Fungal diseases of grapes and measures to combat them

Diyorjon Muhammadali oglu Abdurakhmonov
Fergana regional branch of Scientific Research Institute of Plant Quarantine and Protection

Abstract: This article analyzes the main fungal diseases of grapevine (Vitis vinifera L.), including downy mildew and downy mildew, their causes, distribution characteristics, and damage. It also provides scientifically based information on effective control measures and preventive measures.

Keywords: grapes, fungal diseases, powdery mildew, mildew, oidium, fungicide, agrotechnics

Introduction. Grapes are one of the most important fruit crops for the national economy, cultivated since ancient times. Viticulture was well developed in the territory of today's Uzbekistan until the 1970s. The policies of the former Soviet Union, namely the monopoly of cotton in our republic, had a negative impact on the rapid development of viticulture. After our country gained independence, special attention was paid to the development of the industry. In order to develop viticulture, a number of legislative acts adopted in recent years are bearing fruit. During the years of independence, new vineyards were established on more than 40-50 thousand hectares of mainly fallow and unused land. The next 7-8 years were especially fruitful for the industry. It is worth noting that, based on the resolution of our President dated August 3, 2023 "On measures aimed at further developing the viticulture and winemaking sector in 2023-2026", consistent work is being carried out in Jizzakh region, as in the rest of our republic, to establish new vineyards, turn viticulture into a profitable industry, and ensure that every family has a vineyard. Within the framework of the implementation of this resolution of the Head of our state, in Jizzakh region, farms and other agricultural enterprises established new vineyards on an area of 6,419 hectares in 2023-2024. Also, vineyards on an area of 7,294 hectares were reconstructed.

Obtaining high yields and quality products from grapes also depends on protecting the crop from diseases and pests. Fungal diseases, in particular, are widespread during the grape growing season, reducing the quality and quantity of the crop.

Fungal diseases in vineyards are one of the main factors reducing yield. The widespread spread of diseases such as mildew, oidium, anthracnose and gray rot causes economic losses to viticulture. Therefore, by studying their biological characteristics in depth and applying integrated control measures, it is possible to produce high yields and high-quality products. Effective agrotechnical measures, the correct use of fungicides and compliance with preventive measures ensure sustainable development in viticulture. Therefore, it is urgent to have scientifically based information on the biology of diseases and measures to combat them. we the most dangerous was from diseases fake flour - dew and real dew diseases one from one difference and similarity according to information we brought.

Fake dew (*Plasmopara viticola)* of grapes the most dangerous mushroom from diseases one to be, to be harvested quantity and quality sharp reduces. The disease mainly manifests itself on leaves, berries and young shoots, forming a white powdery coating. Many studies have been conducted by scientists around the world on the spread, biology and measures to combat this disease. According to the literature, *Plasmopara viticola was* first identified in North America and entered European countries at the end of the 19th century (Millardet, 1878). Currently, the disease occurs in almost all regions where grapes are grown. High humidity (80 -100%) and temperatures around +18…+25 °C

create favorable conditions for the development of the fungus (Spencer, 2000). Scientists say that the causative agent of the disease persists in the soil or plant debris in the form of oospores (Gessler et al., 2011). When there is sufficient moisture in the spring, they germinate and form zoosporangia that fall on the leaf surface. This results in oily spots on the leaf, and in humid conditions, a whitish mold coating forms on the lower surface (Burruano, 2000).

False powdery mildew causes premature shedding of grape leaves, which dramatically reduces photosynthesis. Fruits rot, reducing the ability to produce quality wine and other products. According to some sources, if the disease is not prevented in time, it can lead to a loss of up to 70-80% of the crop (Dagostin et al., 2012).

An integrated approach is important in combating the disease; ensuring good air circulation in the vineyard, removing excess leaves and branches, and destroying diseased residues (Pertot et al., 2017), treatment with Bordeaux liquid, copper, and systemic fungicides (Gisi & Sierotzki, 2008), some sources note that the use of biological agents (e.g., *Trichoderma* species) has yielded effective results (Magnin-Robert et al., 2014), and modern breeding efforts are paying great attention to creating grape varieties resistant to downy mildew (Eibach & Töpfer, 2015).

