by the obligate parasite *Plasmopara viticola*, attacks all European varieties and may cause large losses of production, especially in warm and humid climates. The pathogen affects all green parts of the vine, especially the leaves, and also the branches. Common symptoms include oily, yellowish and angular lesions on leaves, located between the veins, but also necrosis of the stem or shoot. As the disease progresses, after warm and humid nights, a white mycelium (downy mildew) can be observed on the lower leaf surface.

OPTIMA project developed best management practices for controlling this disease, after investigating the efficacy of novel plant protection products. The control strategy is based on the use of a mixing route including bio-PPPs/PRI (Cerevisane, Essential oil of sweet orange, *Bacillus pumilus* and *B. amyloliquefaciens*) alternated with the new generation PPPs oxathiapiprolin + zoxamide and mandipropamide + zoxamide with a normal dose. It is recommended to use the normal suggested dose of each PPP to prevent the development of *Plasmopara viticola* fungicide resistant isolates and to avoid the curative use of bio-PPPs/PRI under high disease pressure. In organic farming it is recommended to combine multiple doses of the bio-PPPs/PRI Cerevisane and Essential oil of sweet orange and resistant varieties where available, in order to reduce the use of copper fungicides.



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