

Pre- and post-harvest management of mangoes



Management of trees



Handling of growing fruits



Harvesting of fruits



Handling of harvested fruits



Processing of fruits



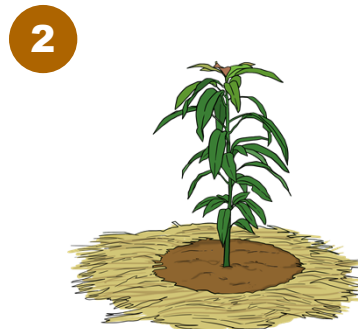
Packing fresh fruits



Soil nutrient management in mango production



1
Applying compost or manure at planting



2
Mulching around young trees



3
10 t per ha and year
Top dressing with compost or manure around growing trees



4
Top dressing with compost or manure around mature trees



5
Growing cover crops after 3 years



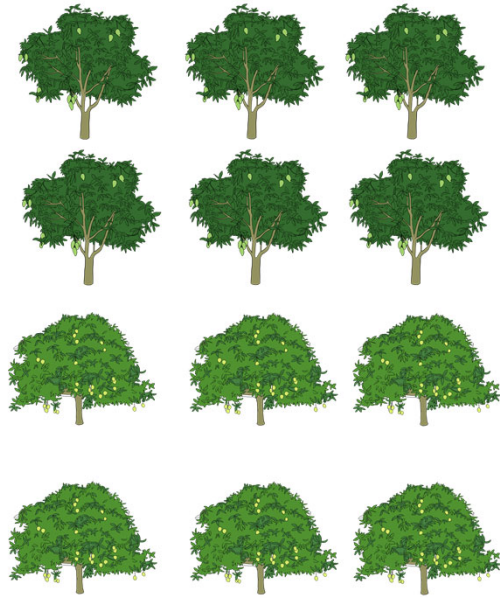
Benefits of good soil and water conservation

<p>Strong erosion</p>	<p>Overheating</p>	<p>Reduced erosion</p>	<p>No overheating</p>
<p>Poor soil structure</p>	<p>Many weeds</p>	<p>Good soil structure</p>	<p>Suppression of weeds</p>
<p>High evaporation</p>	<p>Low soil biological activity</p>	<p>Low evaporation</p>	<p>Encouraged soil biological activity</p>
<p>Poor soil and water conservation</p>		<p>Good soil and water conservation</p>	

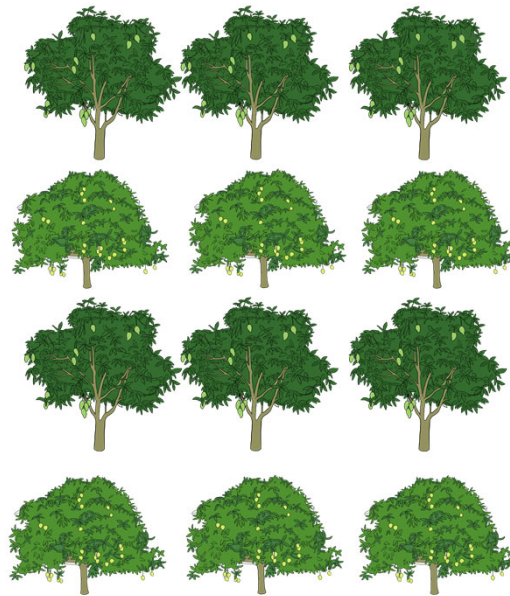


Arranging varieties in the mango orchard

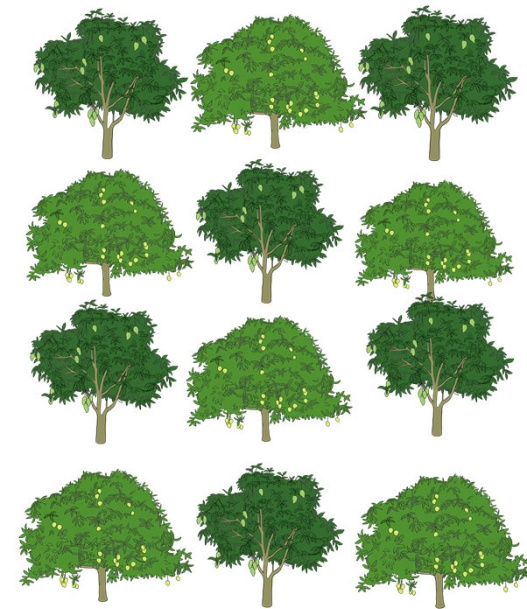
Different varieties
in **separate orchards**



