

Topic: Species composition and bioecology of pests found in walnut plants

Xolmatova Saidaxon Qurbonboy qizi
FARDU biology course II-year master's degree

Abstract: Walnut is one of the most valuable fruits that nature gave us. It is widely used in various areas of our life. The walnut tree grows in almost every garden and its medicinal properties have already been written about in previous articles on this site. Every year bring us joy bountiful harvest walnuts are still facing problems. This article covers the diseases that affect the precious tree.

Key words: Peanut, Bordeaux liquid, American white butterfly, *Streptomyces avermitilis*, *Pseudomonas aureofaciens* and *Bacillus thuringiensis*.

In one year, the tree can give 200-300 kg of incredibly nutritious fruits, which are rich in useful substances and play an important role in human nutrition.

However, the tree grows well, the fruits are set, but after a while the nut fruits turn black and crumble.

You should know that walnuts are sick, and the disease is called bacteriosis.

This disease is most common among walnut trees.

There are no varieties resistant to this disease. But experts say that thin-skinned fruits are more susceptible to this disease than thick-skinned fruits.

The disease affects all terrestrial parts: leaves, its leaves, flowers (male and female), one- and two-year-old branches, buds, fruits at any stage of development.

This disease overwinters in the bark of affected branches. In the spring, the infection enters the leaves and others through mechanical damage.

How is bacteriosis manifested?

First, large black spots appear on the leaves that spread along the veins.

Long-term rainy weather contributes to this, the shoots bend and dry.

How to deal with bacteriosis?

By collecting and burning fallen leaves.

It is necessary to remove damaged branches and fruits.

In the spring, it is necessary to try not to overfeed the walnut tree, because large doses of fertilizers, and especially nitrogen ones, contribute to the rapid spread of the disease.

How to treat a sick tree?

It should be treated with preparations containing copper. It can be Bordeaux liquid (100 g of copper sulfate 150 g of lime per 10 liters of water), copper oxychloride, Abiga peak, Oxyhom, etc.

Processing walnuts with Bordeaux liquid is also effective against another dangerous disease - brown spots, in which the fruits are also damaged and the upper part of the skin becomes dark. Light spots appear on the leaves, which eventually turn dark brown. The disease gradually spreads to all parts of the tree.

Currently, more than 100 walnut pests are registered in different countries in the world.

Walnut is one of the simplest plants in terms of soil conditions and agricultural technology. It is grown on carbonate soils, constantly softening and fertilizing the surface. Young trees suffer from frost, so they should be sprayed for the winter. With proper care, walnuts grow very quickly and grow 1-1.5 m per year. Walnut trees use the soil mercilessly: the level of groundwater drops sharply under them, the soil turns into stone, and even grass cannot withstand such a neighborhood. Walnut leaves contain a poisonous substance - juglandin. Rains wash it from fallen leaves into the soil and prevent other plants from growing.

In the south of Ukraine, in the potential region of industrial cultivation, leaves, branches, fruits and stems of walnuts are damaged and damaged by about 50 diseases and pests of walnuts.

The butterfly moth is dark gray, with dark transverse stripes and a large oval spot of yellow-brown color, golden-copper shine on the top of the wing, wings - 18-20, body length - about 10 mm. Butterflies fly in

May-June, in the evening at dusk and at night, and during the day they sit motionless on branches and trunks and merge with the bark. If the night temperature is above 15 ° C, the butterflies begin to lay eggs, laying them one by one on the smooth surface of leaves or fruits. One female can lay 40 to 220 eggs.

Eggs are round, flat, translucent, 0.9-1.3 mm in diameter. Embryonic development of the egg lasts up to 10 days, depending on the temperature. Regenerated caterpillars are white-pink, about 2 mm long, with a black head. During feeding and growth, which lasts up to 38 days, the caterpillars turn a bright pink color. At the end of feeding, they pupate in places where the branches are branched, under the bark, in the neck of the root, under lumps of soil, in weeds. The second generation of butterflies appears in July, the caterpillars are reborn eight to ten days after the beginning of the butterfly summer.

The most harmful pests of walnuts are the second generation caterpillars, which are reborn in August. They enter the nut through the base of the fruit and eat its core. Some of the damaged fruits may drop prematurely, and those remaining on the trees lose their marketability. The walnut pest overwinters in the pupal phase in a web of cocoons under the bark and in the soil.

In order to protect the crop from the moth, it is necessary to constantly monitor walnut pests with the help of pheromone traps. Since butterflies fly high, it is necessary to place a trap at the top of the canopy. In small plantations, traps are hung 1 piece / 100 m², in large massifs - 1 piece / 2. Traps are checked every three days. When catching more than five butterflies in a week, it is recommended to treat with pesticides after 7-14 days (they are used when the caterpillars are reborn, they have not yet entered the fruit). If the number of trapped butterflies is less than the harmful limit, it is not advisable to use pesticides.

