

## **FEATURES OF THE SYSTEM OF PROTECTIVE MEASURES ON GRAPE PLANTATIONS AGAINST MILDEW IN THE CONDITIONS OF ODESA REGION**

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Downy mildew is one of the most widespread specialized diseases of grapevines in terms of its distribution and harmfulness. The causative agent of the disease, the parasitic fungus *Plasmospora viticola*, has long been a parasite on wild grapevines in the southeastern part of North America [1, 2]. The distribution area of downy mildew is associated with high humidity conditions, and the disease is most dangerous in viticulture areas with high rainfall; in our conditions, the disease is mainly caused by fog and dew [2]. Mildew can affect all green organs of the grape plant - leaves, shoots, antennae, inflorescences and bunches of grapes. The disease usually develops first on the leaves, which serve as a source of secondary infection of all other green organs [3, 4].

Our research was aimed at studying the technological effectiveness of modern fungicides in the fight against mildew. Using new products in the fight against downy mildew, we set ourselves the task of determining the degree of their impact on the yield and quality of Aligote grapes. To do this, we determined the following: annual growth, the degree of vine ripening, bunch weight and bush productivity, and the economic efficiency of the fungicides under study.

The experiments were carried out on fruiting grape plantations of the Aligote variety in the Bilhorod-Dnistrovskyi district of Odesa region in 2022-2023. The planting scheme was 3.0 x 1.25 m.

In the field experiment, the effectiveness of modern fungicides with different active ingredients in the control of powdery mildew was studied: based on active ingredients - folpet 700 g/kg + triadimenol 20 g/l (Shavit F), with a consumption rate of 20 g/10 l of water; based on active ingredient - cresoxim methyl, 500 g/kg (Strobi 50% v. g), with a consumption rate of 2 g/7 l of water; on the basis of the active ingredient - metaphenone 500 g/l (Vivando), with a consumption rate of 0.2



l/ha and on the basis of the active ingredients - mancozeb 640 g/kg + metalaxyl-M 40 g/kg (Ridomil Gold MC 68 WG), with a consumption rate of 2.5 kg/ha.

Grape quality was determined at harvest. The mass concentration of sugars in berries was determined by the aerometric method according to DSTU "Fresh grapes. Methods for determining the mass concentration of sugars", and titratable acidity was determined by the acid-base titration method using the bromothymol blue indicator in accordance with DSTU "Wines and wine materials. Methods for determination of titratable acids".

The meteorological conditions of the growing seasons in the years of research were very favorable for the development and spread of downy mildew, especially in 2022. They were characterized by high precipitation and high air temperature in June 2022. There was 65.0 mm of precipitation, and the average daily air temperature rose sharply to 16 °C, with a maximum of 25-30 °C.

All of this contributed to the rapid germination of *Plasmopara viticola* spores and severe infection of the leaves, and subsequently of the grape bunches.

In 2022, the initial manifestation of the disease was observed in the second decade of June, and by the end of September, almost 20% of the farm's vineyards were affected, including both European and relatively resistant grape varieties.

Damage to grape plants in 2023 began in the second decade of June and amounted to 2%, and damage to stems and shoots - 1.0%. The development of the disease during this period reached 5%. The highest level of downy mildew damage reached in the first decade of July and in the second decade of August, where it was 10.0 and 12.0%, respectively. The stems and shoots of grapes were most damaged in the first decade of July - 5%, and 11% in the second decade of August - 3%. The development of the disease reached its highest level (12%) in the second decade of August.

As noted earlier, mildew causes a reduction in leaf surface, premature leaf fall, and inhibits overall plant growth. The analysis of the impact of this disease on the yield and quality of grape berries showed that the fungicides used in the experiment to treat grape plants against mildew have a significant impact on the grape yield. With a relatively equal bunch load on the bush, the highest bunch weight, yield per bush and hectare of plantings was obtained in the experimental variants with the use of preparations based on mancozeb 640 g/kg + metalaxyl-M 40 g/kg (Ridomil Gold MC 68 WG) and metaphenone 500 g/l (Vivando). Similar indicators were obtained when plants were treated with a preparation based on cresoxim-methyl, 500 g/kg (Strobi 50% v.g.). Variational and statistical processing of grape yield per hectare showed that the accuracy of the experiment is high or quite satisfactory.



Thus, we can state that the grapevine in southern Ukraine is affected by numerous pests and diseases that annually destroy up to 20% of the crop, and in some cases its losses exceed 50%. The most threatening is the defeat of grapes by the fungus *Plasmopara viticola*. The system of measures to combat downy mildew should include appropriate agronomic practices: the use of mildew-resistant European grape varieties and the rational use of pesticides during the period of greatest damage by pests, with maximum use of natural factors regulating their numbers.

Studies have shown that the conditions of 2022 and 2023 were favorable for the development of mildew on Aligote grapes. Comparison of the effectiveness of modern fungicides in the fight against the disease showed that

Fungicides based on active substances – mankotseb 640 g/kg + metalaxyl-M 40 g/kg (Ridomil Old MC 68 WG), with a consumption rate of 2.5 kg/ha; folpet 700 g/kg + triadimenol 20 g/l (Shavit F), with a consumption rate of 20 g/10 l of water (62.9 t/ha); based on the active substance cresoxim-methyl, 500 g/kg (Strobi 50% v/v. ), with a consumption rate of 2 g/7 l of water and on the basis of the active ingredient metafenone 500 g/l (Vivando), with a consumption rate of 0.2 l/ha (62.0 t/ha) are the best pesticides against mildew.

### References

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