



INFLUENCE OF POLYPHAGUS INSECTS ON GRAPES YIELD AND ITS QUALITY

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Abstract: *Currently, the harmful objects discussed in the article, which reduce yields in the vineyards of the Southern Federal District, are factors of the biotic environment that are currently poorly controlled by winegrowing specialists. Vine plantings, which are artificial ecosystems, are subject to significant changes under the influence of abiotic and anthropogenic factors. Currently, new objects are appearing in the vineyards cultivated in the Southern Federal District, reducing both the crop yield by up to 50% and its quality. By timely implementation of agrotechnical measures in cultivated vineyards, farm specialists can achieve a reduction in the harmfulness of polyphagous insects, and an increase in the yield and its quality, as well as the improvement of grape tracts due to good ripening of the vines, increased winter hardiness, and, as a result, potential yield.*

Key words: *grapes, increasing grape yields, pests*

To improve the quality and quantity of grape harvest, methods for controlling these factors should be developed. Obtaining stable ecologically and economically sound grape yields depends not only on the biological potential of a particular array, including varietal composition, formation, but also on the timely implementation of measures to control the number of pests. Thus, it is necessary to constantly carry out phytosanitary monitoring not only of vineyards, but also of other agricultural crops located nearby. Scientifically based implementation of a set of necessary measures makes it possible to avoid significant crop losses and not to go beyond the frequency of treatments with protective equipment provided depending on the resistance of varieties and phytosanitary condition.

Systematic management of factors of biotic, abiotic and anthropogenic nature ensures a stable level of fruiting and quality of grapes. According to world statistics, annual grape harvest losses from pests and diseases are at least 30, and in Russian conditions in some years - 50 or more. In the fight against a complex of pests and pathogens for the conditions of the Krasnodar Territory, adaptive-integrated vineyard protection systems have been developed and widely used, providing an integrated approach to the frequency of treatments with plant protection agents, depending on the susceptibility to specialized pests. However,



in the last few years, in the Krasnodar region, there has been a significant infestation of previously unknown polyphagous pests - the citrus leafhopper (*Metcalfa pruinosa*) and the cotton bollworm (*Helicoverpa armigera*). According to specialists from the Zoological Institute of the Russian Academy of Sciences, the pest citrus leafhopper (*Metcalfa pruinosa*) entered Russia from North America through Abkhazia or Turkey. It can pose a danger to many cultivated and wild plant species in the Krasnodar region, since it is a polyphage, has few natural enemies in the ecosystems of the region, and is resistant to insecticides. Specialists of the branch "Forest Protection Center of the Krasnodar Territory" identified populations of this species in the city of Novorossiysk, in the green spaces of the city of Krasnodar. In Krasnodar, *Metcalfa* leafhopper colonies began actively damaging grape plants in 2012. The result of a high degree of infestation of vineyards by this pest is a decrease in sugar content by 2 g/cm³, weakening of plants, poor ripening of the vine, and, as a consequence, a decrease in the winter hardiness of the plant. So, in 2012, in areas inhabited by this pest, 70–80% of the central buds died, and the yield loss amounted to 50–70 c/ha, while in uninfested areas, the death did not exceed 15–20%, where the result was a harvest over 85 c/ha. The nature of damage caused to grape plants by leafhoppers is varied.

The most dangerous is the sucking of juices from the phloem, xylem and parenchyma of the leaf, which deprives plants of nitrogenous substances and moisture necessary for the construction of tissues and leads to a slowdown in growth and sometimes death. Damage is especially dangerous for young vineyards, which is associated with the release of phytotoxins in saliva, which inhibit the growth and development of plant tissues. Leafhoppers suck juices from plant tissues, causing damage to chlorophyll-bearing cells. This leads to leaf spotting and a decrease in the efficiency of photosynthesis, dehydration of non-lignified shoots, significantly weakening plant growth. Salivary secretions will contain phytotoxins, which sharply inhibit the growth of shoots. In addition, the pest is capable of transmitting various viruses from plant to plant. Sugary secretions (honeydew) contaminate the leaves, interfering with normal gas exchange. A fairly aggressive pest of grapevines is grape thrips. With the buds begin to swell, the females leave their wintering grounds and begin to feed. Opening eyes, young leaves, and berries are damaged. At the same time, the leaves lose turgor and wither. The ovaries fall off. The berries shrivel, short-noded shoots are observed (similar to viral). The decrease in harvest quality caused by this pest is expressed in a deterioration in the appearance of the bunch and a decrease in sugar content. According to our data, with a population of up to 20 individuals per



inflorescence, the mass of the bunch decreases by 2–3 times. The cotton bollworm is a very variable species in appearance and biological properties. In vineyards, the cotton bollworm damages bunches and young leaves. The most harmful for the vineyards of the Krasnodar region are the second and third generations of the pest, which settle on ripening bunches of grapes. In case of untimely breaking of shoots and chasing, infestation of tracts with dicotyledonous weeds, during the years of epiphytotics of gray rot, the cutworm can destroy over 50% of the grape harvest, i.e. up to 60 c/ha.

Thus, taking into account that the timing of treatments against specialized pests of the grapevine (LFF, grape budworm, herbivorous mites) does not always coincide with the timing of the development phases of the pests listed above - polyphages, which are most sensitive to pesticides, it is necessary to constantly carry out phytosanitary monitoring not only of vineyards, but also other agricultural crops and lands located at a distance of up to 200 meters from them. Timely implementation of a set of necessary measures allows you to avoid significant crop losses and not go beyond the limits of the frequency of treatments with protective equipment provided depending on the resistance of the varieties and the phytosanitary condition of the plantings.

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