



Research Article

ADVENTIVE TYPE – POTATO MOTH AND METHODS OF FIGHTING IT

Submission Date: August 15, 2022, **Accepted Date:** August 25, 2022,

Published Date: August 30, 2022 |

Crossref doi: <https://doi.org/10.37547/tajabe/Volume04Issue08-03>

Journal Website:
<https://theamericanjournals.com/index.php/tajabe>

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ABSTRACT

Based on the climatic conditions of our region, harvesting the potato before the development of the potato layer stops (before the layer dries up), removing the potato layer and infected tubers from the field without leaving a place for the pest to overwinter in the field. In the system of combating this insect, it is necessary to pay great attention to the storage of potatoes in conditions of low temperature (3-5°), under such conditions, the potato moth stops developing and dies. For pest destruction on vegetable tops are recommended insecticides with active substances: cypermethrin+chlorpyrifos, Lyambdatsigalotrin+thiamet-hoxam, and Deltamethrin.

KEYWORDS

Potato, pest, potato moth, insecticide, biological efficiency, worm, spread, damage, development.

INTRODUCTION

Potato growing is one of the important sectors in the agriculture of our Republic. In recent years, our

government has paid great attention to providing the population with high-quality and affordable food

products. In the development of this field, it requires a scientific approach to determine the prospects at the level of the requirements of the market economy, as well as to produce quality products. Today, potatoes are the most widely used food after bread. In our republic, potatoes were planted on 40,000 hectares in 1991 and the average yield was 87.7 t/ha. In 2014, potatoes were planted on 78,300 hectares. In the climatic conditions of our republic, potatoes are planted and harvested twice a year.

The potato plant is damaged by a number of specific harmful organisms, and if chemical control measures are not taken against them, the yield of potatoes will decrease sharply. That's why the timely implementation of pest, disease and weed control measures is one of the important conditions for obtaining a higher and better quality harvest than potatoes, as well as other crops.

One of the pests that causes great damage to the yield in a number of regions where potatoes are grown in our republic is the potato moth, a dangerous quarantine insect.

This pest was detected in Shavat district of Khorezm region in 2009 [2,7]. To date, it has been found that it has spread to the Republic of Karakalpakstan, Samarkand, Surkhandarya and Tashkent regions.

Potato moth – *Phthorimaea operculella* Zell. Belongs to the family of notched-winged moths (Gelechiidae)

of the butterfly family and is considered a dangerous pest that causes great damage to potato, tomato, eggplant, tobacco and other plants belonging to the family of itusums.

The butterfly of the potato moth is small, light gray in color. At rest, the wings are folded over the shoulder, and when spread, the wings are about 12-15 mm [1.5], the male is 2-2.5 mm smaller than the female. The wings have dark stripes and black spots.

Eggs are oval-shaped, 0.35-0.45 mm wide, 0.8 mm long. The worm gnaws through the egg and makes a hole to get out of the egg.

The hatched larva is 1.2 mm long, colorless or light reddish in color, with a black head. Mature worms are 10-13 mm long, 1.5 mm wide, yellowish-red or greenish-gray in color, with a brown or black head. The worms feed on the leaves, stems and tubers of potatoes. Worms are mostly wrapped in a thin cocoon and attached to the leaves, inside the stem and in the lumps in the soil. The potato moth butterfly lays up to 150-300 eggs after living for 6-19 days [4,5,6,7].

The potato moth damages up to 60-70% of potatoes in the field, and up to 80-100% of potatoes in storage [2,5,6].

Place and technique of researches. Research has been ongoing since 2009 in the farms of Shavot district of the Khorezm region and in the laboratory of the

Khorezm base station of the Plant Protection Institute of Uzbekistan. Methods accepted in entomology were used in the work (Methods for Conducting Field Experiments, 2007; and Methodological Guidelines, 2004) [3].

RESULTS OF EXPERIMENTS AND THEIR DISCUSSION.

