

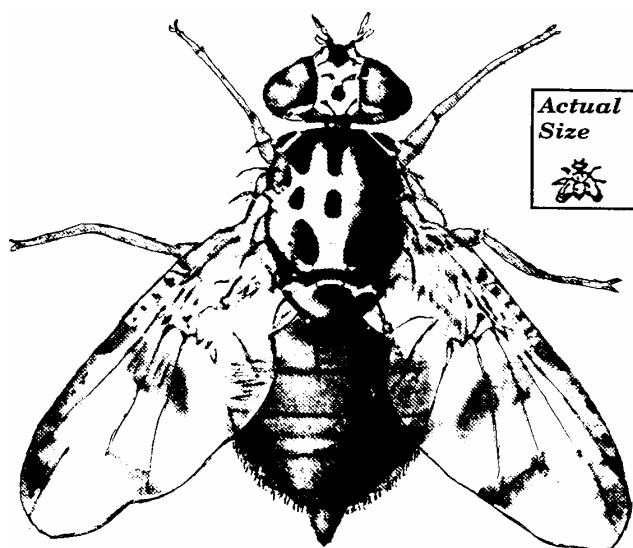
Mediterranean Fruit Fly

(Ceratitis capitata) (Weid.)

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The Mediterranean fruit fly appeared in the Northern Territory and been eradicated but it is necessary to be on guard against its re-appearance. It is a serious pest of fruit, capable of damage to a wide range of citrus, stone fruits and ornamentals.

The Mediterranean fruit fly, *Ceratitis capitata* (Weid.) (family Tephritidae) was first described nearly 150 years ago. It occurs in almost every important fruit growing country in the world. It ranks amongst the world's six most damaging fruit fly pests.



In Australia it occurs in Western Australia where it is a serious orchard pest. It has established breeding populations in the Pilbara and Kimberley Region town areas but the main range occurs west of a line joining Gingin, Northam, York, Balingup and Busselton in the South-west of the State.

An outbreak in Kununurra in late 1995 was eradicated after an extensive program. In the Northern Territory, two outbreaks have occurred in Alice Springs and the fly has been detected in a caravan park in Darwin.

Spasmodic outbreaks occur in South Australia but, because intensive trapping programs are continuously in operation, early warnings of infestations are received.

Such outbreaks are eradicated by using a combination of cover-spraying with fenthion and bait-spraying using protein hydrolysate and Malathion®.

BIOLOGY AND APPEARANCE

The Mediterranean fruit fly is a two-winged insect, slightly smaller than a house fly. It is mainly yellowish-brown, but the thorax has white markings on a black background. The abdomen has two lighter coloured bands.

The wings are marked with brownish bands and spots. When resting, the wings are in a characteristic semi-spread position.

The adults rarely move very far from the foliage of fruit trees especially when ripe or ripening fruit is available.



LIFE CYCLE

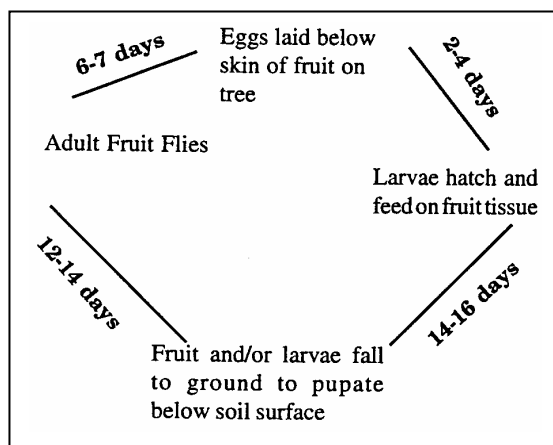
Six to eight eggs, which measure about 1 mm and are creamy white in colour, are laid just under the skin of ripe or ripening fruit. The female can lay as many as 300 eggs in many different sites. The eggs hatch into larvae or maggots in two to four days.

The larvae or maggots feed and burrow into the fruit, resulting in tissue breakdown, formation of soft spots and finally complete decomposition of the fruit. The larvae are creamy-white and about 7-8 mm when mature.

