OPTIMA

Redefining Pest Management - a Holistic Approach

Practice Abstract Nº 6

Biological control of grape downy mildew

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 affect al green parts of the vine, especially the leaves, and also the bunches. 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. Biological control of grape downy mildew is mainly based on the application of copper compounds as contact fungicides, leading to accumulation of this heavy metal in the topsoil in many European countries. As a consequence, the use of copper fungicides is now restricted by European Union Regulation 2018/1981 to 4kg/ha/year. OPTIMA project is searching alternative products to reduce the use of copper-based formulations. Tests are in progress in Greece and Italy on biological plant protection products such as Trichoderma spp., Bacillus amyloliquefaciens, Pythium oligandrum, Bacillus pumilus, Aureobasidium pullulans, laminarin, eugeniol, geraniol and thymol. Practical recommendations are: the use of tolerant varieties or at least of less sensitive varieties; balanced fertilization with reduced nitrogen to avoid excessive vigour and canopy development; the use of natural products and elicitors to enhance plant self-defence that are registered in several EU countries such as cerevisane and orange oil; the use of Decision Support Systems to optimize pesticide use and application timing.

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