



## MEDITERRANEAN FRUIT FLY - *CERATITIS CAPITATA*

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Article history:		Abstract:
<b>Received:</b>	10 <sup>th</sup> September 2024	Globally, many species of insects belonging to the family <i>Tephritidae</i> , also known as fruit flies, feed phytophagously on natural and cultivated jujube agrocenoses. These flies are medium-sized insects (4.5–5.5 mm) with wings that have a shiny border on their lower half. The adult flies (imagos) feed on the nectar of compound flowering plants, while the larvae feed on the fleshy parts of fruits. Some species also feed by creating mines in leaves. There are more than 4,500 species of these flies, some of which cause significant damage to plants. For instance, in the U.S. state of Florida, it has been identified that fruit flies damage more than 400 types of plants.
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**INTRODUCTION.** The most widespread species among fruit flies is the Mediterranean fruit fly (*Ceratitis capitata* Wiedemann), whose native habitat is the southern regions of Morocco. Currently, this fly has become widely distributed in countries such as Yugoslavia, Greece, Austria, Australia, Switzerland, Italy, Portugal, France, Czechoslovakia, Germany, Africa, Australia, South America, and Oceania.

The Mediterranean fruit fly is a polyphagous pest, causing damage to more than 200 types of plants. These include jujube, orange, mandarin, grapefruit, lemon, banana, apricot, peach, cherry, plum, pear, apple, grape, and others. Although infested fruits may appear nearly identical to healthy ones externally, they quickly fall off and rot.

*Ceratitis capitata* – Mediterranean fruit fly – is listed in the "List of harmful organisms with quarantine significance for the Republic of Uzbekistan," but it has not yet spread in the country.

The Mediterranean fruit fly (*Ceratitis capitata*) overwinters in the soil in a pupal stage. It emerges from hibernation when the air temperature rises above +14°C. After feeding on plant sap, the flies mate, and females lay eggs in fruits that attract them with their scent and color. A single female can lay between 300 and 1,000 eggs. Under favorable conditions, larvae emerge from the eggs within two days and begin feeding on the fleshy part of the fruit. After consuming the fruit, the larvae drop to the soil and pupate.

The adult fly (imago) is 4–4.5 mm in size (smaller than a house fly) with three segments in its antennae. Its wings are covered with yellowish-brown stripes across the width. There are three transverse band-like markings on the thorax. The eggs are long, white, and 0.5–0.9 mm in length. The larvae are white, with 12 segments, and 7–10 mm in length, slender in shape. The pupa is oval-shaped, dark brown, and 4–5 mm long. All developmental stages of the Mediterranean fruit fly spread.

The international name and synonyms of the Mediterranean fruit fly:

**Name:** *Ceratitis capitata*

**Synonyms:**

*Ceratitis citripeda* Efflatoun

*Ceratitis citriperda* Macleay

*Cerati tis hispanica* Breme

*Pardalaspis asparagi* Bezzi

*Tefrit kapitata* Wiedemann

*Tripeta capitata* Wiedemann

**Distribution:** **Europe:** Austria, Albania, Greece, Malta, Netherlands, Spain, Italy **Asia:** Afghanistan, Israel, Indonesia, Jordan, Iran, Cyprus, Lebanon, Egypt, Turkey, Java Islands, and widespread around the Mediterranean region. **Africa:** Algeria, Egypt, Zaire, Zimbabwe, Congo, Libya, Mauritius, Madagascar, Morocco, Nigeria, Senegal, Sudan, Tanzania, Tunisia, Uganda **Central and South America:** Argentina, Brazil, Peru **Australia and Oceania:** Also widespread.

**Damage:** The Mediterranean fruit fly has been reported to damage more than 70 types of fruit and vegetable crops. These include jujube, apricot, peach, orange, mandarin, lemon, banana, coffee, date, fig, strawberry, pomegranate, apple, cherry, grape, tomato, eggplant, and other plants. In Romania, it is specifically noted as a major pest of jujube. In countries where the Mediterranean fruit fly is widespread, such as the United States, Spain, Germany, Chile, and others, it has caused significant economic problems. To combat it, extensive scientific research has been conducted. Control methods have included the use of pheromones and other attractants, as well as pesticides.

In addition, the use of sterile male flies has been implemented in the United States and Chile. This method is usually carried out over large areas by official organizations. In this approach, male fruit flies are sterilized in specialized

laboratories using radiation and then released into nature. The sterilized male flies mate with wild females, and as a result, the females do not fertilize their eggs and are unable to lay them. This method is very costly.

There is no biological control for the Mediterranean fruit fly. However, it has been discovered that certain insects parasitize the larvae of this fly.

As a result of long-term use of sterile male flies and other control measures, the Mediterranean fruit fly has been completely eradicated in the U.S. states of Hawaii, California, Texas, and Florida, as well as in New Zealand and Chile.

### **Conclusion: Possible pathways of introduction, damage, and preventive measures for Uzbekistan:**

The Mediterranean fruit fly expands its range naturally by flying, with its imagos (adult flies) being spread by wind and adhering to transport vehicles. Its pupae spread through soil, while larvae are transported via infested fruits. Once it reaches a new area, plants such as apricot, peach, orange, mandarin, lemon, banana, coffee, date, fig, strawberry, pomegranate, apple, cherry, grape, tomato, eggplant, and others can suffer severe damage.

To prevent the introduction of the Mediterranean fruit fly into Uzbekistan, it is essential not to import seedlings or other susceptible plants and fruits from areas where the pest is prevalent. Additionally, imported seedlings must be soil-free, and all quarantined products should comply with the "Plant Quarantine Law" and relevant legal documents. Furthermore, continuous monitoring of crop fields and border areas with neighboring countries by plant quarantine inspectors is required.

If the Mediterranean fruit fly does enter Uzbekistan, it will become a serious phytophagous pest for fruits and vegetables such as apricot, jujube, peach, lemon, date, fig, strawberry, pomegranate, apple, cherry, grape, tomato, eggplant, and others.

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