The larva can, by turning its head to its tail and suddenly extending itself, jump a considerable distance (20-30 cm). Larvae mature in 14-16 days drop to the ground and burrow into the soil to pupate.

The pupa is brown and shaped like a rounded barrel. The adult emerges in 12-14 days so the whole life cycle is completed in 28-34 days.

The adult flies can survive for 28-112 days, depending on weather conditions and availability of food and water.



Mating and egg laying does not take place for six to seven days after emergence. It is during this period that flies are most susceptible to bait-spraying techniques.

FRUIT ATTACKED

In excess of 100 fruits, nuts and vegetables have been recorded as hosts for this fly in various parts of the world.

In Western Australia, the fly has attacked mangoes, citrus fruits, apples, pears, plums, nectarines, apricots, peaches, grapes, persimmons, quinces, loquats, plantains, passionfruit, bananas, mulberries, olives, walnuts, tomatoes, sapodilla, guava, feijoa, pomegranate, clerodendron, chilli, rose, Irish strawberry, prickly pear, Osage orange, Natal plum, lillypilly and Barbados gooseberry.

Fruits vary in attractiveness and suitability for completing the life cycle of this fly. Many plums and grapes are too watery to allow proper development. Larvae have been found in pomegranates and passionfruit, but no adults have been reared. Although not regarded as an important host, bananas have yielded larvae and adults. Complete development occurs in lemons only in very ripe fruit.

The most important host fruits are peaches, apricots, pears and figs.

Citrus fruit form an important link in the breeding capacity since, by the time fruits such as apricots, pears, peaches and figs are finished, citrus fruits are commencing so providing ample breeding material during the cooler months. Grapefruit, oranges and kumquats are particularly attractive.

Loquats provide the final bridge between the winter citrus and the summer fruits.

In the Kununurra outbreak, kumquats and mangoes were the main hosts.

CONTROL MEASURES

1. Legislation

The Mediterranean fruit fly is a notifiable pest under the *NT Plant Disease Control Act*. Under the Act, it is the responsibility of the public to report suspected infestations.

2. Baiting

Foliage baiting using protein hydrolysate (attractant), Malathion[®] (insecticide) and water (carrier) is standard practice throughout the world for control of Mediterranean fruit fly. This mixture is applied as a coarse spray to foliage in the infested area (not specifically to fruit-bearing trees). Application is done on a weekly basis. In an urban garden, approximately 1 litre of the mixture is applied to 10 spots per housing block.

3. Baiting

Plastic traps baited with a synthetic male lure (trimed-lure) and an insecticide (dichlorvos) indicate the presence or absence of flies. This does not give adequate control, but does give an indication of the efficiency of the control program.

As an adjunct to the trapping program, all types of fruit are sampled regularly and flies are bred from these in the laboratory. This helps to define areas of infestation.

4. Cover Sprays

Sprays of trichlorfon, fenthion or dimethoate are often used to quickly reduce populations of adults and larvae, or to protect fruit from initial infestation. Dimethoate lasts 1-2 weeks whereas trichlorfon is significantly less persistent. It should be noted that dimethoate can cause leaf and fruit drop in some fruit trees, including apricots, Meyer lemons, Seville oranges, kumquats, early peach varieties, figs and guavas.

5. Sanitation

Infected fruit should not be allowed to remain on the tree and should not be permitted to remain on the ground after falling. Ripe fruit left on the tree provides an ideal breeding site. This was very evident in kumquats at Kununurra.

Over-ripe fruit should be destroyed by boiling, burning, or soaking in water and kerosene. For small amounts the fruit can be placed in a sealed plastic bag and exposed to the direct sun for several hours. This will kill all larvae and eggs. The fruit can then be placed in the compost or rubbish disposal. Burying is not recommended since larvae can burrow in soil and adults can emerge from the fruit buried in sand to a depth of 1m. If large amounts of fruit have to be disposed of, infested fruit should be placed in a deep burial pit, thoroughly burnt using diesel fuel and buried under a metre of soil.

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