



Fruit flies

Fruit flies are the world's worst fruit pest. They appear on nearly every continent and millions of dollars are spent annually on their control and eradication.

Fruit flies destroy fruit and vegetables grown commercially and in home gardens.

Fruit fly freedom in South Australia allows producers access to world markets worth millions of dollars in export income.

The situation in Australia

More than 80 species of fruit fly are found in Australia. Two of the most economically damaging species are:

- the native Queensland fruit fly (*Bactrocera tryoni*) in the eastern states and Northern Territory;
- the introduced Mediterranean fruit fly (*Ceratitis capitata*) in Western Australia.

Fruit fly maggots hatch from eggs deposited in the fruit.

The female fly will lay her eggs in all cultivated fruits and some vegetables such as:

citrus—orange, mandarin, lime, grapefruit, lemon, cumquat,

pome—apple, pear, quince, crab-apple,

stone—peach, plum, apricot, nectarine, cherry,

tropical and temperate—avocado, banana, feijoa, fig, guava, loquat, mango, papaw, persimmon,

fruiting vegetables—capsicum, eggplant, tamarillo, tomato (including cherry and tree tomatoes).

Many ornamental and native fruits are also attacked.

Introduction to 'clean' areas

Fruit flies can be transported readily to 'clean' areas as eggs or maggots in fruit and fruiting vegetables. Fruit flies may be introduced into South Australia by travellers carrying infested fruit, or by infested commercial consignments of fruit and vegetables.

To keep South Australia free of fruit flies, restrictions must be observed.

Infested fruit brought into South Australia by mistake should be boiled at the traveller's destination or sealed in a plastic bag and placed in the sun for two days. Otherwise, the mature maggots will shelter in the soil, pupate and emerge as flies (see life cycle diagram).



Fruit fly maggots hatch from eggs deposited in the fruit and feed on the fruit flesh.

Life cycle

South Australia is almost completely surrounded by desert areas that provide an effective natural barrier against the entry of adult fruit flies. Outbreaks develop only from infested fruit that is brought into the State.



Female fruit flies can lay 500 to 800 eggs in their six month life. In hot weather the eggs hatch in two to four days.



Development of maggots takes six to eight days in summer.



Fruit flies emerge, feed and mate in two to four days in summer.



In SA summers, pupation requires six to eight days.

Prevention

Movement of fruit into South Australia is restricted to commercial shipments of fruit which are certified free of fruit fly. Quarantine officers from Primary Industries and Resources South Australia (PIRSA) are stationed at roadblocks and airports to prevent travellers bringing fruit into the state. Signs on other roads remind travellers to eat their fruit or put it in roadside quarantine bins where provided. People who break the law and bring fruit or vegetables into South Australia face fines of up to \$20 000.

Detection

Early detection of an outbreak means prompt eradication. Householders finding maggots in any fruit or vegetables should contact the **Fruit Fly Hotline** on **1300 666 010**. Many outbreaks of fruit fly have been detected by vigilant householders.

In addition to reports from householders, an 'early warning system' of traps detects adult flies. A grid of more than 3800 fruit fly trapping sites in metropolitan Adelaide, Northern Adelaide Plains, Adelaide Hills, Riverland and a number of country towns are checked regularly by PIRSA officers.

Eradication

In the event of an outbreak, PIRSA aims to destroy all fruit flies and to prevent their spread to clean areas. When fruit flies are found, an eradication (quarantine) area of 1.5 km radius is defined and no fruit, other than preserved or cooked, is to be removed from the properties in that area until the eradication program is completed.

Only the fruit on infested trees in the centre of the eradication area is picked and destroyed by PIRSA staff. An integrated bait spotting and sterile fruit fly technique is used to eradicate fruit fly, with bait spotting applied once or twice a week for two weeks.

What is bait spotting?

Bait spotting is the application of nine to twelve 50 mL spots of bait to suitable vegetation per property and is confined to places where fruit flies might shelter, including trees, shrubs and ornamentals.

The bait is a dilute mixture of Naturalure™ Fruit Fly Bait Concentrate and water that attracts and kills adult fruit flies. Naturalure™ has been certified as organic by Biological Farmers of Australia. The combination of bait spotting and the use of sterile insect technology is currently world's best practice in the eradication of fruit flies.

Disclaimer

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How are sterile fruit flies used?

At the completion of the bait spotting program, PIRSA releases sterile fruit flies into the outbreak area/quarantine zone with the aim of reducing the wild fruit fly population by limiting opportunities for the pest to successfully reproduce. Sterile fruit flies are released into the outbreak area either using a defined release grid (Queensland fruit fly) or via a slow moving vehicle (Mediterranean fruit fly). Sterile fruit flies mate with 'wild' fruit flies and any subsequent eggs laid are infertile, eventually eradicating the 'wild' population.

What is the Government doing to prevent fruit fly establishing in South Australia?

Since 1897, the South Australian Government has had a policy of acting on behalf of the community in:

- Preventing the introduction of fruit fly by requiring all commercial shipments of fruit to be free of fruit fly, and by restrictions on fruit carried by travellers.
- Detecting and eradicating any fruit flies which have been introduced in fruit by thoughtless travellers.

Although fruit fly prevention and eradication is controlled by law (Fruit and Plant Protection Act 1992), this legislation cannot be fully effective without the cooperation of the South Australian community. The partnership has been effective in keeping South Australia free of fruit fly for over 100 years. Major benefits of the program are seen by household fruit and vegetable growers and South Australia's commercial producers, through reduced insecticide use and therefore cost savings, when compared to areas of Australia where fruit fly is established.

What can I do to help?

- Don't bring fruit or fruiting vegetables into South Australia.
- Tell visitors from interstate not to bring fruit or fruiting vegetables across the border into South Australia as they may be infested with fruit fly.
- Should your home be included in an outbreak area, facilitate easy access to your property as part of the eradication program.
- Call the Fruit Fly Hotline on 1300 666 010 if you would like more information or visit the PIRSA website – www.pir.sa.gov.au.

David Heaven, Plant Health

**Be fruit fly aware
DON'T BRING ANY FRUIT
INTO SOUTH AUSTRALIA
REPORT ALL MAGGOTS TO:
Fruit Fly Hotline
Telephone: 1300 666 010**