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DEVELOPMENT DYNAMICS OF PESTS IN THE ALFALFA BIOTOPE, MEASURES TO CONTROL THE DOMINANT SPECIES

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ANNOTATION

As a result of research, it was observed that phytonutrients, alfalfa saplings, alfalfa sap, alfalfa seeds, along with rodents and locusts, which are specialized in alfalfa fields, cause great damage to plants. The distribution areas of these pests during the growing season, the dynamics of development, the degree of damage were studied and control measures were developed.

KEYWORDS. *Alfalfa plant, vegetation period, agrobiocenosis, environmental conditions, pest, yield, dominant species, phytonomus, control measures.*

INTRODUCTION

The territory of the Republic of Karakalpakstan is located in the northern part of Uzbekistan in the harsh agro-climatic conditions, and alfalfa has been cultivated for many years as an agricultural crop in the agrobiocenosis. According to the biology of alfalfa, it is a perennial crop that is sown mainly from seed in March, sprouts from April, and grows rapidly until the end of the growing season.

In order to accelerate the growth process in the spring, the seedlings are sown in the fall and germinate in the winter, and when the air temperature is from +1... + 2°C it begins to grow. While the above-ground section is a high-grade fodder for livestock, the root system accumulates biological nitrogen in the soil and increases its productivity. In addition, due to the rapid growth of the plant, it is a biocenosis, which has the ability to accumulate many biological species in the biotope during the growing season.

Therefore, it was known that the role of insects, mites, microorganisms and other plants (harmful weeds) that directly affect the plant from the biocenosis fields that occur in the alfalfa biotope is high.

The role of insects of these species is important, and while the living conditions of many of them are necessary for the growth and development of alfalfa, those that feed on other plants are affected by their harmful properties.

Some of these pests feed from the time the alfalfa seedlings sprout until the end of the growing season, adversely affecting the aboveground part, while others damage the generative bodies.

Therefore, it is necessary to carry out control measures by studying the types of these pests, their developmental biocology, level of damage, their spreading areas and dynamics.



Methods of the experiment. The types, developmental bioecology, dynamics of pests spread in the alfalfa biotope were determined with the help of the methods of B.P.Adashkevich (1983); Sh.T.Khujaev and others (2004); the degree of damage was determined using the methods of V.I.Tansky (1988). The method of conducting actions of control, determining the biological effectiveness of pest control measures was determined using the formula of Sh.T.Khujaev and others (2004), Abbot (Gar, 1963). The experiments were carried out using the method of B.A.Dospekhov (1986).

Results of the research. The results of research on the identification of pests that cause widespread damage in the biotope of alfalfa, the organization of measures to control them, mainly provide information on the alfalfa weevil, lucerne bug and alfalfa seed chalcid (Xujaev, 2010; 2015; Shamuratova, 2010; Toreniyazov et al., 2018).

As a result of research and monitoring conducted in 2016-2021, alfalfa weevil, lucerne bug, aphid, alfalfa seed chalcid, as well as rodent turnip moths and locusts, which adapted to alfalfa field, are considered to be the most common pests in there. The study of the dynamics of the habitats of these pests during the growing season provided data of theoretical significance for science.

The data obtained from the study of the development dynamics of the dominant species in terms of the degree of damage to alfalfa fields in recent years are given in Table 1.

As can be seen, the alfalfa weevil, which is the main pest of alfalfa, appeared from the third decade of March, and the number of worms reached its maximum in the second and third decade of April.

Of the species of rodent turnip moths that appeared in the alfalfa field, the eggs of the autumn turnip moth were found in the third decade of April, while the worms that fed on the plants in May were taken into account. From the beginning of May to the end of the growing season, the development of lucerne and plant bug generations was taken into account.

Among the species of pests spread in the alfalfa field, the dynamics of development of lucerne and plant bugs was slightly more active than others. Chemical control measures were carried out, taking into account the alfalfa weevil level of damage caused by the pest species and the fact that the worms can feed openly in the third decade of April (Table 2).

