

PREDICTING THE DEVELOPMENT OF THE APPLE BORER (CARPOCAPSA POMONELLA) IN SEED-BEARING TREES AND IMPROVING CONTROL MEASURES

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Abstract. In this article, the scientific basis for increasing the productivity of apples in orchards, reducing the costs of their cultivation, and reducing the amount of damage caused by pests and diseases was explained. In addition, the bioecological characteristics of the development of the main pests of apples were studied, and with the help of ways and methods of monitoring them, cypermethrin 25% em.c. When applied at 0.3 l/ha, damage to fruits is 17%, biological efficiency is 81.8%, and in the third option Endjeo is 24.7% sus.k. When 0.2 l/ha chemical substance was used, the damage of fruits was 9%, and the biological efficiency was 86.5%.

Keywords: apple fruit borer, sap, *Carpocapsa pomonella* eggs, worm, damage, generation, genus, pest, Avaunt, Entovant, chemical control, biological efficiency, economic efficiency.

ПРОГНОЗ РАЗВИТИЯ ЯБЛОЧНОГО БУРАЧА (CARPOCAPSA POMONELLA) НА СЕМЕННЫХ ДЕРЕВЬЯХ И СОВЕРШЕНСТВОВАНИЕ МЕР БОРЬБЫ С НИМ

Аннотация. В данной статье изложены научные основы повышения урожайности яблонь в садах, снижения затрат на их выращивание, уменьшения размера вреда, наносимого вредителями и болезнями. Кроме того, изучены биоэкологические особенности развития основных вредителей яблони, а с помощью способов и методов контроля за ними циперметрин 25% эм.ц. При внесении в дозе 0,3 л/га повреждаемость плодов составляет 17 %, биологическая эффективность - 81,8 %, а в третьем варианте Энджео - 24,7 % сус.к. При внесении 0,2 л/га химвещества повреждаемость плодов составила 9 %, а биологическая эффективность – 86,5 %.

Ключевые слова: яблоневый плодожорка, сок, яйца *Carpocapsa pomonella*, червь, повреждение, поколение, род, вредитель, Avaunt, Entovant, химическая борьба, биологическая эффективность, экономическая эффективность.

INTRODUCTION

Our government has made it an urgent task to "expand orchard plantations and repair old ones, and increase their productivity." Now, it is necessary to carry out in-depth scientific and research work on the above problems and develop a set of environmentally safe and effective measures to combat these pests. Specifies the output.

Many decisions and organizational issues have been resolved by the government of the Republic of Uzbekistan for the development of fruit and vegetable production at the level of demand. Joint-stock farms specializing in fruit and vegetable growing were terminated and farms were established. In 2009, the total area of vegetable crops reached 184.6 thousand hectares and 5709 thousand tons of vegetable products were produced. Productivity reached 309 s/.

In his research, he found out that sugar, vitamin C, polyphenol and other parameters of fruits of 6 varieties of orchards differed by more sugar and vitamin C in summer varieties, and lower level of acidity [6; 4].

In the literature, a full description of the apple fruit borer (*Carpocapsa pomonella*) is given, and measures to combat the pest have been developed.

The apple borer (*Carpocapsa pomonella*) is a common pest and one of the main pests of seed bearing fruit trees, especially apples. In more than half of the apple harvest, the fruits often rot and cannot be saved, in spring, during the budding period of apples, when the temperature exceeds +9, the buds begin to develop, their development takes eight to ten days in the conditions of the valley, mountain and 15 days or more in foothill gardens. In their research, fruit-eating butterflies begin to appear in the valley regions during the period of apple blossoming, Renet Simirenko varieties fly to the cover during the apple blossom period, and the flight period of butterflies and moths lasts for one month [1 ;4;3].

MATERIALS AND METHODS

The research was conducted using the accepted methods of plant protection. It was done with the help of V. V. Yakhontov's phenocalendar methods and the methods of a number of scientists Bey-Biyenko, G. Ya. Bondarenko, N. V. Glushchenko. Spread of pathogenic fungi M.K. Khokhryakov, A.YA Semyonova, L.P. Abramova methods were used. In determining the biological efficiency, Abbot's formula was used, dispersion analysis of the obtained results was carried out using the method of B. Dospekhov (*Metodika polevogo opyta*). A.F. Chenkin's method was used to determine the economic effectiveness of chemical control against apple pests and diseases [5;6].

