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Sucking and Gnawing Pests of Industrial Cannabis (Cannabis Sativa L.)

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Annotation: The article provides information on the biological characteristics, distribution, development and reproduction of some sucking and rodent pests of the technical cannabis plant. At the same time, the negative impact of pests on increasing the economic value of the cannabis plant is also highlighted. Peach aphids, heteroptera, cotton bollworms, thrips, spider mites, and grasshoppers, particularly common in cannabis, are briefly described.

Keywords: technical cannabis, peach aphids, cotton bollworm, thrips, spider mite, grasshopper, heteroptera.

Introduction. Based on the decision of the Cabinet of Ministers of the Republic of Uzbekistan dated June 18, 2019 No. 511 “On measures to create an agro-industrial cluster in the Syrdarya region”, in accordance with the agreement signed between Uzbekistan and a foreign company, licensed cultivation of the industrial cannabis plant (Cannabis Sativa L.), containing up to 0.2 percent of the narcotic substance tetrahydrocannabinol, has been established [1]. In order to obtain high and high-quality yields of this plant, which is considered a new crop for the soil and climatic conditions of our country, it is important to develop agrotechnical methods for its cultivation, useful entomophages, harmful insects found in the agrobiocenosis, as well as coordinated measures to combat them.

In addition to sucking pests such as peach aphids, thrips, scale insects and spider mites, rodent pests such as cotton bollworms and grasshoppers are also found in commercial cannabis crops.

Objectives and methods of the study. The aim of the study is to study the species composition of the main pests found in industrial cannabis in the conditions of the Khavos district of the Syrdarya region, to develop effective methods of combating them based on their morphological

features and identification.

In the experiments, the degree and percentage of infestation by peach aphids were determined using the method of K.A. Gar (1964). Observations and calculations were conducted on 25 selected plants. The infestation of leaves by peach aphids in the observed plants was determined using a five-point scale. The number of sucking pests in the fields was determined using the formula of F.M. Uspensky (1973). Damage by tobacco thrips was assessed on a 3-point scale [3,4,5]. When setting up field experiments and conducting observations in them, the "Basic conditions for testing pesticides against pests and diseases of agricultural crops in small and large field experiments" were observed [3].

Research results. This year, experiments were conducted on the Feremon cannabis plant variety, and observations showed that the main damage to industrial hemp plants is caused by peach aphids, thrips, spider mites, scale insects, and mealybugs. Observations also showed that this plant is also seriously damaged by locusts.

The results of monitoring the damage caused by the peach weevil at the initial stages of growth of the studied industrial cannabis crop are presented in the table below.

Population dynamics of peach aphid on industrial cannabis plants

Variety	Number of aphids on leaves of industrial cannabis, periods of counting and number of aphids, pcs					
	15.05	25.05	05.06	15.06	25.06	05.07
Ferimon 12	8,7	10,4	18,9	17,8	14,1	9,3

In the process of studying the dynamics of the number of aphids on cannabis leaves, 10 samples of plants of each variety were taken, the average number of aphids on each plant was calculated, and the number of aphids was monitored every ten days, starting from April 15 to June 5. This table shows that aphids eating cannabis leaves reproduce en masse from the first to the third ten days of May. It was found that it was during these periods that the scale of damage was maximum.

The peach aphid (Myzodes persicaye Sulz.) is a very common and very harmful species that is also found in cannabis crops. These are insects belonging to the suborder Aphidinea of the family Homoptera [6,7,8].

Aphids suck the sap from plant leaves and contaminate the leaves with their sticky waste, fallen bark and fallen leaves, reducing the quality of the plant. Peach aphid overwinters in the egg phase.

Based on the observation results, other types of sucking and gnawing pests were identified, their reproduction, distribution, harmfulness, biology and other characteristics were studied.

