International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 06, 2020
ISSN: 1475-7192

# SOME KINDS OF DISEASES AND PESTS OF GRAPES AND METHODS OF CONTROL THEM IN THE ARARAT VALLEY

[1] ARMAN HRANTOVICH BABAYAN

***ABSTRACT**-- In this article, we will consider two main problems of vineyards - these are some diseases and pests of grapes that prevail in the Ararat valley. Let's list them: twospotted spider mite (Tetranychus urticae), European grape moth (Polychrosis botrana), anthracnose of grapes, mildew and gray rot (botrytis cinerea).*

***Key words**-- grapes, pests, diseases, anthracnose of grapes, mildew, gray rot, control methods, signs of the disease, twospotted spider mite, European grape moth, anthracnose of grapes, mildew and gray rot.*

## I. INTRODUCTION

Grape plants are damaged by numerous pests, viral, bacterial and fungal diseases. They often suffer from adverse soil and weather conditions. The annual loss of vintage is about 30%, and in case of untimely or poor protective measures, they reach more than 50%.

To preserve the vintage from pests and diseases, it is necessary to apply a system of agrotechnical and chemical measures, making the maximum use of the natural factors of their volume and harmfulness control.

Grape diseases are divided into infectious and non-infectious. Among the infectious diseases the most harmful are: mildew, oidium, anthracnose, gray and white rot .

**The anthracnose of grapes**

This is a fungal disease. It harms leaves, shoots, inflorescences, berries. It is widespread in Europe, Asia, America and Australia. It mainly develops in areas with a warm and humid climate (Middle Asia and Trans-Caucasian region), within the humid subtropical zone of the Black Sea coast of the Caucasus, in Moldova, in Ukraine.

**The causative agent is Gloeosporium ampelophagum Sacc.**

It hibernates on the affected organs of grapes and persists for a long time (up to 5 years) in the form of mycelium, pycnidia, and sclerotia.

It gives up to 30 generations of spores per season. Precipitation in the spring causes early damage to young leaves and shoots of grapes just beginning to develop.

The signs of disease. Brown spots surrounded with a dark white border often merged appear on the leaves. The tissue dies and falls out in the places of spots. Foveate brownish and then pinkish-gray oval spots with a dark border are formed on the grape shoots, often capturing the entire internodes.

Later, the tissue chaps, forming of hollow ulcers. Shoots often break and dry out. Similar symptoms appear on ridges, petioles. Affected inflorescences acquire a brown color and dry out.

[1] *ARMENIAN NATIONAL AGRARIAN UNIVERSITY REPUBLIC OF ARMENIA, YEREVAN, TERYANA 74*

**Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020** 

Brownish or gray foveate angular and rounded spots with a dark border are formed on the berries. A strong spread and outbreak of the disease in the vineyards is observed in rainy weather. Anthracnose causes great damage to vine-growing.

## II. Methods of control:

- introduction of grape varieties resistant to anthracnose,
- avoid stagnation of water in gardens,
- Avoid unilateral use of nitrogen fertilizers.

The first spraying of vases is reduced when 4-5 leaves are present on the shoots, the second is sprayed 8-15 days after the first spraying, the third is after flowering using one of the following preparations: anthracol 2.5 kg / ha, Bordeaux mixture 10 kg / ha, Ridomil gold 2.5 kg / ha.

**Mildea (downy mildew)**

Mildew is the most widespread and the most harmful disease of grapes. It affects all the green organs of the plant (leaves, berries, shoots). The disease is caused by the fungus Plasmopara viticola Berl. et Toni - an obligate parasite. It was introduced in 1878 from North America to the south of France, then spread to all the vineyards of European countries. In Commonwealth of Independent States it is widespread in all places The degree of development of the disease and the harm caused are not the same in different zones of vine-growing and in different years : the disease is most harmful at high humidity (frequent rains, dew, subtropical zones) .

The signs of disease. The first sign is the appearance of the so-called oily spots of round shape of any size on the upper part of young and adult, but still growing leaves in summer. The white powdery coating is formed on the spot from downside in wet weather. Gradually, necrosis (cell death) occurs on the spot tissue, covering an increasingly large part; the affected tissue turns yellow at first, then the spot can become reddish-brown, with pronounced processes of dying and drying.