Field experiments 2021-2022 The experiment was carried out in the conditions of the intensive garden of the information advisory center (*Extetion sentir*) DUK under AQXAI. In the Aydared, Golden deleshest and Semerenko varieties of apples, preparations of the tune to protect apples from fruit-eaters are tested. For this, the following drugs were tested: insecticide - Avaunt 15% em.k., 0.35 l/ha. And Entovant 15% em.k 0.35 ha/l

Apples are planted on a 6 m x 5 m scheme. Spraying was carried out using an OPV-1200 type sprayer. The incidence rate of diseases was studied on May 15 and 25, further calculations were carried out as above.

Experimental scheme

1. Control - no processing
2. Avaunt 15% em.c., 0.35 l/ha was applied against the apple borer
- 3 Entovant 15% em.k 0.35 l/h was used against apple fruit borer

In the experiment, 5 apple trees with average fruit are selected in each option.

2.2.1. Experimental system

Table 1

| Options | Experiment plan |
|----------------|---|
| I Control | No control measures are applied against the apple fruit eater |
| II Model | Avaunt 15% em.c., 0.35 l/ha is used against apple worm |
| III Experiment | Against apple worm Entovant 15% em.k 0.35 l/ha is used |

2.2.2. Scheme of placement of the experiment in the field

Table 2.

| | | | | | | | | | | | |
|--------------------------|--|--|---------------------------|--|--|--------------------------|--|--|-------------------------|--|--|
| 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Control | Avaunt 15% em.c., 0.35 l/ha is used against apple worm | Against apple worm Entovant 15% em.k 0.35 l/ha is used | Control | Avaunt 15% em.c., 0.35 l/ha is used against apple worm | Against apple worm Entovant 15% em.k 0.35 l/ha is used | Control | Avaunt 15% em.c., 0.35 l/ha is used against apple worm | Against apple worm Entovant 15% em.k 0.35 l/ha is used | Control | Avaunt 15% em.c., 0.35 l/ha is used against apple worm | Against apple worm Entovant 15% em.k 0.35 l/ha is used |
| IV-field experiment area | | | III-field experiment area | | | II-field experiment area | | | I-field experiment area | | |

The experiment consisted of 3 options and 4 returns, and the following tasks were planned in it.

Phenological observations are made every 10 days on trees selected for calculation from each option. All phenological observations are carried out according to the method of self-study.

RESULTS

Development dynamics and distribution of the apple borer in the experimental area.

The harm of the apple worm is expressed mainly by damaging the fruit, reducing its quality and reducing productivity. Depending on the climatic conditions and the importance of natural vegetation in different years, if this insect is not controlled, it can reduce the productivity of fruit trees with seeds from 30% to 70%. Damaged cave fruits fall off; the development of the apple worm ends after the apple is spilled. The adult worm crawls to the base of the lower branches or the trunk of the tree to emerge from the fruit and become a pupa. The place where the apple is touched by the worm often rots; and the hole where the worm entered the apple remains a hole.

Andijan region, Andijan region, information consulting center DUK under the AQXAI, we studied the dynamics of apple worm development in our experiments in intensive garden conditions.

3.2. Insecticides used against apple worm biological efficiency

Pruning trees increases the size of fruits up to 20.4% and improves their taste quality. Bushy fruit trees contain more sugars and acids than non-bushy trees. It compacts the branches of the bush, promotes branching, strengthens the main (skeletal) crowns, reduces the need for stakes, delays the shedding of leaves in the lower parts of the crown (bareness of the tree), and reduces the fruiting of the crown. Per hectare, prevents the tree from breaking and thus ensures a long life of the trees. With the help of bushes, it rejuvenates the trees and prolongs the productive life of the garden.

