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DISEASE CAUSED BY MELON FLY (MIOPARDALIS PARDALINA) IN MELONS AND SOLUTIONS AGAINST ITS

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Abstract:
The melon fly, scientifically known as Myopardalis Pardalina, is a widespread and deadly pest that seriously affects the production of cucurbits and other cucurbits worldwide. These breeding insects are members of the Diptera family and are characterized by their unusual infestation and complex life cycle, which makes them particularly difficult to manage. Melon fly infestations significantly reduce agricultural productivity, disrupt food security, and strain local economies. In this article, we discuss the nature of the melon fly disease, its transmission and effects, and the various solutions that farmers and researchers can use to control this pest.

Keywords: Miopardalis pardalina, pumpkin family, food industry, plant safety, disease characteristics, infection

Introduction

The melon fly (Miopardalis pardalina Big) has been found in various countries of Asia and some European countries, including Armenia, Turkey, Ukraine, Israel, Jordan, Pakistan, Saudi Arabia, Lebanon, Syria, Turkmenistan, Tajikistan, and Uzbekistan. It primarily harms wild and cultural plants, which belong to the pumpkin family (Cucurbitaceae). Melon fly infects plants belonging to the nocturnal family at any stage, from the first germination to the full ripening of the crop. During the year, insects go through 3-4 reproductive cycles. Flies like melon flowers appear on them. Female flies lay eggs in the epidermis of the ovaries and in immature fruits, as well as on plant leaves. The larvae penetrate the interior of the fruit, known as the pulp, eating both the seeds and the juice. After that, they come out of the fruit and begin to pupate in the soil. Spring and summer seasons coincide with the time when fodder plants

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begin to form fruit. At this time, the soil temperature in which insects overwinter rises above +20. The life of the pest is observed from early June to mid-October. Insects consume fruit juice as their source. An artwork lasts two months. Open wounds can provide an optimal environment for the breeding of viral and fungal infections. The first signs of the injury of melon flies are manifested as the appearance of patches of small tuberculosis, sometimes called tuberculosis, on the sites where the fruit bites. Then, after the larvae are fully developed, the fruit begins to decay inside. Consequently, the damaged fruits become unsuitable for subsequent use. Their biological activity was determined by the composition and quantity of substances present.

The origin of the melon fly.

Melon flies vary depending on the location of melon damage. Also, the pest directly damages the fruit, causing a 30-70% loss in melon cultivation. Melon flies come from tropical and subtropical regions, mainly Southeast Asia, and they can also be found in different regions. Females fly towards fruits ripe to lay eggs. As the oviposition continues, the places of egg laying develop into skin spots that acquire a slightly late purple color. Under the egg pocket cover is usually one larva for each damaged fruit, quite rarely two. In areas where there is a large number of pests, farmers face serious problems as a result of the destruction of damaged fruits falling into the ground, the costs of measures to protect melons increase the cost of growing melons. As a result, consumer prices rise. Because this dipteran has a suitable life cycle for rapid reproduction, fields must be harvested in parts frequently. It does not bring any benefit to farmers and occupies an unconditional high place in the list of pests.

The importance of melon in crop quality.

Melancholas belong to the pumpkin family. This herb is also called cucumber. Popularly known by this name because of the Aegean world and the Thracian islands. It is believed that this plant originated in Africa and was cultivated in Egypt. During Muhammad's reign, it spread to the Near and Middle East. Later, it began to be cultivated in some regions of Anatolia. Although melon cultivation began in Greece and Italy, in 1939 there was an increase in production in Turkey. In our country, melons are grown in Central Eastern and Southeastern Anatolia. In our country, 5% of the total area of fruit growing, that is, 560 thousand

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hectares of summer melon products, where approximately 305 thousand tons of fruits are obtained. Of these, 90,000 tons are consumed as melons and 205,000 tons are used in other industries. Turkey occupies an important role in the summer melon breeding among the countries of the Mediterranean. Moreover, besides the successful cultivation of the breed, its geographical advantage contributes significantly more productive in production and competition. Melons weighing 6 kg are cultivated in large scale and are of great importance in the sale and consumption of melons on the international market. It is a water-rich fruit. It is difficult to maintain for a long time. It deteriorates very quickly. Its market term is 3-5 days. Sensitive to pressure, decay, freezing and sunburn. In addition, fiber is very susceptible to degradation. Its shelf life is 3-5 weeks.