Different varieties
in **separate alleys**
in the same orchard

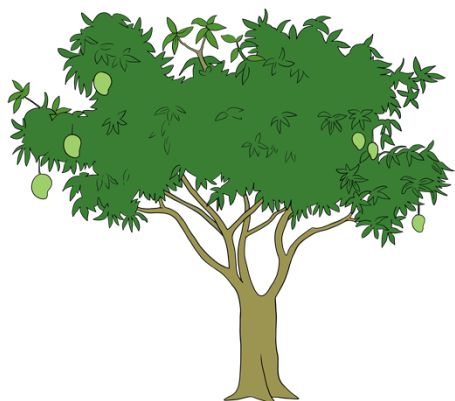


Different varieties
randomly mixed
in the same orchard



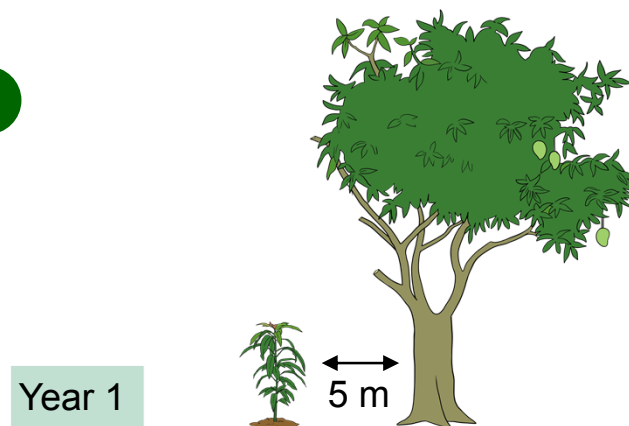
Replacing old trees in the orchard

1



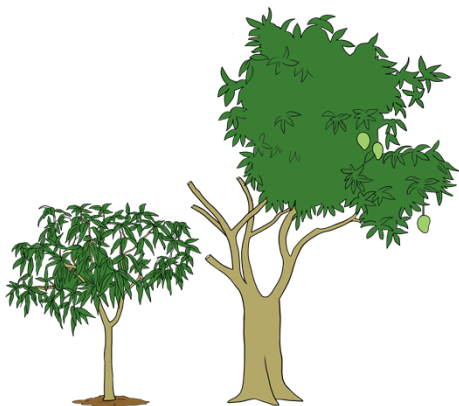
Remove old unproductive branches from one side of the tree

2



Plant a new mango tree in the alley between old trees

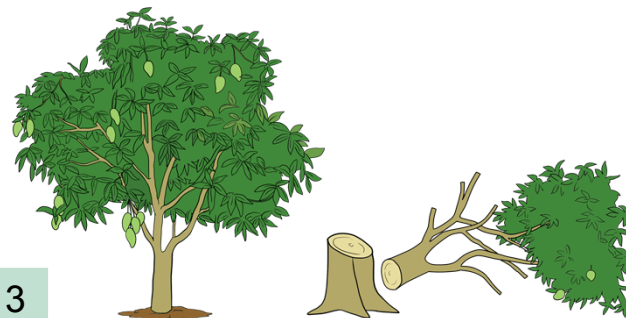
3



Year 2

Continue pruning the old tree as the young tree grows

4



Year 3

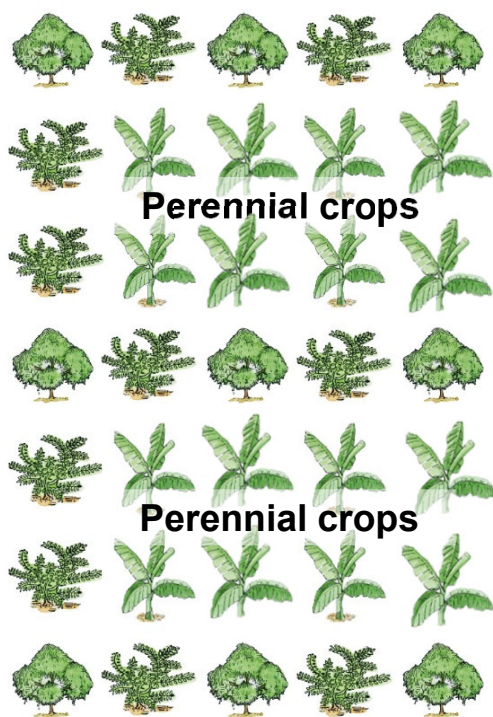
Cut the old tree, when the young tree starts fruiting



