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ADAPTED PROTECTION OF AGRICULTURAL CROPS FROM PESTS

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Abstract. This article discusses the purpose and function of agricultural entomology. Methods of pest control. Also, information is provided on the biology of insect pests and plant damage in epiphytic situations, as well as measures to combat pests.

Among the living beings in the world, insects are the most widespread in terms of species and numbers, they develop and show life activity in the soil, on plants and even on the insects themselves. In addition to being very small organisms, insects have the property of reproducing very quickly, and they feed on products consumed by humans and animals, competing with industrial and food products.

Insects have been bothering people since ancient times, and they were also used to fight fleas, mosquitoes and flies during the primitive community. At the same time, people have been breeding and using bees and silkworms for several thousand years.

Agricultural entomology, in addition to studying pests, studies the biology of beneficial insects, predators and parasites and their interaction with the environment.

Therefore, agricultural entomology is inextricably linked with the sciences of general biology, physiology, microbiology, zoology, soil science, plant science, seed production and selection, general farming, agrochemistry, cotton growing, and chemical plant protection.

Every year, agriculture suffers great damage from insect pests, with more than 100,000 species of insects damaging agricultural crops and products, and more than a few dozen of them causing great economic damage to plant science. If control measures are not taken, even one or two types of pests can cause 50-60 percent, and in some cases even more, damage to plant science in a certain area and make the sector economically unprofitable.

Every year, more than 30% of agricultural crops are lost worldwide due to pests, diseases and weeds. In developed countries, 20-25% of crops are lost due to the above harmful organisms, while in less developed countries, 40% or even 50% of crops are lost.

The basis of integrated protection should be the use of environmentally friendly insecticides that do not harm warm-blooded organisms and beneficial organisms that affect the environment, only in cases where it is absolutely necessary to prevent, take economic and organizational measures against agricultural pests, carry out agrotechnical, mechanical and biological quarantine measures, and maintain the ecological balance in the region.

PESTS OF COTTON AND FIBER CROPS.

Currently, in order for the Republic of Uzbekistan to achieve full economic independence, it is necessary to further expand and develop the production of industrial products and raw materials needed for industry. Our main raw material for industry and sold abroad for foreign currency is cotton. As is known, in recent years, the allocation of land for homesteading to the population, part of the area of fruit and vegetable, grain and other food crops has been expanded at the expense of

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lands previously planted with cotton, as a result, the area under cotton is partially reduced. This, in turn, leads to a decrease in the gross yield of cotton. In order not to reduce the gross yield of cotton, we must make good use of scientific achievements, the experience of progressives and other opportunities. One of such opportunities is the protection of cotton from harmful organisms. Cotton is one of the crops most frequently damaged by pests. Professor Yakhontov V.V. compiled and described in 1931 a rather incomplete list of the world fauna of invertebrates feeding on cotton, consisting of 772 species. Of these, 751 species are insects. V.V. Yakhontov found that 219 species feed on cotton in the conditions of Uzbekistan.

The main pests of cotton.

Sucking pests of cotton. Spider mites. It is a serious and persistent pest of cotton and is widespread in the cotton-growing areas. It feeds on 248 species of plants, of which 173 are weeds, 38 are shrubs, and 37 are crops.

The spider mite is a single species, with an oval body and a length of 0.3-0.6 mm. Its spring and summer generations are bluish-yellow, and the overwintering ones are orange-red. The female goes through the stages of egg, larva, nymph, deutonymph, and adult. The egg is round and spherical. The other stages are similar to the imago, but differ in that they are smaller.

The summer generations of the mite develop in 8-12 days, in May - in 15-20 days, in April - in 25-30 days. During the year, 4-20 generations develop, of which 3-12 pass in cotton. During development, 40% or more of them die naturally. The female lays up to 100-160 eggs in medium-fiber cotton varieties and lives for 30-40 days. In fine-fiber cotton, she lays 40-50 eggs and lives for 10-15 days, in weeds - up to 30, and lives for more than 10 days.

Large cotton bollworm. (Acyrthosiphon gossypii Merdv) is found in all cotton-growing regions of Uzbekistan. In addition to cotton, it is most often found on mung beans, weeds, and sorghum.

13 species of bollworms are known to infest cotton, of which two species, alfalfa and field bollworm, cause significant damage in some years.

Cotton nightgown - (Heliotis armigera hb) - It is a widespread pest that lays eggs during the cotton budding process. Its first generation develops on weeds and tomatoes. Its eggs are dome-shaped and 0.5-0.6 mm in diameter. The eggs are initially white, then turn brown. They are laid singly at the growth point. After 4-5 days, the larvae hatch from the eggs and feed first on the leaves at the growth point, then on the cob, flowers and fruiting bodies. After feeding, the larvae fall into the soil and burrow 5-12 cm deep into the soil to form a pupa. The pupa is 17-21 mm long and is light pink to brown in color. After 8-10 days, the butterfly emerges from the pupa. One female butterfly lays from 600 to 3000 eggs. It gives 3-4 generations per year. Cotton overwinters as a cocoon at night.

Methods of adapted control measures against cotton pests. Cotton protection from pests, diseases and weeds includes a complex of measures and forms an adapted protection system. They can be divided into organizational and economic, agrotechnical, chemical and biological measures.

Organizational and economic activities.

Based on the organizational and economic measures aimed at combating cotton pests, diseases and weeds, an operational plan of the farm is drawn up, which should take into account the following:

a) the distribution of harmful organisms on the farm by species.

b) determining the volume of equipment and vehicles used to protect all types of plants.