One of them is the sucking pest thrips, which damages plants by sucking liquid from the growth point and leaves as soon as they emerge from the ground. As a result, the plant lags in growth and development. The female tobacco thrips is 0.8–0.9 mm in size, the male is 0.7–0.75 mm, the body is elongated, yellow, and overwinters in the imago stage. In early spring, when the average daily temperature exceeds 8-10 0C, these pests emerge from hibernation and begin to develop. During the season, the number of female thrips exceeds the number of males, and one female pest can lay up to 100 eggs in its lifetime. The larvae hatch from the eggs in 3-4 days. The development of larvae lasts 10-15 days and turns into an adult insect. Adult insects at a young age live from 10 to 25 days, and the development of one generation takes up to 25 days. The thrips pest gives 7-10 generations during its life. This pest is active in dry and hot weather and is quickly noticeable. The higher the relative humidity, the longer thrips damage one plant.

At the same time, observations have shown that one of the pests that causes damage by sucking the sap of plants is the field caterpillar (*Lygus pratensis L.*), which is considered an omnivorous insect.

The adult body size is slightly larger — 5.8–7.3 mm. The body color is green, with black patterns and spots on the upper part of the wings and the lower side of the chest. The body is elongated, ovoid. The larva differs from the adult in its small size and the absence of wings. The egg is transparent, translucent, green, oval-shaped, 0.9-1.2 mm in size. The front part of the egg is blunt, and the back part looks as if cut off. Sometimes the laid eggs protrude above the stem, their lower side is smooth and reaches a width of 0.3-0.5 mm. The size of the larva is 1-4 mm, the distinctive feature of the bark beetle larva is the presence of two black spots on the front and back of the shoulder. The first 3 years the larvae are yellowish, and 4-5 years - greenish-yellow.

An adult hibernates under grassy plants and fallen leaves. When the air temperature reaches 12°C, individual individuals hatch, and when the temperature rises to 16°C, the individual begins to fly in search of food. However, individuals hibernating under dense cover begin to emerge from hibernation only when the temperature reaches 22–25°C, i.e. their mass emergence from hibernation lasts from the second half of March until the end of the first ten days of April. Egg laying in individuals begins at the end of May, and mass laying is observed in the first ten days of June. The second generation of larvae of individuals appears in June. The flight of some of the larvae of the third generation of individuals is observed at the beginning of the second ten days of July.

The fourth generation of field individuals lays eggs at the end of August and completes the development cycle in September. From the beginning of October, there is a mass migration to favorite weeds. In the conditions of our region, field individuals reproduce up to 5 generations per year.

The duration of development of individuals from egg to adult depends on the air temperature. In spring, in April and partly in May, development from egg to imago takes almost 60 days, and in hot seasons - 20 days.

According to field observations, it was noted that the pest of the cotton boll weevil (*Helicoverpa Armigera HBN*.) causes damage to the experimental plot. 30–40 mm with the butterfly's wings spread; the forewing is grayish-yellow, kidney-shaped, with round spots, the hindwing is more yellowish, with a brown border, with dark moon-shaped spots in the middle. The male is lighter than the female. The egg is light yellow. The caterpillar is light green to reddish brown, 35–40 mm long, with a yellow head and marbled chest. Three wide tracks run along its body, and its abdomen is white.

The cocoon is reddish-brown, 15–20 mm long. The cotton weevil overwinters in the soil at a depth of 10–15 cm. When the air temperature reaches an average of 18–20 °C, butterflies begin to emerge from the cocoon. The first generation of butterflies appears after 1–1.5 months (April–May). Butterflies lay 1-3 eggs on plant leaves and fruiting bodies. One female butterfly can lay an average of 500 eggs, and sometimes up to 1000. In the summer months, 25-35 days are enough for one generation to develop, resulting in 3-4 generations. It damages young leaves and buds, gnawing them (hence its second name).

Conclusion. Regular observations have shown that the most common and damaging pests on cultivated lands are spider mites, peach aphids, thrips, scale insects and mealybugs. Aphids, which eat cannabis leaves, reproduce en masse from the first to the third ten days of May. Studying the biological and morphological characteristics of pests is important for developing effective means of combating them.

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