Intercropping in mango orchards

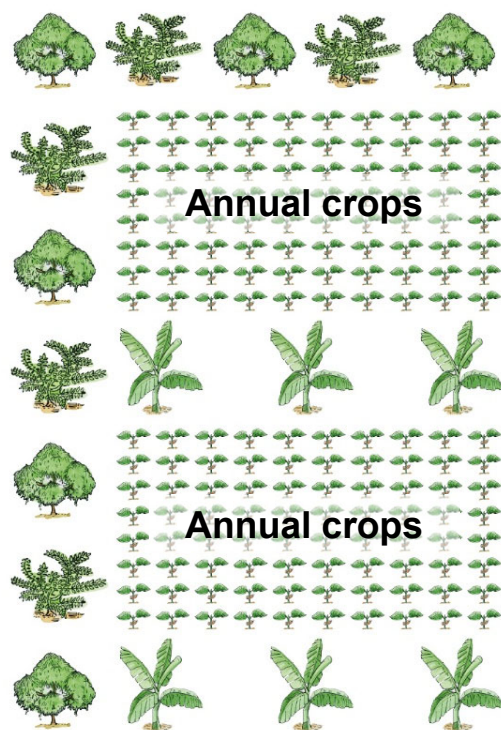
A

Mango with perennial crops



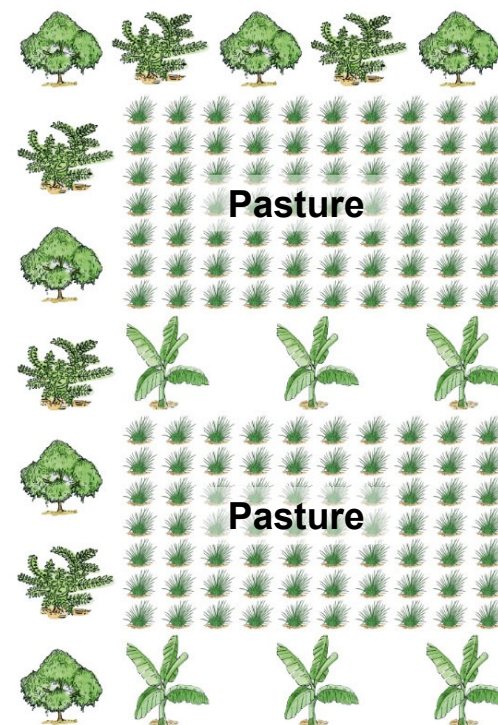
B

Mango with annual crops



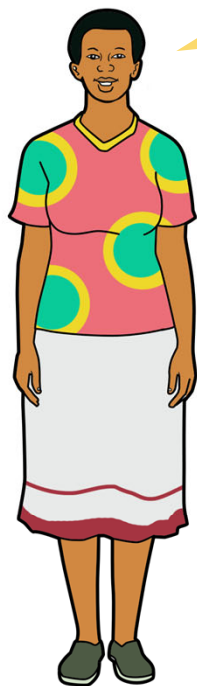
C

Mango in agroforestry / silvi-pastoral systems

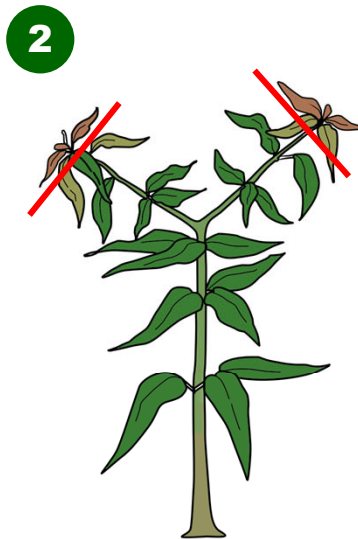


How to form young mango trees

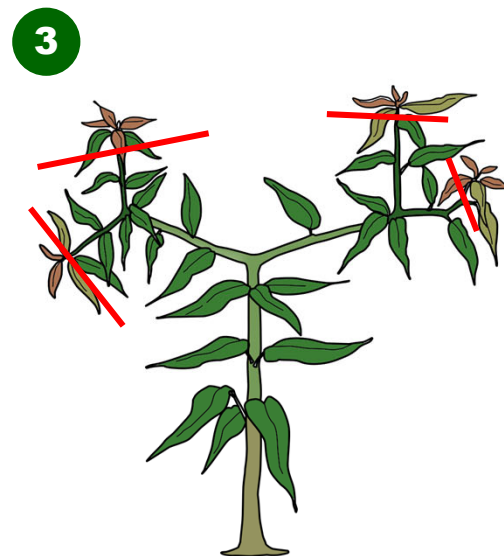
Prune before the node!
If you prune after the node, the tree will produce too many shoots.



