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FRUIT FLIES

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INTRODUCTION

Tephritid fruit flies are flies whose larvae or maggots attack many kinds of ripening fruits and vegetables. They may cause extensive damage to crops in Papua New Guinea.

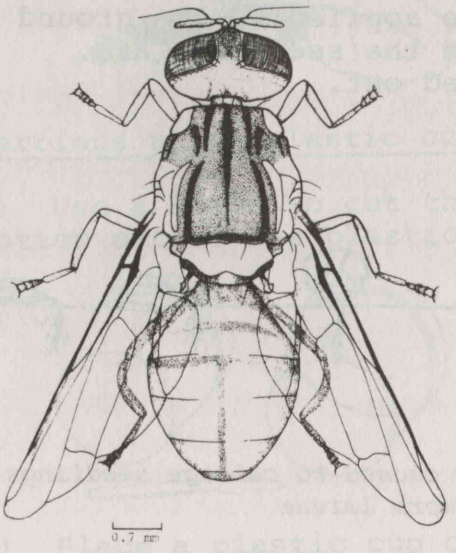
DESCRIPTION

There are many different species (kinds) of tephritid fruit flies in Papua New Guinea. Most are black or red-brown with yellow markings on the body. They range in size from 5 mm to 12 mm. Most have dark marks on the wings. Any flies like this which are attracted to, or reared from fruit or vegetables are likely to be tephritid fruit flies.

BIOLOGY

The female fly lays its eggs under the skin of the fruit. When they hatch the larvae bore into the fruit which then quickly starts to rot. The fully grown larva is about 10 mm long, whitish, sharply pointed at the head end and rounded at the tail. Tephritid fruit fly larvae are able to jump 2 to 3 cm and this behaviour is most often seen when the larvae are exposed after cutting open an infested fruit.

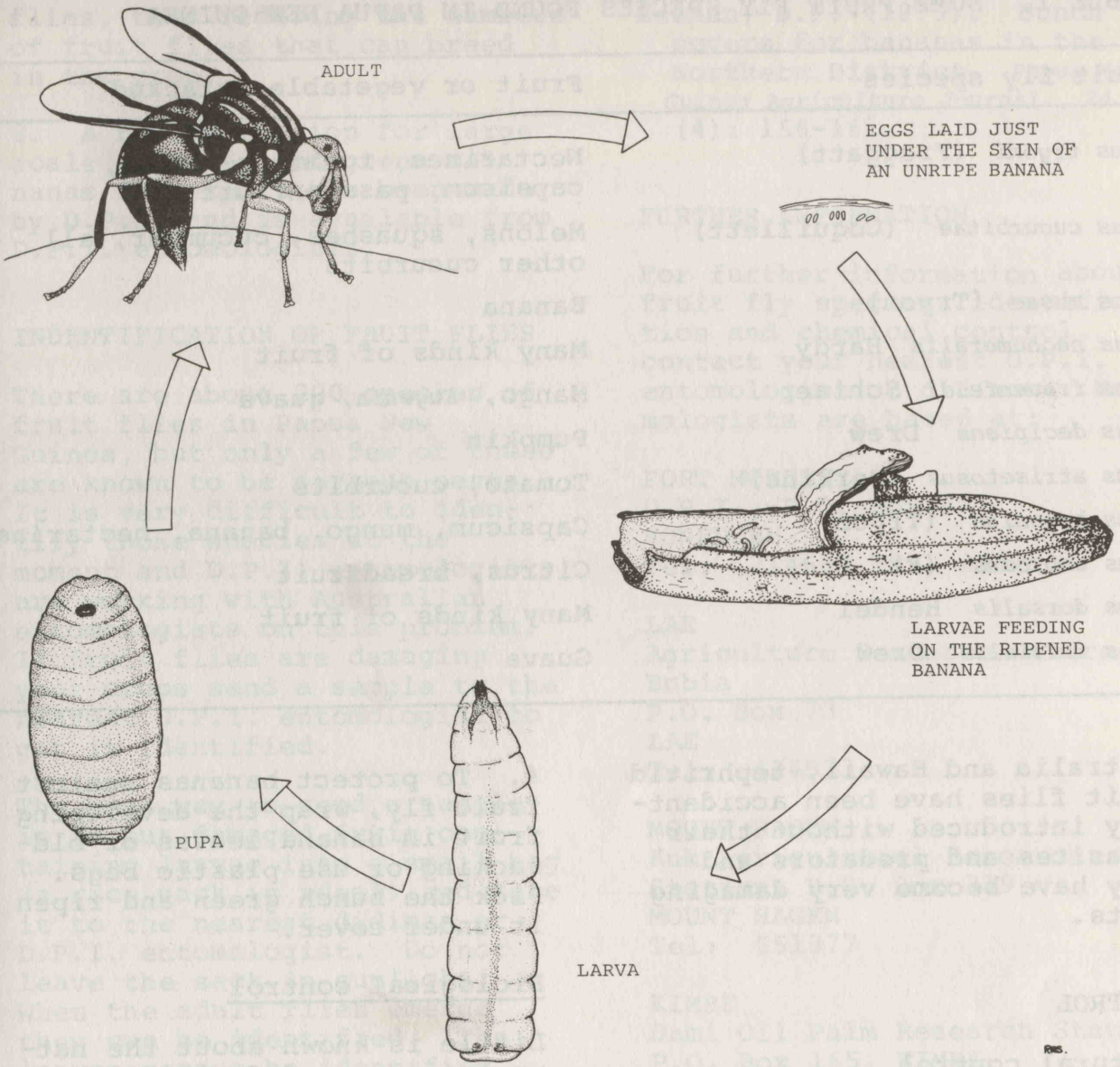
The developmental period varies from species to species. The



The banana fruit fly, adult stage

life cycle of the banana fruit fly, *Dacus musae*, given here is typical of most tephritid fruit flies in Papua New Guinea.

