



CONDUCTING ACTIONS ON CONTROLLING THE SPREAD OF QUARANTINE PEST TYPES IN THE AGROBIOCENOSIS OF KARAKALPAKSTAN

Toreniyazov E.Sh.¹, Davletov A.²

¹Doctor of Agricultural Sciences, Professor

²Individual Scientific Researcher

^{1,2}Karakalpakstan Institute of Agriculture and Agrotechnology, Nukus, Uzbekistan

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INTRODUCTION

Due to the fact that the Republic of Karakalpakstan is situated in the northern part of Uzbekistan, where the climate is sharp and the territory is extra-arid, changes of ecological factors in recent years, in the first place bringing into the decrease of the amount of plant types, yields of agricultural crops, which are being sown in the biotopes. As a result, rapid change of pest types of agricultural crops, which appear in biocenosis, was being observed. While the process of extinction of some types is appeared, there is an opportunity for rapid appearance of types, which did not exist in the past and coming into the ranks of the main pests. It is required to indicate these types of pests as inner and outer quarantine object and carrying out controlling actions in order to prevent them from spreading.

Although these types of pests are appearing in the region in recent years, it can be stated as an example potato moth, which is damaging potato and tomato moth, which is the main pest of potato.

Nowadays, it is an actual problem to create scientific basics of controlling actions which influence in maximum degree by defining biological peculiarities, developing dynamics, damaging degree in order to carry out effective controlling actions of the types which are spread in the agrobiocenosis.

USED WAYS AND METHODS

Morphological characteristics, bioecology of types of potato and tomato moths, which are appearing in the agrobiocenosis of Karakalpakstan, were determined with the help of B.P.Adashkevish's (1983) method, spreading areas, dynamics and conducting actions of control – Sh.T.Xujaev etc., (2004), degree of damage – V.I.Tanskiy (1988). Biological effectiveness of preparations was done with the help of the formula Abbot (Gar, 1963). Methodical ways of B.A.Dospekhov (1985) were used in doing mathematical and statistical analysis in conducting field and industry experiments.

RESULTS OF THE RESEARCH

As a result of observations carried out for creating actions of control vegetable and potato pests, which were being sown in the agrobiocenosis of Karakalpakstan, it was determined that in recent years tomato moth and potato moth are spreading and damaging. Both types of the pest were taken into account as the object of quarantine in the Republic, and controlling actions are being conducted. Although, these kinds of actions were conducted, spreading areas are widening and in recent years damaging degree is increasing.

Both types of the pest were studies as the objects of quarantine, and morphological characteristics of spread types, developing bioecology were taken into consideration.

From these, tomato moth (*Tuta absoluta*), which spread in the area, is included into the group of butterflies (*Lepidoptera*) family Gelechiidae, however, it is taken into account after 2015 in spreading areas as the main pest of tomato, controlling actions are being conducted mainly in the chemical method in last years.

The main morphological characteristics of the pest are body length of the butterfly is 5-7 mm, when they open wings – 8-10 mm, brown or silver, differs with the existing of silver-grey coins and black spots on front wings, it has moustaches like thread.

Eggs oval-cylindrical-shaped light-siliceous yellow or white-yellow, 0.36 mm, width 0.22 mm. When the larvae hatch, they are light yellow in color, the body is 0.5 mm long, the head is dark, at the age of 2-4 years it changes to a bright red or yellowish-green color, and at the last age it reaches to 8-9 mm. Fully nourished pests turn into pupae in silk in the soil. To date, in our references they overwinter in the mature, egg, pupae phases, the pistil lives 10–15 days, the paternity 6–7 days, laying more eggs on the leaves of tomatoes, the average on the stems and less on the fruit. The larvae hatch after 4-7 days from an average of 250-300 eggs laid by their pistils, live an average of 8 days and become pupae after 4 ages. Under favorable conditions, they reproduce generation 8-10 times a year, and the worms damage quickly by eating in the places where they hatch.