In the 1st year, when trees are about 1 m



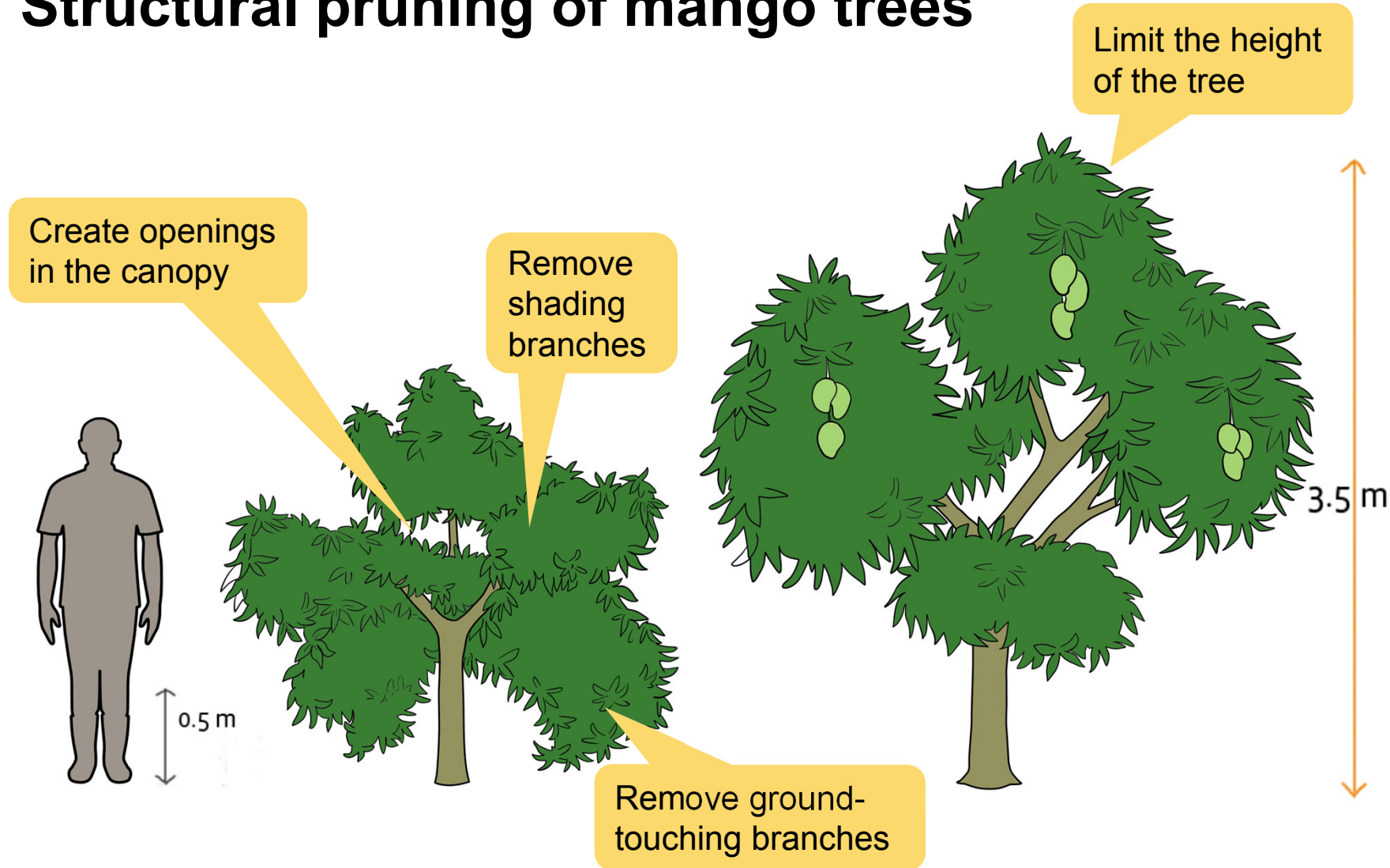
Leave 3 to 4 branches



After every second flush of leaves



Structural pruning of mango trees



Pegging of heavy branches



Make sure you support the branches of young trees so that they do not break.



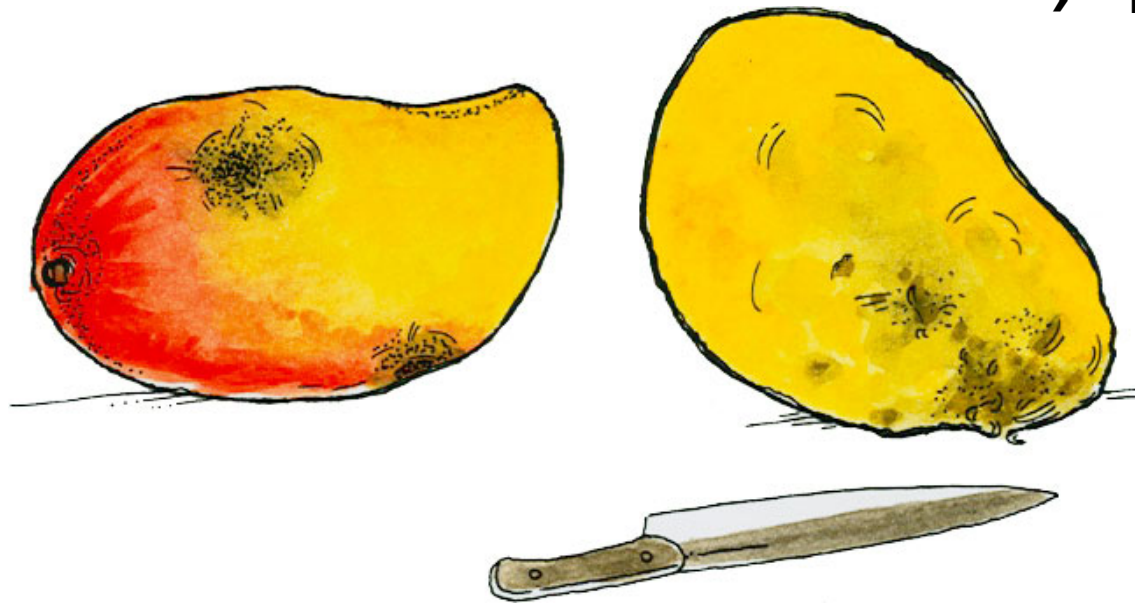
Fruit fly

Symptoms:

