

Management Practices

Pest monitoring, management, and control strategies aimed at maintaining low pest populations, including a fruit fly trapping program, must be implemented in all orchards.

MOAF&M will periodically visit production sites and audit records, which may be provided to APHIS upon request. Harvested fruits must be placed in field bins or containers that are marked to show origin in a manner that enables traceback to the field.

1. Pruning

Prune orchard trees annually to maintain an open canopy of manageable size.

2. Field sanitation

Clear fallen fruits from the farm on a regular basis to prevent harbouring pests. Fallen fruits should be sealed in a plastic bag and placed in sun for 7-10 days or bury mangoes to a depth of at least 2 feet covering with a thick layer of soil.

3. Fruit Fly Trapping Programme

Use traps baited with torula yeast to trap flies. Place 1 trap for every 5 acres. If you have less than one acre of mango trees, place only one trap on the farm.

Place traps in a shady area of the mango tree so that it is not exposed to direct sunlight, strong wind or dust. Hang trap 6-12ft from the ground. Traps should be placed so that the trap opening is not blocked by twigs and leaves.

4. Chemical control

Use a broad-spectrum pre- or post-harvest fungicidal application for stem end rot and Bacterial Black Spots and a suitable insecticide for control of fruit flies on a scheduled basis.



Ministry of Agriculture, Fisheries & Mining
PLANT QUARANTINE/PRODUCE INSPECTION BRANCH

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Growing Mangoes for Export to the USA



Mangoes may be imported into the continental United States from Jamaica only under the following conditions:

The mangoes:

- 1. **Must** be grown on farms that are registered with the NPPO of Jamaica-the Plant Quarantine Produce Inspection Branch
- 2. **Must** be imported in **commercial consignments** only
- 3. May be treated with a broad-spectrum pre- or post-harvest fungicidal application for diseases
- 4. **Must** be treated for fruit flies by irradiation with a minimum absorbed dose of 150 Gy
- 5. **Must** be transported, from the farm to the packing house, in a covered vehicle, in bins covered with insect-proof mesh to prevent infestation of fruit flies.

Responsibilities of Growers

- 1. Register his/her orchard with Ministry of Agriculture, Fisheries & Mining (MOAF&M) 90 days before the export season begins.
 - Each orchard site will be issued a unique and permanent Production Unit Code (PUC), by MOAF&M which will serve as a traceability code

- 2. Establish clearly defined lots within the orchard from which fruits will be harvested and presented for pre-shipment inspection.
 - Only fruits from lots with less than 1 fruit fly per trap per day (FTD) will be authorized to harvest for export.
- 3. Implement and maintain the management practices and procedures
- 4. A year round fruit fly trapping system must be implemented in the orchard
 - Accommodation must be made for MOAF&M to inspect traps
 - Any damage to traps must be immediately reported to MOAF&M for replacement.
- 5. Keep records, including chemical treatment, trap servicing, pruning schedule.
 - Records must be made available to MOAF&M personnel for inspection upon request.
- 6. The workers must adopt hygienic practices at all times while on the farm.

Target Quarantine Pests and Required Mitigations

Action	Number found	Pest Type	Target/ Non-target Pest
Reject consignment	1 or more	Fruit fly (<i>A. suspensa</i> , <i>A. obliqua</i>)	Target pest
Reject consignment	1 or more	Scale Insect (<i>Coccus moestus</i>)	Non-Target pest
Reject consignment	1 or more	Stem End Rot (<i>Phomopsis mangiferae</i>)	
Reject consignment	1 or more	Bacterial Black Spot (<i>Xanthomonas campestris</i> pv. <i>mangiferaeindicae</i>)	
Reject consignment	1 or more	Other insect pests, excluding Lepidopteran pupae or adults	
Certify consignment but notify APHS of the pest	1		
Reject consignment	2 or more		
Reject consignment	1 or more	Snail, disease, or mite	

Note:
If a pest or disease is detected at the port of entry in the United States, the shipment of mangoes would be denied entry into the United States and future shipments from the place of production where the mangoes were grown will be prohibited.



Figure 1: West Indian Fruit Fly (*Anastrepha obliqua*)
Photo credit: Alberto Luiz Marsaro Junior



Figure 2: Caribbean Fruit Fly (*Anastrepha suspensa*)
Photo credit: Division of Plant Industry, University of Florida

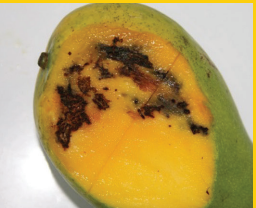


Figure 3: Fruit fly damage on mango, Jamaica



Figure 4: Scale Insect (*Coccus moestus*)
Photo credit: Division of Plant Industry, University of Florida



Figure 5: Bacterial black spot on mango leaves.
Photo credit: A. A. Seif



Figure 6: Stem end rot of mango (*Phomopsis mangifera*).
Photo credit: Post harvest Science Dept., Agricultural Research Organization, Israel

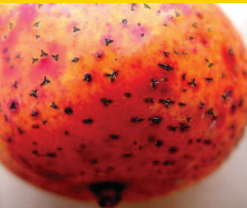


Figure 7: *Xanthomonas campestris* pv. *mangiferaeindicae* (Bacterial black spot) on mango fruit.
Photo credit: A. A. Seif