Degree of encountering of representatives of the family of poultry in the solanaceae family grown in greenhouses

Istam Saidov¹*, Bakhtjon Toxbaev¹

¹Tashkent State Agrarian University, University str., 2, 100140, Tashkent, Uzbekistan

Abstract. We have set ourselves the main goal of identifying the types of thrips that cause serious damage to the members of the family of the ituzum family grown in greenhouses, their level of occurrence, and mainly to give recommendations for the production of thrips-resistant varieties of Bulgarian pepper. At the same time, the introduction of the improvement of the combined control system by studying the stations and gradations between insects, population density in greenhouses. The organization of the cultivation of vegetable products that is ecologically clean and in accordance with international standards is a partial solution to the main pressing issues facing the agricultural workers today.

1 Introduction

The sharp increase in the number of people on earth is causing an increase in the demand for food, as well as an increase in attention to the quality of products. Until now, cases of irregular use of chemical agents are observed in agriculture [1-4]. This, in turn, has a negative impact on the activity of humans and warm-blooded organisms, as well as disrupts the natural management of the biocenosis.

In our republic, further development of export potential and promotion of Uzbek products to the world are being carried out rapidly [5-9]. Fortunately, our president is creating all the necessary conditions for the development of the industry, the result of these activities is the reason for the increase of modern greenhouses on the territory of our Republic. Today, during the day, greenhouses are operating on more than 6,000 hectares of land [4, 10].

Representatives of the field of plant protection have the important task of protecting crops grown in greenhouses from various diseases and pests. Several types of rodents and sucking pests pose a serious threat to greenhouses today [10]. We present the results of our research against the main sucking pests of crops belonging to the Solanaceae family in the greenhouse.

2 Methods and Materials

This research was conducted in the Kibrai district of the Tashkent region, where we identified the thrips species present in the Bulgarian pepper export bop svetafor variety

*Corresponding author: i.saidov@tdau.uz
grown in a greenhouse based on their morphological characteristics [1-7]. Our observations revealed the prevalence of tobacco thrips (Thrips tabaci L) and greenhouse thrips (Hebiothrips haemorrhoidales Behe) in the greenhouse, with changes in population size depending on the crop type. We observed an increase in the fertility of female thrips in plant species rich in food [3]. The purpose of our study was to determine the dominant thrips species by crop type and to observe their developmental dynamics. We compared our observations across different years and obtained average indicators [8].

During the experiment, entomological calculations and observations were made based on V.Yakhontov, G.Y.Bey-Bienko, N.V. Bondarenko, A.A. Zakhvatkin, S.A. Murodov; density of pests Sh.T. Khojaev; The number of dominance of entomophages was calculated based on the methods of K.K.Fasulati S.N.Alimukhamedov. The quality indicators of entomophages were determined according to the method of B. P. Adashkevich, and the calculation of the control option of biological efficiency in laboratory and field experiments was determined according to the formula of V. S. Abbot. The obtained results were analyzed mathematically and statistically using the methods of K.Gar, B.A.Dospekhov and G.F.Lakin. In some cases, a fractional method was used to take into account the "mean error" [1].

Vegetable growing is also important in the economy of the Republic of Uzbekistan. Our scientists face the important tasks of increasing the quality and quantity of crops in areas protected from vegetable growing in exchange for increasing the productivity of the land. Thrips or Thysanoptera species, Terebrantia subfamily, and Thripidae family are particularly important in damaging agricultural crops.

3 Results and Discussion

The thrips family is the most extensive among the animal kingdom, comprising around 1,500 species worldwide, with 300 species found in the Commonwealth of Nations and 200 similar species found in Central Asia. This family is classified into two subfamilies, Terebrantia and Tubulitera, depending on their reproductive mode. Thrips undergo sexual reproduction and parthenogenesis. Their life cycle comprises egg, young larval, pronymph, nymphal stages, with wing development occurring during nymph and pronymph stages. Some species are monovoltine, while others can have up to 10 generations per year.

As a result, a new species of thrips in the greenhouse was observed, which was identified as a cannibalistic thrips (Aeolothrips intermedius) through systematic analysis of thrips imagos (Fig. 1). This finding demonstrates the mechanism of natural mutual management in biocenosis in greenhouses, highlighting nature's ability to manage itself despite the influence of anthropogenic factors (Table 1). It was found that this species naturally controls the number of pests, including cannivorous thrips, proving its potential for biological control. Finally, it was proposed the use of the new generation drug spinosad based on the identification of this species. Clearly, this drug was used to analyze the validity of the idea that drugs with similar effects had little effect on beneficial entomofauna.