- › Infected or rotting mango flesh, sometimes with fruit fly larvae or maggots (the mango seed is not affected, only the flesh)

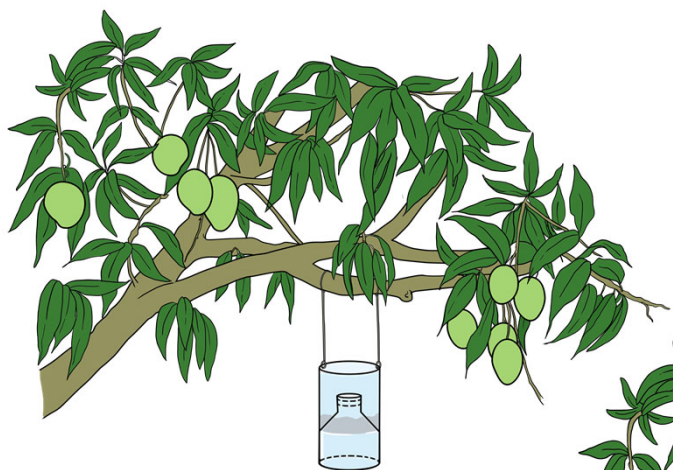
Control:

- › Continuous monitoring
- › Orchard sanitation
- › Natural enemies
- › Biopesticides
- › Bagging



