

Damage Caused by The Oriental Fruit Moth (*Grapholita molesta* Busck) To Fruit Orchards and Control Measures

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Abstract- The Oriental fruit moth (*Grapholita molesta* Busck) is considered one of the most dangerous quarantine pests of stone and pome fruit crops. The pest primarily damages peach, apple, pear, quince, apricot, cherry, and plum trees. As the larvae feed on young shoots and the internal tissues of fruits, both the quantity and quality of the crop are significantly reduced. This article analyzes the biological characteristics and economic importance of the pest, symptoms of infestation, and control measures, including cultural practices, monitoring, biological control, and chemical treatments. Particular attention is given to the advantages of using microbiological preparations during the fruit-ripening period in order to ensure human health and food safety.

Keywords: Oriental fruit moth, *Grapholita molesta*, quarantine pest, peach, apple, integrated pest management, pheromone trap, biological preparations, insecticides, yield.

I. INTRODUCTION

One of the major factors hindering the production of high and high-quality yields in fruit orchards is the presence of insect pests. Among them, the Oriental fruit moth (*Grapholita molesta* Busck) is one of the most economically important pests, causing serious damage to both stone and pome fruit crops. Its rapid reproduction, ability to produce several generations per year, and concealed feeding behavior make its control particularly difficult.

Biology and Damage Caused by the Pest. The Oriental fruit moth belongs to the family Tortricidae and becomes active in early spring. Female moths lay eggs on young leaves, shoots, and fruits. After hatching, the larvae initially enter the tips of developing shoots and feed on their internal tissues. As a result, the shoots dry out, stop growing, and the subsequent development of the tree is weakened[1-2].

After fruits begin to develop, the larvae bore into them and feed on the tissues around the stone as

well as the fruit flesh. As a result of larval activity, the inside of the fruit becomes contaminated with larval excrement, while its external appearance and market quality deteriorate. Such fruits often drop prematurely or rot during storage.

Economic Importance. The Oriental fruit moth can cause significant economic damage within a short period. Under favorable climatic conditions, the pest may produce 4–6 generations per year. This leads to rapid population growth and a sharp increase in the level of infestation[2-4].

Since this insect is considered an international quarantine pest, its detection in products prepared for export may result in export restrictions, rejection, or destruction of the products. Therefore, preventing its spread is important not only for maintaining crop productivity but also for preserving the country's export potential.

The use of an integrated pest management (IPM) system is considered the most effective approach to controlling the Oriental fruit moth.

Cultural Control Measures. To reduce pest populations, it is recommended to collect and destroy fallen leaves in autumn, cultivate the soil around tree trunks, prune and destroy dried and infested branches, and install band traps around tree trunks. These measures can significantly reduce the number of overwintering larvae.

Monitoring. Pheromone traps play an important role in determining the flight period and population density of adult moths. Monitoring results make it possible to determine the most appropriate timing for chemical treatments and prevent unnecessary insecticide applications.

Chemical Control. Chemical insecticides should be applied when the pest population exceeds the economic threshold of damage. Preparations applied during the period of mass larval emergence are particularly effective. In practice, preparations based on the active ingredients chlorantraniliprole, imidacloprid, and lambda-cyhalothrin are widely used. They act on the pest's nervous system and ensure the mortality of eggs and larvae. Their protective effect generally lasts for approximately 2–3 weeks.

As a rule, three treatment stages are recommended during the growing season:

- **First treatment** – when first-generation larvae appear in spring;
- **Second treatment** – against the second generation in summer;
- **Third treatment** – when the risk of infestation remains in late-ripening varieties.
- Chemical treatments should be completely discontinued 20–30 days before harvest [3–4].

Biological Control. During the second half of July and in August, early- and late-ripening varieties may be present simultaneously in orchards. During this period, strong chemical pesticides should not be applied to fruits that are already approaching ripeness.

Therefore, the use of microbiological preparations, including Lepidocid and Bitoxibacillin, is considered appropriate. These preparations are effective against

pest larvae and are relatively safe for human health and the environment. According to the stated application practice, fruits can be consumed 2–3 days after treatment[3–5].

CONCLUSION

The Oriental fruit moth is a dangerous quarantine pest that has a significant negative impact on fruit yield and product quality. To limit its spread, it is necessary to implement an integrated protection system consisting of cultural practices, regular monitoring using pheromone traps, chemical treatments based on the economic threshold of damage, and the application of biological preparations during the fruit-ripening period. Such an approach is essential for maintaining crop quality, producing products that meet export requirements, and protecting the environment.

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