Heavily affected leaves fall off; green shoots can be without leaves. After the primary appearance on the leaves, the disease can also spill over to inflorescences (or clusters), which is very dangerous for the crop.

The generative organs of grapes are usually more sensitive to mildew than the leaves. Mildew strikes grape stalks on inflorescences (or racemations), on which elongated spots of intensely green color appear, as if

saturated with water. The spot tissue dies later, this disrupts the normal sap flow and causes the drying of part of the inflorescence (racemations). If the mycelium has penetrated into the pedicels (fruit-stalks) and flowers (ovaries, young berries), then the inflorescence (a racemation with ovaries of berries) is covered with a white bloom of sporulation of the fungus, and then the buds and flowers dry and slough. The comfort temperature for the development of the disease is 20-25 ° C and high humidity. The causative agent of the disease can develop up to 16 generations per season.

Control methods. In order to prevent mildew from appearing on grapes, it is necessary to treat the bushes several times in the early spring with preparations of systemic action in particular, which do not only protect, but also treat. What is appreciated especially in such preparations is that they are not washed off by rain, since they penetrate deep into the plants.

By the way, in the past only various copper-containing agents were used against mildew (such as copper sulfate, Bordeaux mixture, copper chloroxide - all of these are contact agents), but now much more modern preparations have appeared.

The scheme for treatment of grapes from downy mildew supposes several sprayings, while the most important ones are 1, 2 and 4 (they can be called preventative):

1. After removing the shelter and tying (on bare branches), it is optimal to use contact means (protective), since the spores of the fungus have not yet penetrated deep into the plant. Moreover, it is necessary to treat not only the vine, but also the soil under it.

2. Before flowering (after the appearance of the first 3-4 leaves) the systemic preparations (protective) are applied. Moreover, it is desirable to be in time to perform 2 treatments (according to some winegrowers, the first can be done with a contact preparation, but the second should be done necessarily with a systemic one).

3. During flowering (if the weather is unfavorable and very high humidity. If the weather is dry the spraying is not required ) the systemic preparations also should be used, but without copper if possible (some varieties respond poorly to such spraying).

4. After flowering, but before the berries reached the size of a "pea" (if the signs of the disease are noticed) the use of the systemic preparations (treating) is possible but in a lower concentration, or it is better to switch to the use of contact preparations (treating) or biological preparations.

5. During the formation of larger fruits, but before harvesting - if the first 4 treatments did not help (usually enough) it is desirable to use only contact fungicides (treating) and biological preparations or those systemic preparations that have a very short safety interval. Therefore treatments are performed every 2 weeks or after each rain.

6. After harvesting - again strong systemic preparations should be applied, and calurea can also be used (it destroys fungi in a strong concentration).

Naturally, it is fundamentally important to be able to determine by the state of your grape which particular preparation you need to apply. If you have recently sprayed grapes, the leaves are clean, without signs of disease, then it is better to use preventive (protective) preparations. If you notice signs of the disease, even if only on some leaves, then you already need to use preparations with a curative action.

Systemic preparations are “absorbed” by the plant and act from the inside, and by and large, it is not very important to treat the entire leaf surface. Also, some systemic preparations transfer their active substance to the tops of the vines, thereby protecting growth points from diseases.

Contact preparations work only where applied. Therefore, where they are not applied, the disease will remain, it will be here to stay. That is why such treatment must be performed very thoroughly.

But it should not be overdone either, since the preparations themselves often have the important recommendation "Do not allow liquid to drip off the sheet".

