ACADEMICIA
An International Multidisciplinary Research Journal
(Double Blind Refereed & Peer Reviewed Journal)

DOI: 10.5958/2249-7137.2021.00579.6

PROSPECTIVE METHODS OF USING ENTOMOPHAGES IN THE PROTECTION OF VEGETABLE CROPS FROM APHIDS IN KARAKALPAKSTAN

Utepbergenov Adilbay Reymbaevich*; Satbaeva Rimma Sarsenbaevna; Joldasbaev Edilbay Markhabaevich*****

*Associate Professor,
Candidate of Agricultural Sciences,
Nukus branch of Tashkent State Agrarian University,
UZBEKISTAN

**Doctoral Student of Nukus Branch (PhD),
Tashkent State Agrarian University,
UZBEKISTAN

***1st year Master Degree Student
Nukus branch of Tashkent State Agrarian University,
UZBEKISTAN

ABSTRACT

The article presents the types of aphids that develop in and damage vegetable and melon crops in Karakalpakstan, the type of crop that each species develops in, the period of coming to the field, the damage and the criteria for economic damage. The biological efficacy was determined after application of natural predators, vermins, and laboratory-bred golden eyed entomophagous in the control of aphids, and the technology of application of this predator was studied.

KEYWORDS: *Sucker, Pest, Entomophagous, Predator, Vermin, Biolaboratory, Biological Efficiency, Economic Damage Criterion, Migration.*

INTRODUCTION

The importance of vegetables and melons grown by our farmers in providing the population with vegetable and melon products is very high.

At present, food security and ecologically clean production remain a pressing issue in the world. Therefore, we must pay attention to the modernization and diversification of our economy, including the agricultural sector, especially the cultivation of food crops. Over the next four years, 300,000 hectares of low-yielding cotton and grain fields will be replaced by fruit and vegetable and other food crops, including 32,000 hectares of intensive orchards, 15,000 hectares of vineyards, 2,000 hectares of modern greenhouses, and 114,000 hectares of vegetables and potatoes, legumes and oilseeds on 72,000 hectares, and other crops on 52,000 hectares.

At present, farms of the Republic plant vegetables and melons on 15-20 thousand hectares, of which 30-40 centners are harvested. This is 2.5-3 times less than expected.

According to medical data, for the normal development of the human body during the year, the population of the Republic is recommended to receive 113.0 kg of vegetables and 50.4 kg of melons, an average of 81.7 kg. This equates to an average of 44.4 kg per person today. One of the main reasons for this is the low level of reclamation of arable lands, the increase in soil salinity, as well as the damage of pests, pathogens and weeds that develop in agricultural crops. Therefore, increasing the productivity of agricultural vegetables and melons requires improvement of soil reclamation, soil salinization and the development of promising methods to control plant pests.

According to the scientific data of the well-known scientist of Uzbekistan entomologist Sh.T.Khojaev [3] melon aphid (Aphis gossypii Glov.) highly damages melons, cucumbers, tomatoes; cabbage aphid (Brevicoryne brassicae L.) damages cabbage plant. According to the results of scientific research conducted by scientists of the Republic, 30-40% of vegetable and melon crops become unusable every year, despite the use of high agro-techniques in agricultural crops and measures to control plant pests [1; 2].

In solving the above problems, filling the population's table with ecologically clean vegetables and melons without destroying the crop, taking into account the specific environmental factors of the region and the peculiarities of bioecological development of pests, the types of methods of pest control, their application technology are fully studied, and the method is required to ensure a biological efficiency of more than 98%.

In order to identify the types of aphids that grow in vegetable and melon crops in Karakalpakstan in 2018-2020, in the fields of Chimbay, Kegeyli and Nukus districts controlling works were carried out every 10 days at the stations of melon, cucumber, tomato and cabbage crops. As a result of control works, the development of melon and acacia aphid in melons and cucumbers, large cotton aphid in tomatoes and cabbage aphid in cabbage was determined. The average density of aphid of melon (Aphis gossypii Glov.) and acacia (Aphis craccivora Koch.) was found to be 22 to 185 pieces per 1 damaged plant, and 85 to 345 pieces of cabbage aphid (Brevicoryne brassicae L.) per 1 plant. But the number of large cotton aphid (Acyrthosiphon gossypii Mordv.) in tomatoes was very few. That is, the number in 1 plant did not exceed 4-5.

