PEST ADVISORY LEAFLET NO. 36

Plant Protection Service
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FRUIT BAGGING TO CONTROL FRUIT FLIES

FRUIT FLIES cause considerable damage to fruits, resulting in lost production at the village and commercial level. Adult female flies lay eggs in maturing fruits, and these hatch into white maggots (larvae) that feed in the fruit flesh. An infested fruit is considered lost and has no marketable value, even if a single larva is present inside.

Fruits can be easily protected by **bagging** them in newspaper bags. The bag provides a physical protection to the fruit by preventing adult female flies laying eggs. Bagging has been used for a very long time in Asia by commercial planters and smallholder farmers. The carambola export industry in Malaysia, worth 10 Million US$ in 1994, protects entire orchards by bagging. This has been successfully practised for over 70 years. It is also widely practised to protect mangoes in Thailand and Philippines and melons from melon fly in Taiwan. Bagging is inexpensive and easy to apply and guarantees nearly complete protection from fruit flies. It is ideal for small scale growers who do not use pesticides.

To **prepare a bag** (Figures 1 to 4): **1.** Use a double layer of newspaper sheet. A single layer breaks easily. **2.** Fold and sew or staple the sides and bottom of the sheets to form a rectangular bag.

To **bag fruits** (Figures 5 to 6): **1.** Blow in the bag to inflate it. **2.** Place the fruit in the bag and firmly tie top end of bag with string or tie wire. Bag immature fruits not yet infested with larvae, but do not bag very young fruits. **3.** Push the bottom of bag upwards to make it "**v**"-shaped. This prevents damage by rain and keeps the bag inflated, and keeps the fruit away from the sides of the bag.

The bag may be carefully opened to check if the fruit inside is ripe. Bagging produces very high quality fruits at harvest (Figures 7 to 8). It is best suited to protect guavas, mangoes and carambolas.

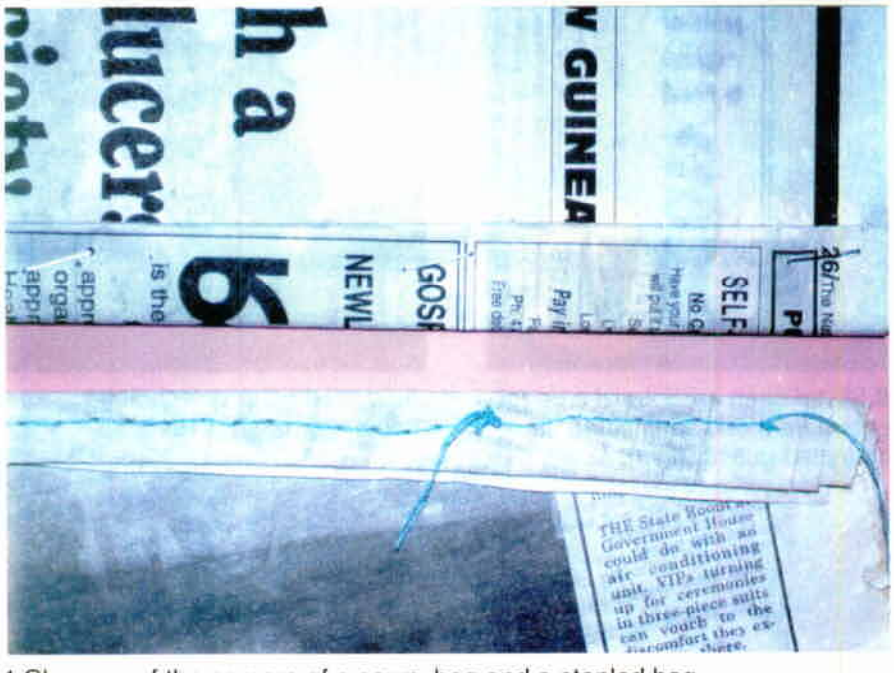
Plastic bags may be used but are not ideal, because the inside gets hot and moisture favors fungus growth, though it is more suitable for large cucurbits. Alternatively, bags made of natural leaves may be used. Leaves of Pandanus, betel nut tree, sago palm or swamp taro are recommended. To protect bananas, the whole bunch may be bagged inside banana leaves, as frequently practised in Papua New Guinea (Figure 9).

How to make a bag

1. Folding the bottom of newspaper bag.

2. Folding the side of newspaper bag.

3.Stapling the side of a newspaper bag.



4.Close up of the corners of a sewn bag and a stapled bag.

How to bag fruits

5. Inserting a guava into a bag.

6. Pushing the bottom of the bag (holding the guava).

7. High quality guava inside an open bag at harvest.

8.Sliced open sections of a bagged guava (left) and an infested un protected guava (right).

9.Bagged banana technique commonly used in PNG.

This leaflet was prepared by Luc Leblanc, United Nations Volunteer Entomologist, Amanda Manaruai, Junior Scientific Officer, and Michael Kalamen, technician, all working in Papua New Guinea under the PNG Fruit Fly Project, which is a collaboration between the FAO/AusAID/UNDP/SPC Project on "Regional Management of Fruit Flies in the Pacific" and the ACIAR project on "Identification, Biology, Management and Quarantine Systems for Fruit Flies in PNG".

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