The second type of quarantine pest, which spread in the area, potato moth (*Phthorimaea operculella* Zell.) belongs to the group of butterflies (*Lepidoptera*) and the family of winged moths (*Gelechiidae*), and it was first defined in the potato fields and storage rooms in biotopes of Khorezm and Karakalpakstan in 2009 (Khodjaev, 2015; Turenliyazov, etc., 2018).

The adult of the potato moth can be distinguished from other species by the sign of a butterfly, which is white, ash-like, and gathered its wings to the shoulder when it is standing quiet. The front wing is 12-15 mm, decorated with dark and black stripes on the upper sides. The paternal wing is smaller than that of the pistil (2.0–2.5 mm), the length of the last member of the abdomen, covering 1/3 of the length of the abdomen, and the end of the abdomen covered with thick feathers. The color is yellow, gray, with gray-white markings on the underside. The paternal butterfly is easily differed from the pistil butterfly by two white or gray feathers at the end of the abdomen.

The eggs are oval, some are slightly concave on one side, 0.35-0.45 mm wide, 0.8 mm long, white when laid, the shell is flat, one side is reticulate. Over time, the color of the

egg changes into dark, and there is a characteristic sign that the worms are fully visible inside before they hatch. The larvae are 1.2 mm long, colorless or pale red, liver-shaped as they continue to eat, and can be distinguished from other species by their dark heads. At the adult age its length is 10-13 mm, width 1.5 mm, the color is yellowish-red or greenish-gray, the chest is dark, yellowish, the shields are very small and dark brown. When the worms are fully nourished, they fall into the waste or soil and become pupae inside the cocoon, which is woven from the outside. The cocoon is 10 mm long and 4 mm wide, with a silvery yellow color.

The pest overwinters in the phase of adult worms or pupae, it is active when the air temperature is in the range of +10°C to +36°C, reproduces 5-6 times during the growing season, one generation fully develops in 22-30 days, 2-4 months in winter. The pistil lays average 150-200 eggs in 6-19 days. The pest is a fast-growing creature in the open during the growing season, and at other times in storage rooms.

To determine the biological usefulness of pesticides against potato and tomato worms, preparations were used based on field methods (Table 1).

Table 1
Biological effectiveness of using chemical preparations in controlling tomato and potato moths
The Republic of Karakalpakstan, 2019-2021

Names of preparations	Amount, l/ha	Number before treating, number on 1 plant	Biological effectiveness,%		
			1	7	14
For controlling tomato moth on tomato					
Karate-zeon 5% k.s	0,2	2,5	62,1	77,6	90,7
Kinmaks 5% k.e.	0,2	2,9	60,7	82,8	93,9
Konphidor 20% k.e.	0,05	2,1	63,9	82,2	94,5
Sherpa 25% k.e.	0,16	1,6	64,5	84,5	96,4
Control(not treated)	-	1,8	-	-	-
For controlling potato moth on potato					
Karate-zeon 5% k.s	0,2	4,3	73,2	80,9	96,2
Kinmaks 5% k.e.	0,2	3,6	83,7	94,9	97,7
Konphidor 20% k.e.	0,05	3,1	65,3	82,3	94,7
Sherpa 25% k.e.	0,16	2,8	65,1	80,4	97,1
Control(not treated)	-	4,2	-	-	-

As a result, the biological effectiveness of the selected preparations for pests reached 60.7-83.7% on the first day after application, 77.6-94.9% on the 7th day and 96.54-97.7% on the 14th day, and it indicates that the method has excellent biological usefulness. As a result, a scientific basis has been created for the possibility of proposing the application of such a method in industry.

CONCLUSION

Among the quarantine pests considered in the agrobiocenosis of Karakalpakstan, the widespread development of tomato moth and potato moth was found to contain abiotic, biotic factors that are conducive to maximum damage. In order to prevent the spread of pests, it is necessary to destroy them with chemicals in the same way as in the winter and from the beginning of the growing season.

Extensive scientific research is required to determine the main bioecological developmental characteristics of the pest.

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