In our experiment, the species of natural predators and verminsfound in the group of vermins were identified and their density in the field was studied. As a result, in all species of aphids were found 2, 7 and 14-point species of beetle ladybird, larvae of the sirfid fly, golden eyed larvae, the number of which averaged 0.5-2.5 per 1 damaged plant.

Parasitic aphidids were found in large colonies of acacia aphid in the licorice plant on the edges of vegetable and melon crops. They were seen biting adult individuals of aphids, laying their eggs on them and infecting aphids.

In our experiment, the dynamics of the development of aphids in cucumbers and cabbage was studied. That is, in entomological small gardens, 2 pieces per 1 plant in the 1st variant; in the 2nd variant, 6 aphids and in the 3rd variant, 10 aphids were distributed, covered with a cloth entomological material, and the development and reproduction of aphids were monitored for 20 days. Due to the absence of natural entomophagous in entomological small gardens, the number of aphids increased very rapidly, and after 20 days the number of aphids increased to 40 in variant 1, 65 in variant 2, and 114 in variant 3.

During our experiment, the economic damage caused by aphid in the developmental stages of the cucumber plant was studied. In entomological small gardens, 10 melon aphids were distributed to 1 plant in small gardensduring the 3–4 leaf period of the plant, growing, flowering and fruiting periods. As a result, no crop was harvested from the 3-4 leaf period. 4.2 kg of cucumbers were taken under control. The yield was 2.2 kg during the growing period, 3.1 kg during the flowering period and 4.1 kg during the fruiting period.

This means that when the pest falls during the young germination period of the plant, 100 percent of the crop is lost. 50% was not harvested during the growing period, 25% during the flowering period and 4% during the fruiting period.

In order to reduce the damage of melon aphid in the cucumber crop, an additional golden eyed predator was applied to natural entomophagous and its biological effectiveness was determined (Table 1).

TABLE 1 BIOLOGICAL EFFICACY OF GOLDEN EYED PREDATOR AGAINST MELON APHID IN CUCUMBER (IN ENTOMOLOGICAL SMALL GARDEN)

№	Variants	Average number of pests per 1 damaged plant, piece				Biological efficiency, %, in days		
		Numbers till using golden eyed	Numbers after using golden eyed					
			3	7	14	3	7	14
1	Control	162	184	260	380	-	-	-
2	5:1	205	106	84	30	31,8	59,1	83,4
3	10:1	212	152	106	58	38,4	50,0	72,7
4	15:1	186	152	140	85	38,3	46,8	64,4
5	20:1	198	168	152	106	35,2	42,6	53,5

As can be seen from the table, in the unused variant of golden eyed, the number of aphids increased from 184 to 380, and the plant was not harvested. When applied in the 2nd variant at a score of 5: 1 (5 aphids: 1 entomophagous), the biological efficiency was achieved after 14 days by 83.4%, and in subsequent variants by 72.7, 64.4 and 53.5%.

CONCLUSION

1. Melon and acacia aphid develops in vegetable and melon crops, causing great damage to the plant.

2. The average number of melon aphid is 192.6 pieces in average 1 damaged cucumber plant during the vegetation period.

3. In plants with melon aphid, from natural entomophagous ladybird beetles, sirfid fly larvae, golden eyed larvae and parasitic aphidids are found. Their average number in 1 damaged plant was 0.5-2.5 pieces.

4. In entomological small gardens, when 2, 4 and 6 pieces of aphid were distributed to 1 plant, after 20 days their number increased to 40, 65 and 114 pieces according to the variants.

5. In entomological small gardens on the developmental stages of the plant, when 10 aphids were sent to 1 plant, no crop was harvested from the 3-4 leaf period. 4.2 kg of cucumbers were taken under control. The yield was 2.2 kg during the growing period, 3.1 kg during the flowering period and 4.1 kg during the fruiting period.

6. The use of golden eyed larvae in a 5: 1 ratio against aphids in cucumber crops reduced aphids damage and achieved a biological efficiency of 83.4%.

LIST OF USED LITERATURE:

1. Toreniyazov E.Sh. Pest species in Karakalpakstan, control system // Nukus branch of TSAU, materials of scientific-practical conference.- Nukus: Miraziz Nukus, 2013.-P.51-52.

2. Toreniyazov E.Sh. The main pests of vegetable and melon crops, the dynamics of development and damage // Nukus branch of TSAU, materials of the scientific-practical conference.- Nukus: KSU, 2014.-P.74-76.

3. Khojaev Sh.T. Modern methods and means of combined protection of plants from pests.- Tashkent: Navhóz, 2015.-P.110-116.