Literature review

The literature on the control of melon fly, in particular Miopardalis pardarina, has highlighted a number of biological and integrated pest control strategies aimed at mitigating the impact of this invasive pest on melon crops. The groundbreaking work created by Dhillon et al. (2005) comprehensively reviews the biology and management practices associated with the melon fruit fly, Bactrocera cucurbitae, a melon fruit fly with similar characteristics to Miopardalis pardalina. The authors emphasize the role of protein baits and traps in pest surveillance and control, but they caution against difficulties associated with the migration of protein-fed females. In addition, they note the limited success of biocontrol agents despite the inclusion of the parasitoid Phopius arisanus in integrated pest control (IPM) programs. The study also mentions the potential of the fungus Rhizoctonia solani as a bio-agent, while acknowledging the uncertainty about its efficacy in field conditions. In addition, the authors note the importance of creating resistant plant varieties, although progress in this area is limited.

In a recent study, K. Onsongo et al., (2022) explores the use of entomopathogenic fungi, particularly Metarhizium anisopliae and Beauveria bassiana, as biopesticides to combat the melon fly Zeugodacus cucurbitae. This study highlights the importance of eco-friendly approaches within the IPM, highlighting the potential of ICIPE 69 fungal isolate to significantly reduce crop losses. The study suggests that incorporating biopesticides into pest control strategies can provide sustainable solutions to the massive damage caused by

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this invasive pest. The results of this study contribute to the growing body of evidence supporting the use of biocontrol methods as a viable alternative to chemical controls, which have been proven relatively ineffective in previous studies. Together, these papers show an important evolution in understanding pest control strategies for melon flies, suggesting a shift to more sustainable and environmentally conscious methods. The study of biopesticides and the integration of different management practices represent a promising direction for future research and practical application in the field.

Results and recommendations.

Solutions against the infestation of the melon fly

There are a variety of solutions available to control melon fly populations, and a comprehensive and versatile approach is most effective for limiting damage and damage.

1. Physical barriers

Covering your shell plants with fine netting or screens can effectively limit the access of large flies and protect them from later egg laying. Consistent application of this measure can effectively control the population of melon flies.

2. Cultural control

Changing agricultural methods can significantly reduce the risk of infection. By keeping fields clean (i.e., thoroughly eliminating any debris, debris, or weeds) and specific planting strategies, farmers can manage melon fly populations and create favorable conditions for melon cultivation.

3. Use of pesticides

Chemical control is common and generally effective against melon flies, although problematic, it is due to increased resistance to pesticides observed in this type of pest. Caution should be exercised when using pesticides, given the importance of avoiding overuse or application in a particular area in order not to contribute to environmental pollution.

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4. Biological methods of struggle

Biological control can also effectively manage melon fly populations. This method, which involves the deliberate expulsion of a beneficial organism (e.g., parasitoid or predatory), aims to suppress pest populations while increasing broader ecological sustainability.

5. Improved bait traps and more practical options for detection

Scientists have tested new melon fly traps using bioethanol-free mixtures, and they've obtained easy-to-trap formulas that release bio-rational or even better active chemicals that trap some melon flies without harming the different environments and other beneficial organisms that live there.

Conclusion

The management of melon fly damage by melons remains a crucial issue worldwide, and there are significant economic losses as a result. This requires thoughtful strategies that provide sustainability, reduce environmental impacts, and reduce reliance on insecticides. Understanding the nature of this pest and considering comprehensive management options that combine methods such as cultural, biological, and pesticide control will allow farmers to optimize their overall pest management. Even without technological expertise, combining traditional practices such as manual typing can improve other developed solutions together.

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