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## BIOECOLOGICAL DEVELOPMENT FEATURES OF DIPTERA GROUP REPRESENTATIVES IN CUCURBITS CROPS

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### ANNOTATION

*The article presents results of research on the types of representatives of the Diptera groups found in the agrobiocenosis of Karakalpakstan, their distribution areas, features of bioecological development, the degree of damage, methods of controlling them, useful species.*

**KEYWORDS.** *Diptera, distribution areas, bioecological development, damage.*

### INTRODUCTION

Agricultural crops are being planted on 415020 hectares of irrigated land of the Republic of Karakalpakstan. In the region, cotton is cultivated on 86291 hectares, wheat - 53000 hectares, corn - 7783 hectares, rice - 40,000 hectares, legumes - 1693 hectares, oilseeds - 12400 hectares, vegetables - 6820 hectares, cucurbits crops - 6189 hectares, potatoes - 2464 hectares, fodder crops - 39337 hectares, intensive orchards - 107 hectares, vineyards - 1233 hectares (statistics of the Republic of Karakalpakstan for 2017-2020).

Expanding the area under agricultural crops and increasing yields will provide an opportunity to meet the population's demand for food. According to the results of medical research, 90.9 kg of bread and bakery products, 6.3 kg of oil, 4.9 kg of rice, 46.1 kg of meat, 10.1kg of fish, milk - 135.6 kg, vegetables - 113.0 kg, cucurbits crops - 19.5 kg, potatoes - 50.4 kg, fruits - 58.3 kg, grapes - 13.9 kg and others are recommended for people to eat during a year in order to be healthy. (Toreniyazov, 2014).

To ensure the uninterrupted supply of agricultural products to the population throughout the year, it is necessary to increase the quality and quantity of the harvest. However, one of the main problems in the cultivation of agricultural crops in the region is the

high level of damage caused by harmful arthropods that occur during the growing season. Although these species are the main biological factors in the growth and development of plants in the agrobiocenosis, the bioecological characteristics of some species are adapted to feeding on plant species, adversely affecting their growth and development during the growing season, leading to crop quality and decline. Therefore, it is necessary to identify the types of insects and organize control measures.

### METHODS OF THE RESEARCH

Territory of origin of *Diptera* insects in Karakalpakstan, morphological features, peculiarities of bioecological development, time of overwintering, field density, flight of mature species were determined by the methods which were edited by B.P.Adashkevich (1983); G.Ya. Bey-Bienko (1983); Ch.P.Narchuk (2003).

### RESULTS OF THE RESEARCH

It was found that in the agrobiocenosis of the Republic of Karakalpakstan, the level of damage caused by representatives of *Diptera* group of arthropods is high. More than 160,000 species of double-winged insects have been identified by world scientists, of which the complete morphological features and bioecological



development conditions of 3817 species were studied. Ch.P.Narchuk (2003) It has been found that representatives of the *Diptera* group encounter species that damage the vegetative and generative organs of agricultural crops, feed on human and animal blood, and cause many diseases.

As a result of our many years of research in Karakalpakstan, it has become possible to collect a lot of information and solve some problems in this area as a result of studying the lifestyle and bioecological development peculiarities of *Diptera* group in nature.

It is known that in the systematics of arthropods, the basis of the signs of the adult phase of *Diptera* insects is divided into 2 subgroups – with long antennae (*Nematocera*) and with short antennae (*Brachycera*) (Ch.P.Narchuk, 2003).

In our study, leaf miner fly, melon flies, Swedish flies, summer cabbage flies, house flies, common house mosquitoes, flesh flies, crane flies, black flies, chironomids, sand flies, circular seamed flies, blow flies, robber flies, marmalade hoverfly, tachinid flies, aphid midge, species such as *Goniurellia Tridens* (*Goniurellia Tridens*), a member of the family black and white winged (*Trypetidae* or *Tephritidae*), which has a picture of an insect on its wing. No damage was observed in the fields of melons with the occurrence of some species. This is due to the fact that there is a favorable microclimate in the fields of melons for the survival of these species.

