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SCIENTIFIC BASICS OF DEVELOPING BIOECOLOGY OF HARVEST-BUGS, ACTIONS FOR CONTROLLING PESTS IN THE CHANGE OF AGRO CLIMATE OF KARAKALPAKSTAN

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INTRODUCTION

L., lycopersicon esculentum Mill., brassica oleraceae L. var capital L., solanum melongena L., allium cepa L., daucus sativus (Hoffm) Roehl., caspicum annuum L., raphanus sat. var.ract. Pers., raphanus sativum L. types of cucurbits crops, melo orientalis (S.Kudr) Nab., citrulus vulgaris Sch., cucurbita pepo L. types of vegetables are sown in the agrobiocenosis of Karakalpakstan and by effectively using convenient micro climate conditions, which appear in biotopes, most pests of agricultural crops spread widely and damage. From these Agriotes meticulosus Cond., Agrotis segetum Den. et Schiff., Agrotis exclmationi L., Heliothis armigera Hb., Mamestra oleracea L., Phytometra gamma L., Liriomyza bryoniae., Thrips tabaci Land., Aphis gossypii Glov., Hyalopterus pruni geoffr., Trialeurodes vaporariorum Westw., Bemisia tabaci Genn., Tetranychus urticae Koch., Aculops licopersici Masee., Lygus pratensis L., Adelphocoris lineolatus Coeze., Myiopardalis pardalina Big. types were determined as the main pests in the conducted experiments, and controlling actions were made according to the results of scientific researches (Khodjaev, 2015; Toreniyazov and others., 2018; Yusupov, 2018; Eshmuratov, 2019; Aytimov, 2022).

When using the system of controlling, which was being carried out in biotopes of cucurbits and vegetable crops of agrobiocenosis, in controlling one of the main

pests - Tetranychus urticae Koch., Aculops licopersici Masee. according to spreading areas, degree of damage, its developing bioecology must be taken into account.

Therefore, in order to achieve results in controlling this type of harvest-bugs, which has differences comparing to other types on their morphobioecological peculiarities, making scientific basics of controlling actions by taking into consideration environmental factors and by defining developing dynamics and damaging degree is an actual problem of today.

Used ways and methods. Types, morphological features, bioecological development of harvest-bugs, which can be met in the agrobiocenosis, were determined by the method of B.P.Adashkevich (1983), conducting controlling actions by taking into account spreading areas, dynamics – Sh.T.Khujaev and others (2004), degree of damage – V.I.Tanskiy (1988). Biological effectiveness of used acaricides was defined with the help of Abbot formula (Gar, 1963). Methodological ways of B.A.Dospekhov (1985) were used for mathematical statistical analysis of field and industry experiments, results.

Results of the research: As a result of experiments which were carried out to define vegetable and cucurbits crops that are damaged by Tetranychus urticae Koch., Aculops licopersici Masee. types of harvest-bugs spread widely in the agrobiocenosis of



Karakalpakstan, it was obvious that there is a convenient stage of opportunities for the vegetation period and wintering of the pest. Adequacy of types of vegetables and cucurbits crops for the nourishment of pests was determined as a result of conducted observations (table 1).

Adult phase of the type *Tetranychus urticae* Koch. in agroclimate condition winters in the residues of plants, slits of soil and plants, stems of trees, and overwinter when the lowest temperature is 7.3 °C in spring. Active generations gather into plants, lay eggs under leaves and after pupa, pronimpha, deytomimpha phases adults of the next generation appear, continue developing. Depending on the environmental condition it reproduces 8-20 times, when the temperature is 26-33°C and the moisture is 55-60% it is considered as the comfortable condition, the pistil lives 30-40 days and it was defined that it lays up to 100-160 eggs. As can be seen, it was obvious that it highly damages vegetable and cucurbits crops which were sown in the agrobiocenosis.

Type *Aculops lycopersici* Masee. is from the family Eriophyidae, it is simple and not visible, its body is 135-160 mg, nimpha is 100 mg, small pest. It is differed from other types with the biological feature of

wintering on the surface of soil, among the grasses in the nimpha phase, apart from field in vegetation period, in winter it is spread in greenhouses and develops continuously. When the temperature is 25-30°C, moisture 40-50%, one generation fully develops in 7 days, gives 15-25 generations in a season, and controlling actions, which were being carried out as the recently spreading type in the republic, are considered to be lower than expected. It is required to conduct controlling actions by taking into account that the pest *Lycopersicon esculentum* Mill. damages highly and *Solanum melongena* L. less.

Therefore, high biological effectiveness is provided when chemical preparations, which are permitted to use in fields of crops, were applied in controlling (table 2). Results of the conducted experiments in this field proved that there is an opportunity of decreasing the number of harvest-bugs from 81.8-90.9 % to 95.2-97.7% by using chemical preparations in melon and tomato fields. Multiplication of the number of pests again at the end of the vegetation period in the fields, where acaricides were applied, was not taken into consideration. As a result, the harvest was fully saved and the economical effectiveness of conducted controlling actions was provided.

