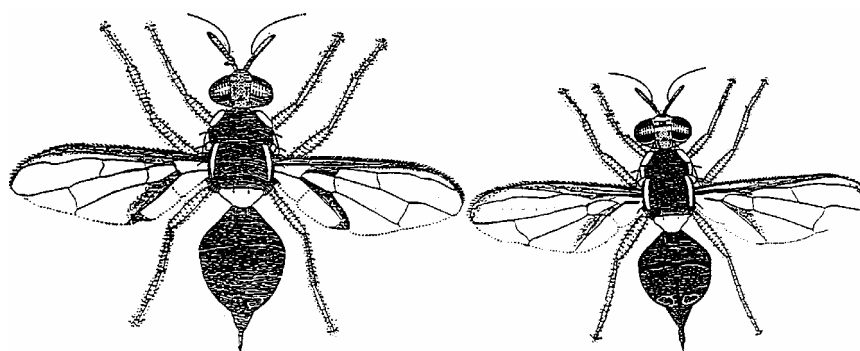


Fruit Flies in the Home Garden

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Fruit flies are major pests of horticultural crops throughout the world and many species occur in Australia. Many fruit fly species have been recorded in the Northern Territory (NT). However, only two, *Bactrocera tryoni* and *Bactrocera jarvisi* have attained major pest status.



Bactrocera tryoni

Bactrocera jarvisi

HOST RANGE

In contrast to the other fruit fly species found in the NT, these two pest species have a wide host range.

B. tryoni has been recorded on over 70 hosts, 48 of these are cultivated plant species. *B. jarvisi* has a much narrower host range of 27 species, of which 15 are cultivated.

The more important fruits and vegetables attacked by *Bactrocera tryoni* include: Avocado, apple, banana, Barbados cherry, Brazilian cherry, capsicum, carambola, guava, grapefruit, hog plum, lemon, loquat, mango, peach, pear, sapodilla, tomato, and water apple.

Those attacked by *Bactrocera jarvisi* include: Barbados cherry, guava, Malay apple, mango, orange and pomegranate.

It is probable that other potential hosts closely related to the species in the above list will also be infested by *B. tryoni*

LIFE CYCLE AND APPEARANCE

The two species of flies are similar in appearance, being slightly larger than a house fly and red-brown or yellow-brown in colour with yellow markings. The wings are clear with two dark bands forming a rough 'V' shape, which are normally held in a semi-spread position while walking or resting on fruit or the undersides of leaves. Females

have an elongated ovipositor at the rear end for egg laying and this tends to give them a somewhat wasp like shape.

Female flies deposit a clump of six to ten creamy white eggs about 1 mm in length just beneath the skin of ripening fruit but they are rarely seen. After a day or two, the eggs hatch to produce larvae which burrow into the fruit. Within six to eight days, the legless larvae look like typical maggots, about 8 mm long and creamy white in colour with black markings, especially at the front end. When mature, larvae can move by curling over and flicking open to produce a considerable jump and they leave the fruit to burrow 2-3 cm below the soil surface. Here they pupate into brown barrel-shaped pupae about 5 mm in length. After 10 to 12 days, adult flies emerge from the pupal cases and wriggle their way to the soil surface. Flies become sexually mature after a further two weeks and after mating, females fly in search of ripening fruit. In the Top End, the life cycle is about four to five weeks. However, it is generally longer during the cooler weather experienced in the Alice Springs area in spring and autumn.

DAMAGE

Fruit spoilage is due to the activity of the larvae or maggots burrowing into the fruit tissue. This activity introduces bacteria which hasten the spoiling process and lead to rotting and eventually to a complete breakdown of the fruit. Generally, the flies will only attack fruit approaching maturity but *B. tryoni* has been found in mangoes as early as 'golf ball size'. The latter pest has destroyed the entire crop on some individual trees in the Darwin area.

QUARANTINE AND EXPORT IMPLICATIONS

Before any fruit or produce is exported interstate or overseas, please contact DPIFM Quarantine at www.ntqs.nt.gov.au or phone (08) 8999 2138 or email quarantine@nt.gov.au to find out if there are any export requirements.

CONTROL MEASURES

Several measures can be imposed to reduce fly numbers or even to eradicate fruit flies from certain areas. However, in urban areas, exclusion, cover sprays and good sanitation are of most value. Baiting is also a good method of reducing populations over a wide area.

1. **Harvest fruit before infestation occurs.** As mentioned above, fruit flies generally only attack fruit approaching maturity. To avoid infestation, most types of fruit can be picked before ripening begins and held to ripen indoors. This should greatly reduce the chances of fruit fly infestation.
2. **Cover sprays.** Foliage sprays of dimethoate or fenthion are effective in quickly reducing populations of adults and larvae and protecting fruit from initial infestation. These insecticides are available in a variety of trade names and should be used strictly as directed on the container since dimethoate may cause leaf burn on some fruit trees (e.g. Meyer lemon, Seville orange, cumquat, figs and some guavas) and is therefore not recommended for use on these crops. Fenthion is toxic to birds and should not be used in the proximity of poultry or caged birds.

Two spray applications should be made, one approximately four weeks, and one two weeks, prior to the time of anticipated harvest. The mixing instructions on the label must be carefully followed and best results will be obtained by a thorough coverage of both foliage and fruit. The quantity of spray mixture required will vary depending on the size of the fruit trees but, as a guide, 5 L is sufficient for most citrus trees while 10 L may be necessary to effectively spray a 10-year old mango tree. A withholding period of seven days between spray application and harvest should be observed.

For fruits which crop frequently, such as carambola and guava, sprays should be applied at two to three weekly intervals while there is a crop on the trees.

3. **Protein bait spraying.** Protein autolysate used in the bait comes from a brewing process, (such as stout or beer production) or production of health foods using yeast fermentation.

The bait is made by mixing 50 mL of 50% protein autolysate to 1 L of water and adding 4 mL of 50% a.c. malathion. This mixture may cause leaf burn on some tropical fruit trees such as carambola.

The spray should be applied at the rate of 40 mL per tree to four trees for the average back yard. It is applied as a coarse spray at low pressure to one 'spot' in the tree. As fruit flies tend to congregate on the underside of leaves, it is best to apply the bait to this area.

Baiting should be carried out at weekly intervals.

4. **Sanitation.** It is essential that ripe fruit should not be left on the tree or lying on the ground to provide a breeding site for fruit flies. Unwanted or infested fruit should be collected and destroyed by placing in a sealed plastic bag and leaving in the sun for a few days before disposal in the garbage or by burning. Burying infested fruit is not recommended since adults can emerge from fruit buried to a depth of 1 m.
5. **Bagging fruit.** Large, high-value fruit such as avocado, grapefruit, *Annona* spp. and *Rollinia* spp. can be protected from fruit fly attack by individual paper bags, a method practised in some South-East Asian countries. Similarly, fruits which are borne in clusters can be bagged as a group. It is also possible that householders can bag a certain number (say ten per week) to enable harvest of that number for home consumption at maturity.
6. **Fruit dipping.** Work over the last few years has determined that dipping is required for commercial certification of produce against fruit flies. This method is unlikely to be used for back-yard production for home consumption and is not recommended.

Further information can be obtained from the Entomology Section, Department of Primary Industry, Fisheries and Mines on 8999 2260 or email insectinfo@nt.gov.au.

Please visit us at our website:

www.nt.gov.au/dpifm

Department of Primary Industry, Fisheries and Mines

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ISSN 0157-8243

Serial No. 425

Agdex No. 622

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