Female banana fruit flies lay batches of 7 to 12 eggs just below the skin of an unripened banana. The eggs are laid while the bananas are still green, a few days before they change colour and ripen. The eggs hatch 3 to 11 days later and the larvae eat the soft fruit. The larvae mature within 8 to 9 days and they drop out of the rotting fruit to pupate (enter the resting stage) in the damp soil at the base of the banana plant. The pupa is reddish-brown, cylindrical and broadly rounded at both ends.



Stages in the life cycle of the banana fruit fly

The pupal stage lasts 7 to 10 days. The adult fruit fly then emerges and becomes sexually mature about 2 weeks later. Under normal lowland conditions the usual life span for a generation is 4 to 5 weeks.

ECONOMIC IMPORTANCE

Tephritid fruit flies are important because of the damage done to mature fruit by their larvae. The fruit is eaten by the larvae and this quickly becomes rotten and inedible. Different species of tephritid fruit fly attack different kinds of fruit and vegetables. Table 1 shows the fruit and vegetables attacked by some species of fruit flies in Papua New Guinea.

Despite the many species of fruit fly and the many kinds of fruit and vegetables that they will attack, serious economic damage in Papua New Guinea is at present uncommon. This may be because fruit flies have been in Papua New Guinea for many years and their natural enemies keep them under control and also because at present there are no really large areas of land planted to fruit crops. In some countries, including

TABLE 1. SOME FRUIT FLY SPECIES FOUND IN PAPUA NEW GUINEA

Fruit fly species	Fruit or vegetable attacked
Dacus tryoni (Froggatt)	Nectarines, tomato, *Eugenia*, capsicum, passionfruit
Dacus cucurbitae (Coquillett)	Melons, squashes, cucumber, all other cucurbits
Dacus musae (Tryon)	Banana
Dacus neohumeralis Hardy	Many kinds of fruit
Dacus frauenfeldi Schiner	Mango, *Eugenia*, guava
Dacus decipiens Drew	Pumpkin
Dacus atrisetosus (Perkins)	Tomato, cucurbits
Dacus bryoniae (Tryon)	Capsicum, mango, banana, nectarine
Dacus umbrosus (F)	Citrus, breadfruit
Dacus dorsalis Hendel	Many kinds of fruit
Dacus trivialis Drew	Guava

Australia and Hawaii, tephritid fruit flies have been accidentally introduced without their parasites and predators and they have become very damaging pests.

CONTROL

Cultural control

1. Always pick your fruit or vegetables promptly. If they can ripen after picking, pick them before they are ripe and ripen them under cover.

2. Clear away any fallen or rotting fruit or vegetables from the garden and surrounding areas.

3. Many fruit flies will live in several kinds of fruit and vegetables. If you have fruit flies in your garden check that they are not also living in wild fruits in the surrounding bush. If you remove these alternate host fruits it will help protect your garden.

4. To protect bananas against fruit fly, wrap the developing fruit in banana leaves or old sacking or use plastic bags. Pick the bunch green and ripen it under cover.

Biological control

Little is known about the natural enemies of fruit flies in Papua New Guinea. The only recorded natural enemy of the banana fruit fly is a black earwig called *Chelisoches morio*, which is common on banana bunches in the field. *Chelisoches* has been seen to eat fruit fly larvae and exert some biological control.

Chemical control

1. If there are many fruit flies and other methods of control fail, use 0.5% Dimethoate. Spray weekly when required and wait 7 days before using the crop.

2. 'Dak-pot' fruit fly lure will attract and kill male fruit

flies, thus reducing the numbers of fruit flies that can breed in the crop.

3. A recommendation for large scale treatment of green bananas for export has been made by D.P.I. and is available from D.P.I. entomologists.

INDENTIFICATION OF FRUIT FLIES

There are about 200 species of fruit flies in Papua New Guinea, but only a few of these are known to be serious pests. It is very difficult to identify those species at the moment and D.P.I. entomologists are working with Australian entomologists on this problem. If fruit flies are damaging your crops send a sample to the nearest D.P.I. entomologist to get it identified.

The best way to send a sample is to put damaged fruit containing larvae into a small bag (a rice sack is ideal) and take it to the nearest didiman or D.P.I. entomologist. Do not leave the sack in sunlight. When the adult flies emerge they can be identified. The larvae cannot be identified.

You may also see small yellow or brown flies about 2-3 mm long attracted to rotting or decaying fruit. These are lesser fruit flies (*Drosophila*) and are of no economic importance because they only attack fruit that is already rotten.

FURTHER READING

Smith, E.S.C. (1977). The banana fruit fly, *Dacus musae* (Tryon), in Papua New Guinea. In Enyi, B.A.C. and Varghese, T. (Eds). *Agriculture in the Tropics*. University of Papua New Guinea.

Heenan, D.P. (1973). Bunch covers for bananas in the Northern District. *Papua New Guinea Agriculture Journal*. *24* (4): 156-161.

FURTHER INFORMATION

For further information about fruit fly species, identification and chemical control, contact your nearest D.P.I. entomologist or didiman. Entomologists are based at:

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