Powdery mildew (*Uncinula necator)* is one of the most dangerous and widespread diseases in grape growing. The disease is characterized by the formation of a whitish powdery coating on leaves, shoots and fruits. This disease spread from North America to Europe in the 19th century and later spread widely in Asia, Africa and Uzbekistan (Pearson & Gadoury, 1987). The pathogen of oidium is stored in the form of cleistothecia (blackheads) on shoots and buds during the winter (Gadoury & Pearson, 1990). In the spring, ascospores germinate and cause the initial damage. During the growing season, it spreads rapidly with the help of conidia (Doster & Schnathorst, 1985). The optimum temperature for the development of the fungus is noted to be +20…+28 °C, and the relative humidity is in the range of 60-80% (Calonnec et al., 2004). The main symptom of oidium is the formation of a whitish, powdery coating on leaves, stems and fruits. In severe cases, the leaves curl, the fruits crack, and the quality drops sharply. This condition also causes problems in wine production (Stummer et al., 2005). According to some sources, when oidium spreads heavily, it leads to a loss of up to 50-80% of the crop (Gadoury et al., 2012). Thinning, aerating and removing diseased branches of vineyards are noted as important preventive measures against oidium (Pearson, 1990). Studies have shown that sulfur preparations are effective against oidium, and their preventive use is necessary (Northover & Schneider, 1993). Later, fungicides belonging to the triazole group (penconazole, tebuconazole, myclobutanil) were widely introduced (McGrath, 2001). *Ampelomyces quisqualis* has been identified as a mycoparasite of the fungus oidium and has been recommended as a biological control agent (Kiss, 2003).

Breeding efforts in Europe and the United States have resulted in the development of oidium-resistant varieties, which is an important factor in sustainable grape production (Eibach & Töpfer, 2015).

Conclusion. The analysis of the literature shows that downy mildew is one of the most dangerous fungal diseases in grape growing. In the fight against the disease, not only chemical preparations, but also the use of agrotechnical measures, biological agents and resistant varieties are of great importance. By applying integrated control measures, it is possible to reliably protect the crop from oidium.

References

1. Millardet, A. (1878). Études sur le mildiou de la vigne. Bordeaux.
2. Spencer, D. M. (2000). The Downy Mildews. Academic Press.

3. Burruano, S. (2000). The life cycle of Plasmopara viticola. Plant Pathology, 49(4): 545-556.

4. Gessler, C., Pertot, I., & Perazzolli, M. (2011). Plasmopara viticola: a review of knowledge on downy mildew of grapevine. Phytopathologia Mediterranea, 50(1): 3-44.

5. Dagostin, S., Schärer, H. J., Pertot, I., & Tamm, L. (2012). Are there alternatives to copper for controlling grapevine downy mildew in organic viticulture? Crop Protection, 34: 53-62.

6. Gisi, U., & Sierotzki, H. (2008). Fungicide modes of action and resistance in downy mildews. European Journal of Plant Pathology, 122(1): 157-167.

7. Magnin-Robert, M., et al. (2014). Biological control of grapevine downy mildew by Trichoderma species. Biological Control, 76: 85-92.

8. Eibach, R., & Töpfer, R. (2015). Traditional grapevine breeding techniques for resistance. Acta Horticulturae, 1082: 157-162.

9. Pertot, I., et al. (2017). Integrated control of downy mildew. Crop Protection, 96: 46-56.

10. Абдурахмонов, Д. М. (2025). ҒАЛЛАНИНГ СЎРУВЧИ ЗАРАРКУНАНДАЛАРИНИНГ БИОЭКОЛОГИК ХУСУСИЯТЛАРИ. Экономика и социум, (3-2 (130)), 383-385.

11. Abduraxmonov, D. M., & Kodiraliyev, E. K. (2022). G ‘O ‘ZADAGI OQ SIKADALAR BIOEKOLOGIYASI, RIVOJLANISHI, TARQALISHI VA ZARARI. Экономика и социум, (6-2 (97)), 8-10.