Table 1
Types of vegetable and cucurbits crops, which are damaged by harvest-bugs, in the agrobiocenosis of Karakalpakstan, damaging degree Chimbay, Kegeyli, Nukus regions, years 2019-2021

Harvest-bug types	Spreading plants	Damaging degree
<i>Tetranychus urticae</i> Koch.	<i>Cucumis sativus</i> L.	+++
	<i>Lycopersicon esculentum</i> Mill.	+
	<i>Solanum melongena</i> L.	++
	<i>Brassica oleraceae</i> L. var capital L.	+
	<i>Daucus sativus</i> (Hoffm) Roehl.	+++
	<i>Allium cepa</i> L.	+
	<i>Caspicum annuum</i> L.	++
	<i>Melo orientalis</i> (S.Kudr) Nab.)	+++
	<i>Citrus vulgaris</i> Sch.	+++
	<i>Cucurbita pepo</i> L.	+++
<i>Aculops lycopersici</i> Masee.	<i>Lycopersicon esculentum</i> Mill.	+++
	<i>Solanum melongena</i> L.	+

Note: +-little,++-average,+++damages highly



Table 2

**Biological effectiveness when acaricides were used in controlling harvest-bugs in tomato and melon
 The Republic of Karakalpakstan, years 2019-2021**

Names of preparations	Amount, l/ha	The number before application, pieces in 1 leaf	Biological effectiveness, %		
			1	7	14
To control <i>Tetranychus urticae</i> Koch.					
Vertimek 1,8 % k.e.	0,4	36,7	84,4	93,6	97,7
Karate-zeon 5% k.s	0,4	42,3	87,4	92,7	97,1
Uzmait 30 % a.p.	3,0	41,8	81,8	90,0	95,2
Fufanon, 57 % k.e.	1,2	39,6	84,4	92,2	96,6
Agrophos, 55 % k.e.	1,5	38,3	90,9	94,5	97,4
Nurell-D,55 % k.e.	1,5	42,8	87,8	94,7	96,0
Control(not applied)	-	37,5	38,9	51,3	64,2
To control <i>Aculops lycopersici</i> Masee.					
Vertimek 1,8 % k.e.	0,4	23,7	85,1	91,4	93,5
Karate-zeon 5% k.s	0,4	24,4	83,5	86,7	92,4
Uzmait 30 % a.p.	3,0	22,9	75,6	81,8	87,4
Fufanon, 57 % k.e.	1,2	23,1	86,8	89,7	94,1
Agrophos, 55 % k.e.	1,5	22,5	88,7	93,2	96,1
Nurell-D,55 % k.e.	1,5	24,1	82,9	90,1	93,6
Control(not applied)	-	23,6	24,1	27,8	29,4

Note: The number of harvest-bugs, on one leaf, piece

CONCLUSION

Harvest-bug types *Tetranychus urticae* Koch., *Aculops lycopersici* Masee. are dominant among the harvest-bugs, which develop in biotopes of vegetables and cucurbits crops in the agrobiocenosis of Karakalpakstan, according to their spreading areas, damaging degree, and they are considered to damage crops in the region highly. The number of pests in melon and tomato fields, where they spread and damage highly, average on one leaf is from 22,9-24,4 to 36,8-42,8, when optimal acaricides were used in the experiments it was expedient to destroy 81,8-90,9 % of pests in a day, and 95,2-97,7 % after 14 days. As a result, damaging degree of pests was demolished, effectiveness of controlling actions which save the harvest was indicated. When controlling actions of harvest-bugs were used in industrial fields economical effectiveness of biological efficiency was provided.

LIST OF USED LITERATURE

1. Adashkevich B.P. "Biological protection of cucurbits crops from harmful pests". –Tashkent: «FAN», 1983. –p. 180-188.
2. Aytimov I. *The scientific basis of measures for pest control in the forests of Karakalpak agrobiocenosis, /Dissertation abstract of doctor of agricultural sciences (PhD), 06.01.09 – Plant protection, Tashkent:-2022. -p. 42.*
3. Gar K.A. *Testing the effectiveness of insecticides in natural and field conditions. – M., 1963. – p. 14-92.*
4. Dospekhov B.A. *Methodology of field experiment. - M.: Kolos, 1985.-p. 351*
5. Eshmuratov E.G. *Creating the system of protection from sucking pests of vegetable crops in the condition of Karakalpakstan / Dissertation abstract of doctor of agricultural sciences (PhD), 06.01.09 – Plant protection, Tashkent: -2019.-p. 42.*
6. Tanskiy V.I. *Biological basis of damage of pest. - M.: «Agropromizdat», 1988. –p.182-198.*
7. Torenliyazov E.Sh., Khodjaev Sh.T., Kholmurodov E.A. *Plant protection /Manual. –Tashkent: «Navruz», 2018. –p. 278-381.*



8. *Khodjaev Sh.T. // Modern ways and devices of protecting plants from pests. "Navruz" publishing house -2015.-p. 552.* *doctor of agricultural sciences (PhD), 06.01.09 – Plant protection, Tashkent: -2018.-p. 41.*
9. *Yusupov R. Biology, damage of melon fly and creating controlling actions / Dissertation abstract of*