If the obvious initial signs of harm are noticed, then it will be most effective to use the systemic preparations with a low toxic hazard class (naturally, only those that are allowed in your country for use). The most popular systemic preparations for treatment of grapes from mildew (active ingredients are given in brackets):

- Acrobat MC (Mancozeb + dimetomorph);
- Acrobat Top (Dimetomorph + Dithianon);
- Oxychom (Copper oxychloride + oxadixyl);
- Polyram DF (Metiram);
- Ridomil Gold MC (Mancozeb + mefenoxam);
- Quadris (Azoxystrobin);
- Revus top (Difenoconazole + Mandipropamide);
- Cabrio Top (Pyraclostrobin + Metiram);
- Thanos (Famoxadone + Cymoxanil);
- Ulis (Famoxadone + cymoxanil);
- Homoxyl (Copper oxychloride + oxadixyl);
- Ordan MC (Mancozeb + cymoxanil);
- Ordan (Copper oxychloride + Cymoxanil);
- Tsikhom ( copper oxychloride + cineb);
- Kurzate (Copper oxychloride + Cymoxanil);
- Cuprolux (Copper oxychloride + Cymoxanil).

Contact preparations from mildew, as a rule, include (active ingredients are given in parentheses):

- Abiga-peak (copper oxychloride);
- Delan (Dithianon);
- Strobi (Kresoxim-methyl);
- Bordeaux liquid or mixture (Copper sulfate + calcium hydroxide);
- Copper sulfate;
- Hom (copper oxychloride).

Recently, the use of biological preparations to control various fungal diseases has become popular. But experienced winegrowers are advised to carry out treatments with such preparations only for preventative purposes or after the formation of sufficiently large berries (larger than peas). Biological agents for the prevention and treatment of mildew on grapes include:

- Haupsin;

- Trichovitis or Trichodermin;
- Pentaphage;
- Planriz;
- Alirin-B (Bacillus subtilis, strain B-10 VIZR);
- Fitosporin

**Gray rot**

This is the only parasite of the grape bush that accompanies it throughout the year where the favorable conditions for infection and development occur.

All green parts of the bush and annual wood are affected. The fungus is dangerous while ingrafting, because along with harvested stalks, it also affects the places of ingrafting.

It settles on shoots beginning to grow and can cause a strong shedding already during stratification, and later also in the nursery-garden.

The signs of disease. In the vineyards gray rot covers blooming eyes and young shoots in cold and damp spring weather. In poorly ventilated plantations, in humid weather, a gray coating is formed, covering all parts of the racemation of grapes, which dusts when touched. Often the whole bunch turns into an unattractive, porridge-like lump.

In dry weather, the fungus development is limited to the first berries affected by it which are shriveled later.

Single nitrogen fertilizer increases the sensibility of the bushes to the disease. When dry weather occurs, spring infection almost always stops. Affected inflorescences of grapes or parts of them wither away, turn brown and dry out in dry weather, resembling signs of grape stalks paralysis. In vine-growing, gray rot is especially dangerous as the causative agent of berries and grape stalks rot. With early infection of racemations, it is important that this fungus primarily affects wound sites or weakened parts of the vine bush.

Control methods:

- Avoid water stagnation in gardens,

- Avoid root fertilizer during fruit ripening

- Inoculate plants when the fruit ripens with Rovral 1.5 kg / ha twice a day for 7-10 days.

In addition to the development of diseases, bushes and vintage are under constant threat of harm by many pests.

These are grape louse (Phylloxera vastatrix), ticks, leaf-roller moth (Tortricidae).

On the territory of Ararat, there are such pests as: Polyphylla fullo beetle, twospotted spider mite (Tetranychus urticae), European brown scale (Eulecanium corni), European grape moth (Polychrosis botrana) .

Twospotted spider mite (Tetranychus urticae)

It is a polyphagous pest. It lives on more than 200 species of plants, including grapes. It got its name from the fact that it always cobwebs the inhabitation. It settles on the underside of the leaves and feeds on the contents of the cells. Leaves damaged by twospotted spider mite turn yellow, and in colored varieties they turn red - first along the main veins, and then over the entire surface.

Subsequently, the leaves turn brown, dry and fall.

These damages lead to a decrease in sugar content and an increase in acidity. Growth decreases and the aging of shoots worsens.

During the summer, the spider mite can produce up to 12 generations.

Imago Adverse winter conditions are endured only by fertilized females. Places of wintering are plant debris, peeling bark of trees.