Directional observations were conducted in 2017-2019 to study the distribution and damage level of potato moth in the districts of Khorezm region. It was found that the potato moth is present in 414 hectares of the observed area, and the damage level of potato plants and tubers is 8.5-69.9%.

Our republic requires the development of measures to combat the potato moth in climatic conditions.

We followed the phenological development of the potato moth in this area in 2017 and 2019 and developed a system of combating potatoes growing in the field with chemical protection agents. Considering the practical impossibility of killing worms that have entered the stem, we found it appropriate to use effective insecticides using motorized hand sprayers or OVX-28 tractor sprayers 3-4 times a season during the butterfly flight period. The following can be included among such chemical drugs: Enjoksam, 24.7% sus.k. –

0.2 l/ha, Nurinol, 55% em.k. – 1.0 l/ha, Emaben, 5% s.e.g. – 0.2 kg/ha, Detsis, 2.5% em.k. – 0.5 l/ha, Imidagold, 35% sus.k. – 0.2 l/ha, Pulsar, 5% em.k. - 0.4 l/ha. In Dildora Nafis f/x, we tested each 1 insecticide on 0.1 hectare of land planted with evening potatoes using a motorized hand device. In this,

Each time the calculation was made, the presence and density of the pest butterfly in the field was studied (with the help of a brush), at the same time, it was determined what percentage of the potato layer growing in the field was damaged by moths (Table 1).

As can be seen from the results in the table, all tested insecticides and insecticide-acaricides are highly effective against potato moth butterflies. The 3 chemical treatments we carried out during the season did not significantly damage the potato pods; did not affect productivity. Our control during harvesting showed that not a single damaged potato tuber was detected from the field where we carried out protective treatments. Among the crops harvested from the control (unprotected) field, 1 out of 30-40 fruits was infected (2.5-3%). Potatoes are also less damaged because they are harvested before the development of the pods stops (before the pods dry out) [1].

Table 1

Potato moth against the effectiveness of the chemical treatment carried out 3 times

Field experience, Tashkent vil., Zangiota t., Dildora Nafis f/x.

Hand sprayer, 250 l/ha, 29.VIII. 10. IX. 24. IX. 2017-2019.

| Options | Active substances | Consumption rate of drug, l(kg)/ha | Efficiency, % days after treatment: | | | | | | | | | |
|--------------------------|----------------------------------|------------------------------------|-------------------------------------|------|------|-----|------|--|------|------|------|--|
| | | | Against butterflies | | | | | Plant damage decrease compared to control, % to days after last treatment: | | | | |
| | | | 1 | 5 | 9 | 16 | 23 | 1 | 3 | 7 | 11 | |
| Enjoksam 24.7% sus.k. | Lambdacyhalothrin + thiamethoxam | 0.2 | 100 | 88.9 | 89.4 | 100 | 99.0 | 90.4 | 97.8 | 95.6 | 94.5 | |
| Nurinol, 55% em.k. | Cypermethrin + chlorpyrifos | 1.0 | 100 | 87.2 | 81.6 | 100 | 98.3 | 92.1 | 96.5 | 95.5 | 94.3 | |
| Emaben, 5% s.e.g. | Emamectin benzonate | 0.2 | 100 | 87.2 | 87.7 | 100 | 93.0 | 92.1 | 96.5 | 94 | 92.9 | |
| Imidagold, 35% cuc.k. | Imidocloprid | 0.2 | 100 | 88.9 | 89.4 | 100 | 99.0 | 90.4 | 97.8 | 95.6 | 94.5 | |
| Detsis, 2.5% em.k. | Deltamethrin | 0.5 | 100 | 89.9 | 90.3 | 100 | 95.2 | 90.3 | 95.5 | 94.1 | 93 | |
| Pulsar, 5% em.c. | Lambdacyhalothrin | 0.4 | 100 | 89.9 | 90.3 | 100 | 95.4 | 90.3 | 95.5 | 94.1 | 93 | |
| Control (no drug) | - | - | - | - | - | - | - | - | - | - | - | |

Khorezm oasis is located in the north of our republic, its climate and soil conditions are very different from

other regions. Taking into account that the arrival of spring is 20-25 days later than in other regions, and

autumn is 20-25 days earlier, potatoes planted late are usually planted on May 5-15.