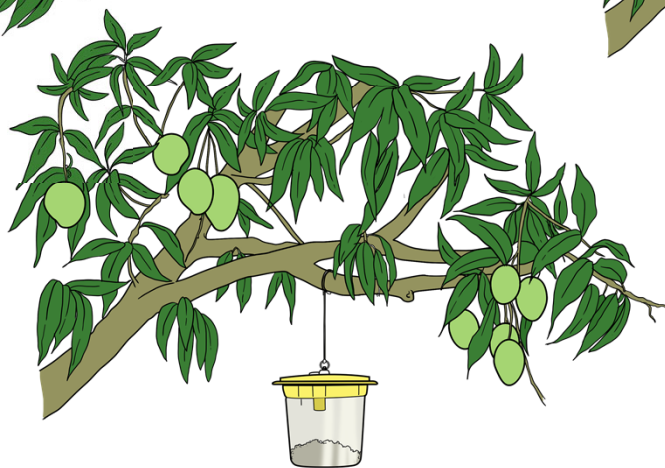
Physical pest control methods

Bait traps



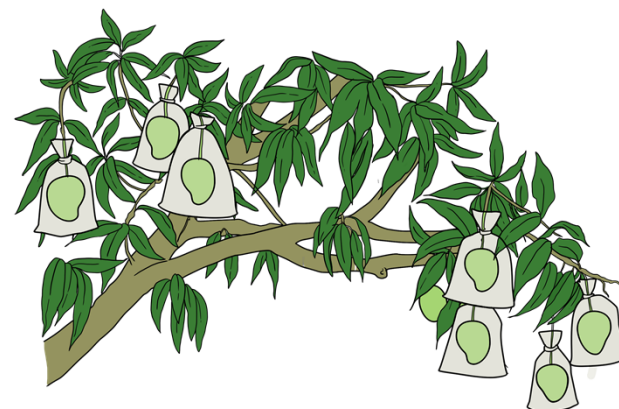
Home-made:
1 trap per tree

Pheromone traps



Factory-made:
1 trap per acre

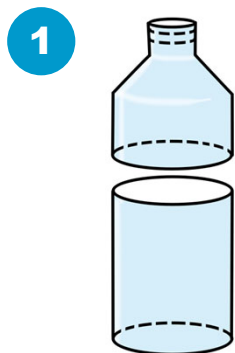
Fruit bagging



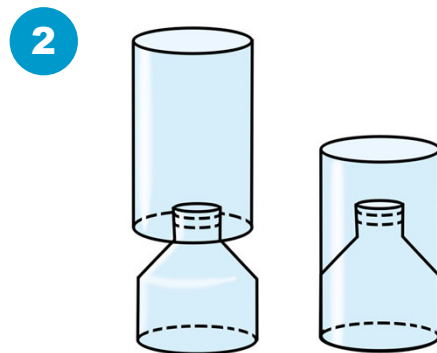
Home-made:
1 bag per fruit



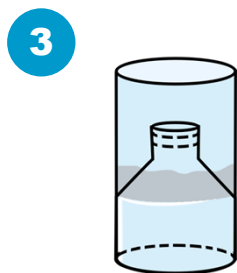
How to make a bait trap



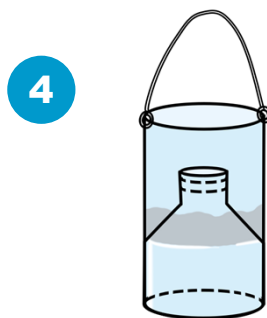
1 Cut a bottle in half



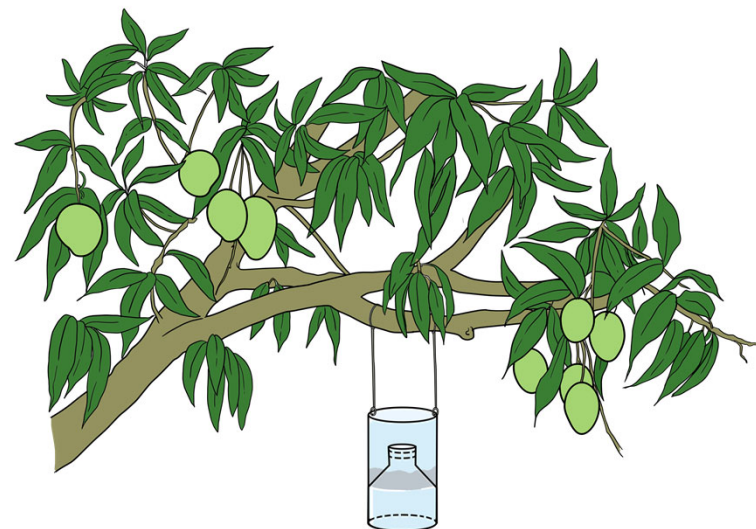
2 Put the two parts together



3 Fill-in 50 ml of the bait solution (80 g sugar in 1 litre of water)



4 Hang-up 1 trap per tree



5 Refill bait every week



Mango seed weevil

Symptoms:

- › Infected or rotting fruit seed, sometimes with visible weevil larvae/maggots



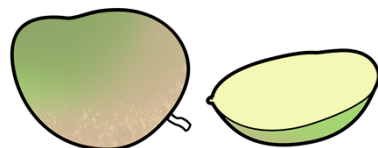
Control:

- › Continuous monitoring to ensure timely intervention
- › Orchard sanitation
- › Orchard quarantine
- › Applying sticky bands



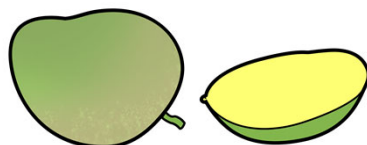
Recommended harvesting stages of mangoes

Unripe



- More sensitive to chilling injury in after-harvest storage
- May not ripen adequately
- Inferior flavor
- Poor taste

Slightly ripe



- Light yellow flesh

Export maturity

Ripe

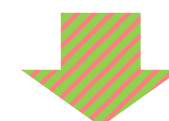


- Visible ripeness (1/4 to 1/2 ripe)