Table 1. Types of thrips recorded in the Bulgarian pepper crop and their occurrence rate ("Nurimov Musa ota " farm greenhouses located in Qibrai district of Tashkent region, 2021-2022)

<table>
<thead>
<tr>
<th>#</th>
<th>Types of thrips</th>
<th>Occurrence rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Greenhouse thrips (Hebiothrips haemorrhoidales)</td>
<td>59.3</td>
</tr>
<tr>
<td>2</td>
<td>Tobacco thrips (Thrips tabaci)</td>
<td>33.5</td>
</tr>
</tbody>
</table>
In the conducted experiment, we utilized the Crompton KS 48% k.e. pesticide containing spinosad at a rate of 0.25 l/ha, as well as the Capito k.s. as a reference treatment at a rate of 0.45 l/ha. A control group was also included and left untreated. An electric hand sprayer was used to administer the treatments, and a total of 300 liters of working solution was applied per hectare, with each experimental site covering 0.5 hectares and undergoing three applications. On the seventh day post-treatment, the Crompton KS 48% k.e. pesticide achieved a biological efficacy of 94.4%, whereas the average biological efficacy of the reference treatment was 93.0%. Meanwhile, the control group exhibited a continuous increase in pest population. While the results suggest that there may not be a significant difference between the two treatments, it is premature to draw a definitive conclusion.

It is worth noting that the high consumption rate of 0.45 l/ha for Capito k.s. results in increased costs and poses a significant negative impact on natural ecosystems. Therefore, before taking any pest control measures, it is essential to analyze the levels of beneficial and harmful organisms in the target area. The natural balance of the biocenosis is maintained by thousands of beneficial insects, and their interactions with other organisms must be fully understood before any action is taken. To gain a comprehensive understanding of insect development under various weather and climate conditions, long-term observations in both open and protected environments are necessary. In this regard, we conducted experiments on the duration of entomophage release in greenhouses to restore natural balance following the application of different classes of pesticides, as outlined in Tables 2 and 3.

Table 2. Timing of reintroduction of entomophages to greenhouses after insecticide application against thrips found in bell peppers in greenhouses ("Nurimov Musa ota" farm greenhouses located in Qibrai district of Tashkent region, 2021-2022)

<table>
<thead>
<tr>
<th>#</th>
<th>Drug names</th>
<th>Drug consumption, l, kg/ha</th>
<th>Safe distribution time, days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Predatory tick</td>
</tr>
<tr>
<td>1</td>
<td>Crompton KS 48% k.e.</td>
<td>0.25</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Capito k.s. _</td>
<td>0.45</td>
<td>1</td>
</tr>
</tbody>
</table>
The study involved observing the effects of chemical agents sprayed against thrips pests on bell pepper in protected areas, on the development of entomophages. The entomophages were observed from 1 day to 21 days after the application of the chemical agents, and periods of no effect were noted. While the chemical agents had no effect on predatory mites, their strong impact on predatory insects meant that they could only be distributed on the first day. However, when the larvae were removed and distributed after 5 or 7 days of using Crompton KS 48% k.e., there was no negative impact on the development of entomophages.

The study also found that after using Kapito k.s., metkiller 90% n.kuk., and Mospilan 20% n.kuk, carp and goldfish eggs should be released within 12-15 days. However, it was observed that 85-90% of the larvae that hatched from the golden eye eggs distributed in greenhouses died as a result of the long-term preservation of these preparations.

The results of this research suggest the importance of producing environmentally-friendly products to ensure the health and well-being of all organisms. The phenomenon of cumulative effects in living organisms implies that harmful substances accumulate over time, leading to negative consequences when a certain harmful dose is reached. Therefore, it is crucial to prioritize the production of ecologically clean and high-quality products over excessive use of chemical agents in pursuit of high yields. Such actions are necessary to build a healthy society for humans and all warm-blooded organisms.

### Table 3. Determination of the biological effectiveness of Crompton KS 48% k.e. drug against thrips species found in bell peppers. ("Nurimov Musa ota" farm greenhouses located in Qibrai district of Tashkent region, 30.10.2021)

<table>
<thead>
<tr>
<th></th>
<th>Variants</th>
<th>Drug consumption, l/ha</th>
<th>The average number of pests per plant</th>
<th>Biological efficiency in % section</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>The number of days after processing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Until processing</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Crompton KS 48% k.e.</td>
<td>0.25</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Capito k.s. (benchmark)</td>
<td>0.45</td>
<td>6</td>
<td>0.8</td>
</tr>
<tr>
<td>3</td>
<td>Control (unprocessed)</td>
<td>-</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
4 Conclusions

The quantity of thrips present in Bulgarian pepper varieties varies, with the number of thrips in some branches correlating with the level of damage to the plants and being influenced by the yield. To draw general conclusions, it is critical to develop a control measure that takes into account the population density and degree of damage caused by insects. Such a measure should also incorporate predictive analysis of the types of insects present in a particular area or station, as well as their impact on plant development.

The development of a chemical usage mechanism that minimizes the impact on biofunds is necessary. Irregular chemical use can destroy the biofund, creating more favorable conditions for future generations of harmful insects and disrupting the natural balance. Repeated use of chemicals can lead to irreversible negative consequences for humans and other warm-blooded organisms. The mutual formation of phytophagous and host relations must be taken into account, and it may be necessary to introduce and acclimatize entomophages that are not currently present.

The primary objective was to organize scientific recommendations for plants and form a comprehensive database that ensures the reliability of these recommendations.

References

8. Asanov, K., Khodjaev, Sh., & Rashidov, M. (2001). In Uzbekistan cotton the house is fertilized protection to do system according to recommendations pp. 11-17.