Studies were conducted to study the effect of potato moth on productivity in Khorezm region. Chemical control against potato moth was carried out 3 times during the season in potato fields planted in Bogu-Boston k/k in the evening period on May 3-5. In this: Nurinol, 55% em.k. – 1.0 l/ha, Enjoksam, 24.7% sus.k. – 0.2 l/ha, Detsis, 2.5% em.k. - used in the amount of 0.5 l/ha. The potato crop was harvested on September 20-25,

the potato layer was 60-70% dry. In this case, in the chemically treated areas, compared to the control, 108-119 ts/ha more yield was obtained and it was divided by quality varieties (Table 2).

The potato moth has appeared in our republic and is causing great damage to potato growing, methods and means of combating it are being created. Based on our research and observations to date, we can conclude by emphasizing the following.

Table 2
Potato moth of insectocides used against effect on potato yield and economic efficiency

Khorezm village. Shavot t., Bogu-Bo'ston k/k. 20-25. IX. 2017-2019

| Options | Consumption rate of drugs, l/ha | Average yield from 1 bush | | Yield, ts/ha | Including by quality varieties, * | | | | | |
|-------------------------|---------------------------------|---------------------------|-------|--------------|-----------------------------------|------|--------|-----|--------|------|
| | | piece | Gr | | I | | II | | III | |
| | | | | | piec e | % | piec e | % | piec e | % |
| Nurinol, 55% em.c. | 1.0 | 7.3 | 382.4 | 280 | 6.6 | 90.4 | 0.5 | 6.9 | 0.2 | 2.7 |
| If I don't 24.7% sus.k. | 0.2 | 6.9 | 372.9 | 274 | 6.3 | 91.3 | 0.5 | 7.3 | 0.1 | 1.4 |
| Detsis, 2.5% em.c. | 0.5 | 7.1 | 367.0 | 269 | 6.2 | 87.3 | 0.7 | 9.9 | 0.2 | 2.8 |
| Control (no drug) | - | 6.8 | 219.3 | 161 | 1.5 | 22.1 | 1.7 | 25 | 3.6 | 52.9 |

* Note: I-Good quality (good for storage and consumption), II-Average quality (not good for storage, good for consumption), III-Bad quality (good for storage and good for consumption).

CONCLUSION

1. From the organizational measures, scientifically based crop rotation in cultivated fields, with the

aim of increasing soil fertility and productivity, and reducing the stock of various pests, diseases and weeds.



2. Based on the climatic conditions of our region, harvesting of the potato layer before it stops developing (before the layer dries up), removing the potato layer and infected tubers from the field without leaving a place for the pest to overwinter in the field. In the system of combating this insect, it is necessary to pay great attention to the storage of potatoes in conditions of low temperature (3-5°), under such conditions, the potato moth stops developing and dies.
3. Potatoes intended for seed can be treated up to 95% if they are "bathed" in a solution of microbiological drug - lepidocide 1% or decisis 0.1% in water in autumn, dried and then stored.
4. If moth butterflies and caterpillars appear in the potato field, one of the following insecticides can be used successfully, taking into account other pests: Nurinol, 55% em.k. – 1.0 l/ha, Enjoksam, 24.7% sus.k. – 0.2 l/ha, Emaben, 5% s.e.g. – 0.2 kg/ha, Detsis, 2.5% em.k. – 0.5 l/ha, lmidagold, 35% sus.k. – 0.2 l/ha, Pulsar, 5% em.k. - 0.4 l/ha.
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