Domestic market maturity

Fruit drying

Very ripe



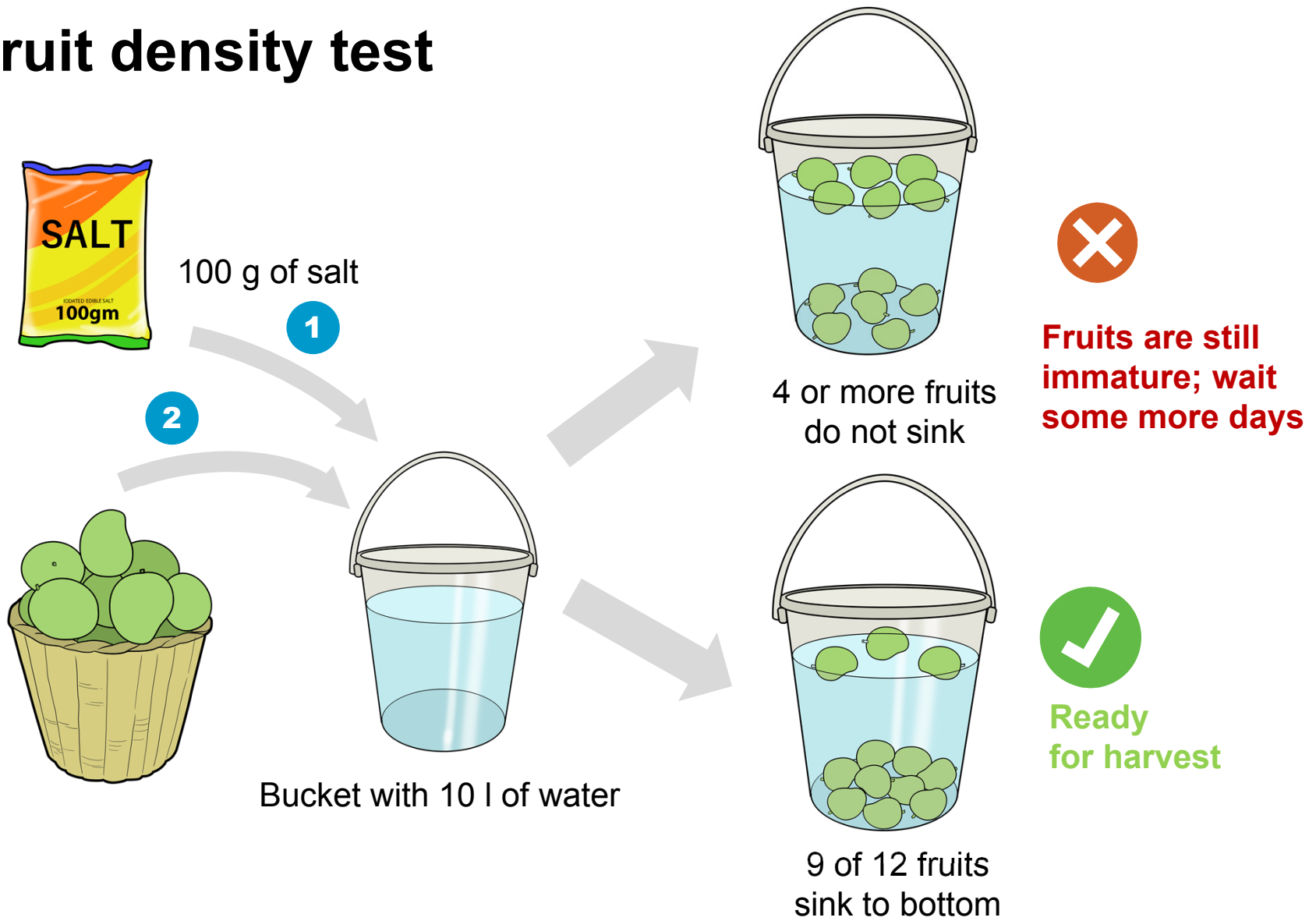
- Tasteful
- Very sensitive to bruising, decay and water loss
- Rapid deterioration of quality
- Short shelf life

Processing

Rapid consumption



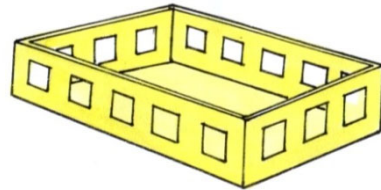
Fruit density test



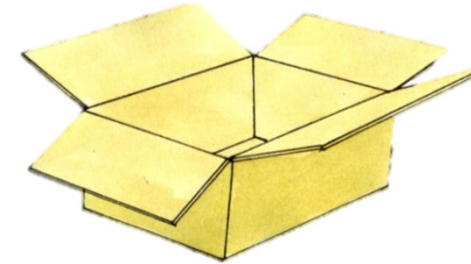
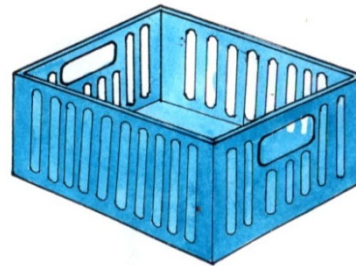
Appropriate harvesting tools and containers