In spring, when the temperature rises to 12–14 ° C, the females leave winter shelters and settle on the underside of leaf blades. Soon, females begin to weave a thick web of thin, silky threads and lay eggs in it, which are located in the web one at a time. During 15–20 days the female lays up to 150 eggs.

All eggs are fertilized in the spring generation. In summer generations females can lay unfertilized eggs. Only males develop from them while individuals of both sexes develop from the fertilized eggs.

In preparation for winter females change color from grayish-green to orange-red, stop eating and reproducing, gain increased resistance to low temperatures. So, summer females die already at 0 ° C, and winter females can endure temperatures up to –27–28 ° C.

Egg. The duration of embryo development depends on the ambient temperature.

The larva develops within 8–20 days depending on the ambient temperature. Like imago, the larvae feed on the juice of green shoots, leaves and fruits.

Imago It takes from 8 to 20 or more days to complete the full cycle from an egg to an imago.

During the growing season, plants are sprayed with acaricides, alternating chemical groups. At the first detection of a movable stage of a twospotted spider mite - spraying with VERTIMEK® CE 0.8–1.2 l / ha.

European grape moth (Polychrosis botrana)

Caterpillars of this pest cause great harm to inflorescences, ovaries and berries of grapes. Butterflies are brown in color, with a beautiful pattern of bluish and brownish spots and stripes on the front wings, the wingspread 12-14 mm. The body length of the caterpillars is 10–13 mm; their color is green or gray-green. The pupa is 5-6 mm long, from dirty green to dark brown in colour .

A large emergence of second generation butterflies is observed in early June. They lay their eggs on the ovary, then on the green berries, which are then harmed by the caterpillars: one caterpillar can damage up to 40 ovaries or up to 10 berries. However, the most harmful is the third and fourth generation of European grape moth. A large emergence of butterflies of the third generation occurs before the ripening of berries (in the beginning-mid-

August), and the fourth generation during the period of their widespread ripening. Caterpillars of these generations (especially the fourth) develop on racemations of ripe grapes, which complicates the use of chemical plant protection means.

Methods of control. After opening the bushes of grapes, the vine trunk and the arms must be cleaned of the old bark. The removed bark and wintering pupae of the pest with it should be burned. However, the main way to control the caterpillars of European grape moths is the chemical method.

Treatment is carried out in the following terms: against a cochylis moth, two sprayings in 12-15 days after the start of emergence of the butterflies of the first and second generation, the third is performed in 10-12 days after the second treatment; against European grape moth for the first time in 12-15 days after the emergence of butterflies of the first generation, the second is performed in ten days after the first (usually on the eve of grapes flowering), the third is in 12-15 days after the emergence of butterflies of the second generation; against the grape-berry moth the first time during the swelling of the buds, the second is performed after blooming. Decis f-LUX (deltamethrin) 0.6 l / ha, Talstar (bifentin) 0.4 kg / ha, Arrivo (cypermethrin) 0.5 l / ha are highly effective against the pests. Use insecticides in turn.

## REFERENCES

1. .Ayvazyan, P.K. Grapevine breeding / P.K. Ayvazyan, E.N. Dokuchaeva. - Kiev: Publishing House of the Ukrainian Academy of Agricultural Sciences, 1960. - P. 288-296.
2. Algae P. 1954. On the infectious degeneration of grapes. Ann. To experience. Agrarian (n. s.), No 8, Ad.. 3, 36 - 76; 4, 1 - 16; 5, 1 - 38.
3. Algae P., Ambrose M., Camouflage C. A. 1962. The new grape disease in the symptomatology is complex. News Ever. Plants, 62 - 63 (n. s. 41 - 42), 59 - 71.
4. Verderevskaya, T.D. Viral and mycoplasma diseases of fruit crops and grapes / T.D. Verderevskaya. - Chisinau: Stiinza, 1985. - 311 p.
5. Soldatov, P.K. Vegetative variability of grapes: Abstract of dissertation for the degree of Doctor of Biological Sciences / P.K. Soldatov. - Tashkent, 1972. - 50 p.

**Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020** 