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c) organizing control teams for plant protection work.
g) selecting an airfield that meets the requirements.
d) arranging standard warehouses for storing pesticides that meet sanitary requirements.
e) expanding the cultivated areas.

Agrotechnical measures.

Agrotechnical measures taken to combat cotton pests are mainly preventive measures. These measures, on the one hand, protect the fields from the appearance of pests in dangerous quantities, and secondly, increase the resistance of plants to damage and increase the effectiveness of protective measures. Agrotechnical measures are based on knowledge of the reproduction and life cycle of pests, and the increase in the number of pest species requires the use of various types of agrotechnical measures against them.

Crop rotations. In cotton farming, the implementation of cotton-alfalfa rotation with the addition of fields planted with corn, catch crops, and siderats provides a high level of overall agronomic efficiency, and in addition, allows for a sharp reduction in the number of pests and disease-causing microorganisms in cotton fields.

COTTON DISEASES AND MEASURES TO COMBAT THEM.

Fungi, bacteria and flower parasites cause diseases in cotton plants. These diseases reduce the number of seedlings, worsen the quantity and quality of the crop. Infectious diseases of cotton include wilt, gummosis, root rot, black root rot, boll and fiber diseases include brown rot, red rot, alternariosis, mucariosis, black aphid diseases, and non-infectious diseases include chlorosis, autumn wilt, smut, leaf spot, leaf deformation. Quarantine diseases of cotton include leaf curl, Texas root rot, anthracnose.

Wilt or wilt disease of cotton. Depending on the type of pathogen, wilt disease is divided into verticillium wilt and fusarium wilt. External signs of the disease appear in the budding or flowering phase of the plant. Initially, polygonal or circular, light green, then yellowish spots appear on the lower leaves. The symptoms develop from the leaf edge to the leaf vein or on the entire leaf surface. The affected leaf turns brown, begins to dry out and falls off. When the disease is severe, the entire plant becomes leafless. In such plants, the stems do not fully mature, dry out and open. Sometimes new leaves form in place of the fallen leaves, which slows down fruit set. Internal signs of the disease can be seen when the stem of the diseased plant is cut crosswise, its woody part darkens and forms necrosis.

The causative agent of verticillium wilt is a fungus belonging to the class of undeveloped fungi, order Hyphomycetales, genus Verticillium dahliae.

Fusarium wilt is caused by the fungus F.oxysporum. f vasinfectum.

The disease begins with the emergence of seedlings of cotton and is observed throughout the growing season. The symptoms of the disease are the appearance of yellow spots on the leaves of seedlings, and the leaf veins look like a web. Initially, the internodes of the affected plants are shortened, the root neck thickens, and the terminal leaves remain intact. During the budding period, the leaves, buds, and flowers of infected plants fall off, and the stem becomes thin. During the pod formation period, the stem of infected plants does not dry out, but the pods do not open due to incomplete maturation. The internal signs of the disease are characterized by the formation of

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blackening and necrosis of the stem. Although the fungus lives semi-saprophytically in the soil, it enters the plant through the roots and damages it.

Cotton root rot. In the conditions of the republic, common, black and sclerotial root rot diseases of cotton occur. The disease lasts from the time the seedling sprouts until it forms 6-8 true leaves. The first signs of the disease begin with the formation of dark brown spots in the root neck of the seedling, which then rot. The roots of the diseased plant darken and rot. The leaves of such a plant discolor, dry up and fall off, and the stem turns brown. Thickening of the stem or twisting of the stem is observed at the root neck.

The causative agents of the disease are various microorganisms in the soil, among which the most common are the fungi Rhizochtonia solani, Thielavtopsis basicola, Sclerotium bataticola. The mycelium of these fungi enters the roots from the soil through the root neck of the plant. The source of infection is mainly fungi that live in soil and infected plant debris.

Control measures: compliance with agrotechnical measures, planting high-quality treated seeds, timely control of weeds and thrips, crop rotation, and removal of cotton stalk residues from the field with their roots.

Gum disease. The disease affects all above-ground parts of the plant, including leaves, petioles, stems, flowers, panicles, and fibers. The main symptom of the disease is the formation of oily droplets on the affected organs of the plant. Initially, angular spots appear on the leaves. The shape of the leaf surface changes, forming brown spots on the leaf blade.

The most dangerous form of the disease is gum disease, in which the stems and branches in the affected area become thin, turn brown, and harden at the site of the yellow liquid discharge. When the upper branches of the stem are damaged, the plant lags behind in growth, does not form buds and fruits. If the plant is damaged at later stages of vegetation, it also infects the inflorescence, panicle and fiber. The diseased panicles do not develop, the fibers stick together and rot. The bacteria that cause the disease are stored in the seed coat. Dark green spots appear on the diseased stem and stem, which thin it and cause it to grow twisted.

The causative agent of the disease is the bacterium Xanthomonos campestris malvacearum, which develops normally at a minimum temperature of 10, and an optimal temperature of 25-28 C. The spread of the disease is carried out by water and wind, as well as by insects, from bacteria accumulated in the oily substance formed on the plant organs.

The source of infection is infected plant residues in the soil and seeds prepared from them. Due to gummosis, the fiber content of the plant decreases by 8-25%, the ripeness by 1.5-2%, and the breakability by 8-20%.

Control measures: nitrogen and potassium fertilizers increase the plant's resistance to the disease, the use of alfalfa in cotton fields in rotation reduces the disease, the preparation of seeds from healthy plants, the treatment of seeds with fungicides before sowing (fenturan 10 kg per 1 t), deep plowing of the soil, the collection of cotton residues and their removal from the field, the field should be watered with cow dung in winter.

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