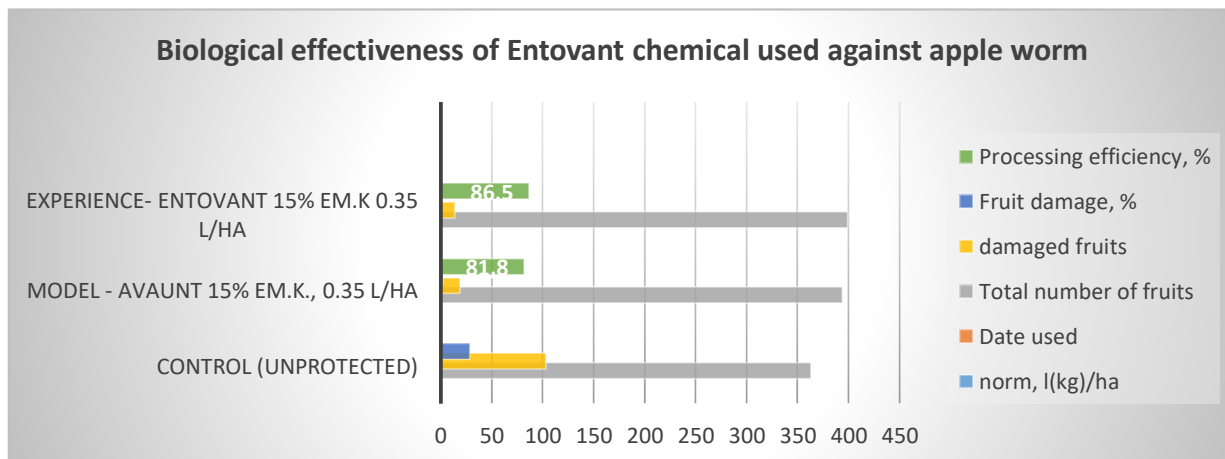
The results are presented in table 4.3.1. As it can be seen from there, in the second option tsypermethrin 25% em.c. When applied at 0.3 l/ha, damage to walnut fruits was 17%, biological

efficiency was 81.8%, and in the third option Endjeo was 24.7% sus.k. When 0.2 l/ha chemical substance was used, the damage of fruits was 9%, and the biological efficiency was 86.5%.

Summing up from the above, it can be noted that the chemical method for protecting walnuts from the nut borer is Endjeo 24.7% sus.k. The application of the chemical substance at 0.2 l/ha showed a high effect.

Biological efficiency of Entovant chemical used against apple worm

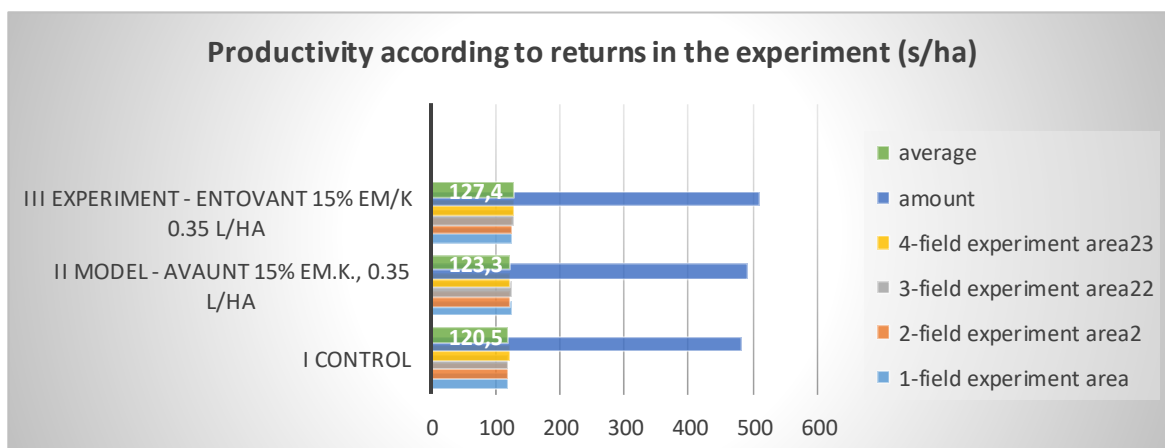
DISCUSSION



3.3. Economic efficiency of the preparations used in the fight against the apple worm

We analyzed the data obtained from our experiment and the data obtained from the experiment mathematically according to the method of Dospekhov (1985) in order to find out how well the experiment was conducted. Based on these returns, the yield was calculated.

Diagram



CONCLUSIONS

1. It was argued that the use of information technologies in the agricultural sector can increase the productivity of agricultural crops, especially orchards, reduce the costs of their cultivation, and reduce the amount of damage caused by pests and diseases.

2. The bioecological characteristics of the development of the main pests of apples were studied, and the ways and methods of monitoring them were determined.

3. Apple fruit eater develops by giving 2-3 generations per year. Butterflies lay their eggs on apple trees.

4. In some years, up to 60-70% of fruits are damaged. Usually, 9-17% of fruits are damaged by it

5. Using the method of chemical control against the apple borer, we achieved high results. In this:

6. Option 2 - Avaunt 15% em.c. In the sample, biological efficiency 65.0% when applied at 0.35 l/ha,

7. Option 3 - the biological efficiency was 82.5% when Entovant 15% em.c was applied to 0.35 l/m from a low-toxicity and fast-degrading insecticide for warm-blooded insects.

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