The melon fly - *Myiopardalis pardalina* Big - from the representatives of *Diptera* family, which is the dominant species of the *Diptera* family, in the fields of the observed farms and agricultural farms, damages the main crop, the worms of leaf miner fly (*Liriomyza bryoniae* (Kaltenbach)) damage the leaves. In our study, the most harmful species of double winged is the melon fly, which destroys 90-100% of fields without control measures. In addition, in rare cases, the Swedish fly - (*Oscinella frit* L.), summer cabbage fly - (*Delia floralis*), representatives of crane fly – (*Tipulidae*) and robber fly (*Asilidae*) families, can damage.

Black mosquito or housefly - (*Musca domestica*) is a species of insect that gathers in early spring in houses, around the fields, in various buildings. This species feeds on a variety of nutrients in homes and fields from early spring to cold autumn days. Black flies

lay their eggs in various sweeteners, in which the worms, formed by numerous swarms, develop rapidly. This type of mosquito has the ability to reproduce rapidly, giving 8-10 generations per year.

Common house mosquitoes - (*Culex pipiens*) are the most common species, laying their eggs on various water surfaces. Pistil mosquitoes lay 150-250 eggs in 2-3 days. They need to be fed blood to lay eggs. It takes 48 hours for the worms to hatch from the eggs, after which the worms hatch. Usually the worms develop in 15-30 days. The worms that hatch from the eggs feed on various organic residues and microorganisms in the water. While the pistil of mosquitoes feed on human and animal blood, the paternity feed on various sweet things and live. It flies in and out of the field in groups. It is very dangerous for humans at night, during which time they suck blood and feed. Representatives of this species are carriers of various diseases in humans.

Flesh flies - Representatives of the family (*Sarcophagidae*) are similar to houseflies and are larger in size. The body is gray, the abdomen looks like a chessboard. His eyes are bright red. It takes 24 hours for the mother to lay her eggs alive and for the worms to hatch from the eggs. The worms spread not only in rotten meat, manure, rotten fruits, but also in places where all sorts of organic matter has accumulated. Gray meat flies have also been found throughout the year in fruit and melon fields. Where the worms are collected, they go through a pupa phase, and after 10–15 days, the adult flies away. Typically, mature breeds live 7–10 days.

Sand flies - members of the family (*Phlebotomidae*) are about 1.5-2.5 mm long and are distinguished by their long legs and trunk. When they are not moving their wings are folded over the abdomen, and their bodies are covered with feathers. Like the other double winged, it goes through 4 developmental stages: egg, worm, pupa and adult. Mosquitoes usually feed on natural sugars and plant juices. Only their pistils feed on blood for the development of their eggs. Worms develop in moist soils, in the nests of various rodents, in soil cracks. Most mosquitoes are active in the evening. These are the difference from mosquitoes, which fly without making a sound while flying. For this reason, these mosquitoes come out in silence.



The average body length of representatives of the family black fly (*Simuliidae*) is around 2-3 mm, the largest species does not exceed 6 mm. These flies are small flies that curl up and are dark black in color. It differs from blood-sucking mosquitoes by the presence of small short legs and short trunks. When it is not moving, the wings rest on top of each other. The short antennae consists of 9-11 joints. Like all *Diptera*, it goes through a full developmental phase. Most representatives lay their eggs under water. The length of the eggs is around 0.1-0.2 mm, laid in a ball-shaped position by several female flies. The development of the eggs takes 10 days at 12°C. It has been reported that worms hatched from eggs enter the nutrient environment and survive under favorable conditions by up to 200 small mosquito worms per 1 cm<sup>2</sup> of nutrition.

Chironomid mosquitoes from the family (*Chironomidae*) are very short-lived. The pistil mosquitoes lay their eggs in groups and in the water. After 3 days from the eggs hatch white, red or green worms. The worms feed on various sea weed and microorganisms. Fully fed worms turn into a pupa phase after 3-4 weeks. Within 48 hours of maturation, the adults develop and fly away. The adult lives for 5-10 days, during which time it is able to copulate and lay eggs. These mosquitoes are mainly active in the evening and can be heard flying from a long distance.