Chemical protection of walnut plantations from pests is very problematic. This is because walnuts contain oils that dissolve and store organophosphorus and some other insecticides. Alternatively, trees are protected with biopreparations based on avermectin produced by *Streptomyces avermitilis*, *Pseudomonas aureofaciens* and *Bacillus thuringiensis*.

Unfortunately, there are still no approved pesticides to protect walnut plantations from pests. Therefore, the managers of enterprises should try hard to prevent pests from settling in walnuts using agrotechnics and nuts. mechanical measures above protection means. We recommend the use of chemical substances for the destruction of pests that have been released en masse in plantations, in particular, fruit crops from the groups of lambda-cyhalothrin, thiamethoxam, thiacloprids, chlorantraniliproles, which are approved for protection. Although the norms and methods of processing these drugs may differ depending on the manufacturer, you should follow the relevant instructions.

In 2015, American white butterfly (*Hyphantria cunea* Dr., Lepidoptera order, Ursa family (Arctidae)) belonging to the walnut trees Internal Quarantine objects developed quite actively.

American white butterfly

The American White Butterfly (ABM) is a polyphagous pest that damages (according to various sources) 250-300 plant species. Most often these are fruit trees, walnuts, elderberries, hops, grapes.

The high harmfulness of ABM lies in the ability of the caterpillars to completely eat the leaves of the plants, which they wrap in spider webs and form nests. Due to the damage, the photosynthetic activity of plants decreases on the leaf surface, metabolic processes are disturbed, which in turn affects the yield, winter hardiness, protective functions and often leads to the death of plantations.

The pest develops in two generations. Pupae hibernate under the remaining bark of trees, branches and cracks in branches, plant debris and other sheltered places. In natural conditions, they withstand frosts down to -30 ° C, but are very sensitive to sudden temperature changes in spring.

Butterflies fly at the end of April - the first ten days of May and lead a twilight lifestyle. At this stage, the pest is snow-white, the wingspan is 25-35 mm, in some specimens even 40-50 mm, the body length is 9-15 mm. It feeds on nectar from flowering plants and does no harm. Females lay 200-350 eggs, mostly on the underside of leaves. One female can lay up to 1500 eggs. Eggs are spherical, smooth, blue or yellow, diameter 0.5-0.6 mm. The revival of caterpillars occurs after 14-25 days. Young caterpillars are greenish-yellow, with age they turn brown with a black wart on the back and orange on the sides. The pectoral shield and abdominal legs are black.

After feeding, the caterpillars pupate. The pupa is lemon-yellow, turning dark brown over time, 8-15 mm long, located in a loose, dirty gray cocoon. The pupal stage lasts up to 20 days. In July, butterflies of the

second generation appear, they multiply very much - the female lays up to 2500 eggs. After finishing feeding, the caterpillars of this generation pupate in September-October and hibernate at this stage.

Plant protection system - quarantine, agrotechnical, chemical and biological measures aimed at limiting the number of pests and preventing their spread throughout the country.

Quarantine measures include: introduction of quarantine in areas where pests are found; permanent inspection of seedlings and its destruction in detection centers. Agrotechnical activities include:

- lower the crown and take weeding, cutting and destroying branches with caterpillar nests;
- inter-row cultivation to control weeds;
- feeding for planting.

Chemical and biological control measures against American whiteflies are used against each generation of the pest, if necessary, during the development of young caterpillars. As a rule, chemical treatment is used to destroy the first generation of caterpillars. Second-generation caterpillar protection products are selected according to the "List of Pesticides and Agrochemicals Allowed for Use in Ukraine" depending on the intensity and abundance of pest development. In order to prevent the spread of the pest in walnut plantations, it is necessary to implement high-quality protective measures in other neighboring fruit crops.

In the agrobiocenosis of walnut plantations, there is always a certain stock of harmful organisms - pathogens and pests, and it is mandatory to carry out phytosanitary monitoring and combination to control their number and save trees. different methods of protection - agrotechnical, biological and chemical.

References:

1. A.Sh. Sheraliyev, B.E. Murodov Entomology and Phytopology, Study Guide for Vocational Colleges - Tashkent - "New Edition" - 2008
2. S. Dadayev Entomology, teaching-methodical guide for students of the master's degree in biology of higher educational institutions - Gulistan-2015
3. M.R. Shermatov, Educational methodical complex of entomology - Fergana - 2021