As can be seen, the biological effectiveness of the chemicals used in controlling alfalfa weevil in alfalfa fields has been proven to be high.

In the days following the use of the preparations, the biological effectiveness was 82.5-98.2%, and 14 days later, 92.5-98.2% of pests in the field were eliminated.

In addition to alfalfa weevil in the field, the development and damage of other pests has been stopped when treated with chemicals as expected.



Table 1
Dynamics of pests, which develop in alfalfa field
(Chimbay, Kegeyli, Nukus regions, years 2016-2020)

types	March			April			May			June			July			August			September		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
Turnip moth (<i>Agrotis segetum</i> Den. et Schif.)	-	-	-	-	1,0	1,4	2,6	5,0	4,2	0,2	0,1	-	-	-	-	-	-	-	-	-	-
Italian locust (<i>Calliptamus italicus</i> L.)	-	-	-	-	-	-	-	1,4	2,2	3,1	4,2	4,5	2,1	-	-	-	-	-	-	-	-
Alfalfa weevil (<i>Phytonomus variabilis</i> Hbst.)	-	-	-	0,2	0,4	1,3	2,6	13,5	24,5	9,2	-	-	-	-	-	-	-	-	-	-	-
Lucerne bug (<i>Adelphocoris lineolatus</i> Coeze.)	-	-	-	-	0,2	0,6	1,3	1,8	2,4	2,4	2,5	3,5	4,4	4,8	5,3	6,4	8,6	4,2	3,1	1,2	0,6
Plant bug (<i>Lygus pratensis</i> L.)	-	-	-	-	-	0,2	0,4	0,6	1,3	1,8	2,1	2,8	3,1	3,2	3,6	2,4	1,9	0,6	0,8	0,9	1,0
Alfalfa seed chalcid (<i>Bruchophagus roddi</i> Guss.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,1	0,6	0,3	0,4	0,2	2,4	-
Lawn bug (<i>Sitona cylindricollis</i> F.)	-	-	-	0,1	0,3	0,5	0,6	0,9	1,3	1,4	1,6	-	-	-	-	-	-	-	-	-	-
Bean aphid (<i>Aphis medicaginis</i> Koch.)	-	-	-	-	0,4	1,3	5,8	14,3	12,5	10,6	10,2	8,8	4,2	-	-	-	-	-	-	-	-

Table 2
Biological effectiveness of chemical preparations used in controlling alfalfa weevil
(Nukus region, 2020.)

Preparations	Used amount	The number before applying	Biological effectiveness, %		
			1	7	14
Karate 5% em.k.	0,10	18,5	82,5	89,6	92,5
Karate 5% em.k.	0,15	19,1	91,3	94,5	96,8
Phuphanon 57 % em.k.	0,2	16,6	89,3	92,5	95,6
Phuphanon 57 % em.k.	0,6	18,3	90,3	93,5	98,2
Phelkill 20 % em.k.	0,6	20,2	88,3	94,6	96,3
Benzofosfat 30 % n.nuk.	3,2	17,6	93,2	95,1	97,4
Cipermetrin 25 % em.k. (etalon)	0,24	19,5	86,3	91,8	94,5
Control (without application)	-	17,8	18,1	20,3	21,9

Note: In control the number of pests in days after application, piece.

CONCLUSION

In the alfalfa biotope of the Karakalpak agrobiocenosis, in addition to plant-adapted pests, many species of agricultural pests have been identified. Along with alfalfa weevils, which are dominant in terms of damage, spreading areas, are required to account for the occurrence and damage of autumn turnip moth in the field. When chemical preparations are used for alfalfa weevil as the main pest of alfalfa in the area and 97.4-98.2% are destroyed, the effect of the method can adversely affect other pests, and it is proven that the dynamics, the degree of damage can be minimized.

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