The whiskers of the members of the family circular seamed flies (*Cyclorrhapha*) are rounded on the shoulder side, with 3 joints, the inside of which is a fake pupa, the adult protruding from the front during exit. In nature, it belongs to the group of families that includes several small families.

Black flies - members of the family (*Calliphoridae*) are glossy or metallic in color, the middle breast epimers are hairy, the antennae is long-haired. Worms develop mainly in the dead remains of animals, in discarded meat, while some species are carriers of the disease in animals. It is also found as a parasitic species of insects from representatives of this species. In nature, members of this family live a synanthropic life, allowing the development of germs and helminth eggs in kitchens, poultry houses, and landfills. Like other species, blue (*Calliphora*) and green (*Lucilia*) blow flies are common in the agrobiocenosis of our region.

There are more than 5,000 species in the wild today of the robber flies (*Asilidae*) family, most of which are large, up to 40 mm long. The head is broad and mobile, has a strong trunk, the abdomen is long and flat, the worms are white or yellow, cylindrical in shape, and most of the head and back are slender. The pupa is closed, the legs and signs of the tumor are clearly visible. While mature breeds of caterpillars attack most insect species, the worms live in the soil and feed on caterpillars, black beetles, calf beetles, grain beetles, and other species of insect worms. One of the species that requires the study of bioecology at the expense of insects beneficial to man in nature.

Marmalade hoverfly (*Syrphus balteatus*, *Syrphus rhesii*) are entomophagous of cabbage aphid. The body of the adult is yellow, with spots, and includes hairless flies. These flies can easily fly in one place in the air. Participates in pollination of plants, is a wild insect in nature, and the average worm feeds on more than 200 aphids per day. It has the ability to destroy more than 2,000 aphids during the feeding period. A single female mosquito is capable of laying an average of 180 eggs. Basically, mosquitoes lay their eggs among a group of aphids. Marmalade hoverflies are protected as a biological factor that reduces the number of aphids in agrobiocenosis conditions, creating favorable conditions for their development.

Tachinid flies - members of the family (*Tachinidae*) are insects that love sunlight and can be seen in flowers in summer. Adults feed on the nectar and sap of flowers. The copulated pistil lays her eggs on the stems and leaves of the plant, as well as on the soil. Eggs develop in an average of 8-25 days. It is also one of the species protected as the main entomophagous of the earworms due to its reproduction by laying its eggs on the body of the host.

Aphid midge - (*Aphidoletes aphidomyza* (Rondani)) is a very common among the group of aphids which spread on agricultural crops in the region. Adults come out from wintering in April-May and lay eggs separated on the group of aphids. Pistils lay up to 90-100 eggs during their lives, worms hatch eggs and continue developing. They lay eggs to places with high moisture, because if the moisture is low, the worms do not develop. The worms are reddish-yellow in color, about 2.2-2.5 mm in size, and eat 70-80 aphids during



their lifetime. The development of the worms is completed and they go through a pupa phase in the soil. It has been found that they give 8-10 offspring during the growing season. Today the method of manipulating these insects in artificial way is created and it is effective using them in controlling aphids in greenhouses, so it is being studied in a broad way.

## CONCLUSION

In the conditions of Karakalpakstan agrobiocenosis, it has been proved that the representatives of the *Diptera* family are the main biocomponents of agrobiocenosis. It is necessary to study the main differences in the bioecology of species that cause damage to agricultural crops and prepare scientifically based conclusions.

It is necessary to fully determine the bioecology of the dominant species on the criteria of damage caused by spreading areas and to develop control measures.

It has been proved that the members of this family are required to scientifically substantiate the criteria for the reproduction of parasitic and predatory species in the agrobiocenosis, reducing the number of pest species. There is a need to accelerate research on the development of field distribution measures by manipulating some species in biolaboratories in artificial environments and nutrition.

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