Woven baskets



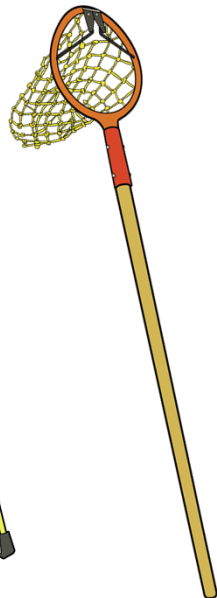
Plastic crates



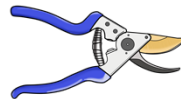
Cardboard boxes



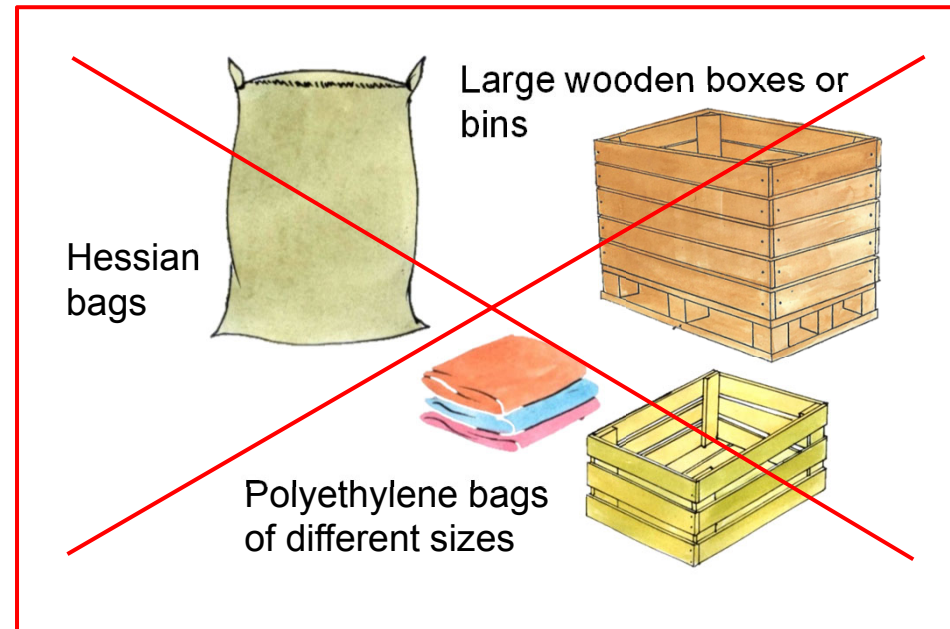
Ladder



Harvesting net



Shears



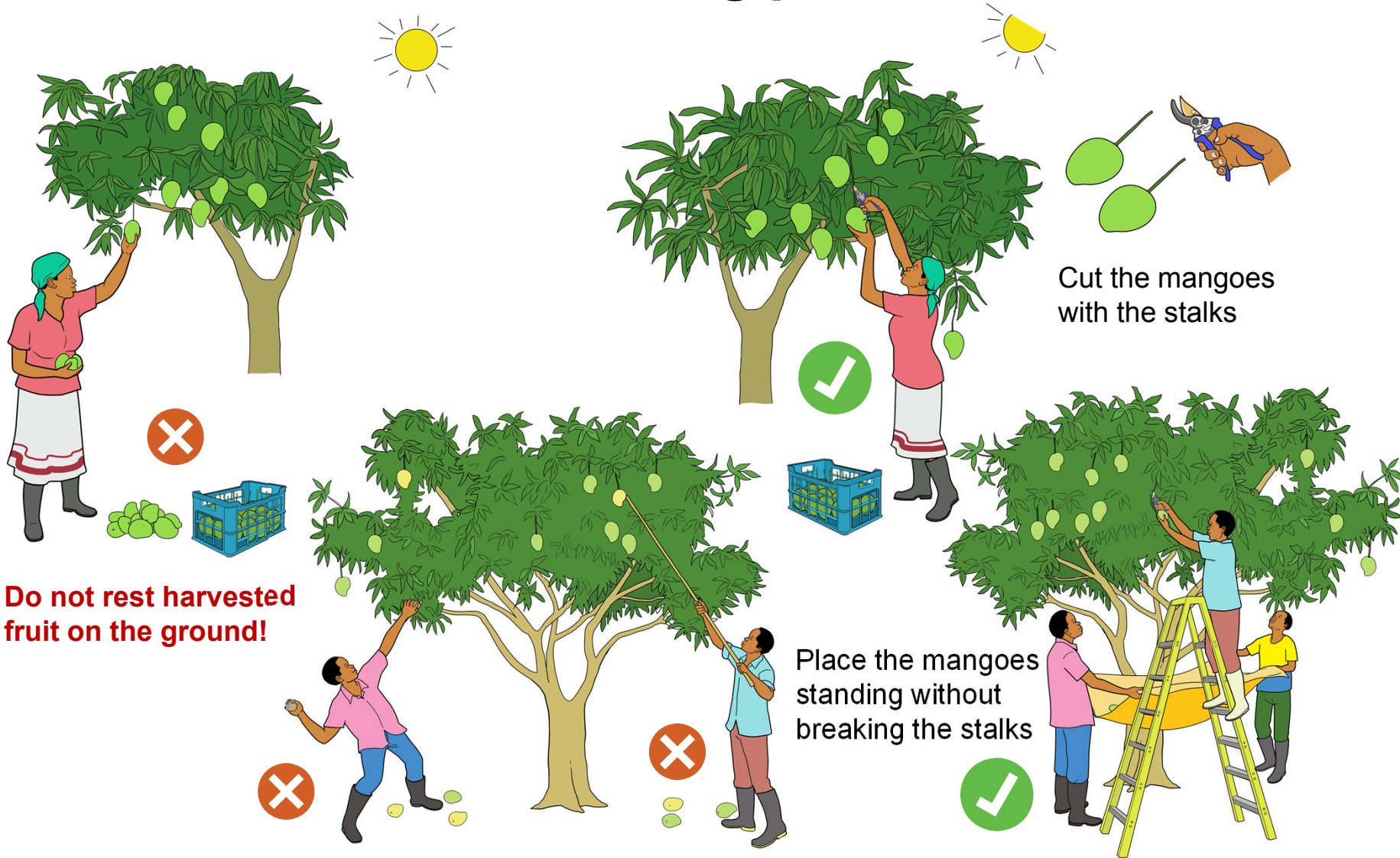
Hessian bags

Large wooden boxes or bins

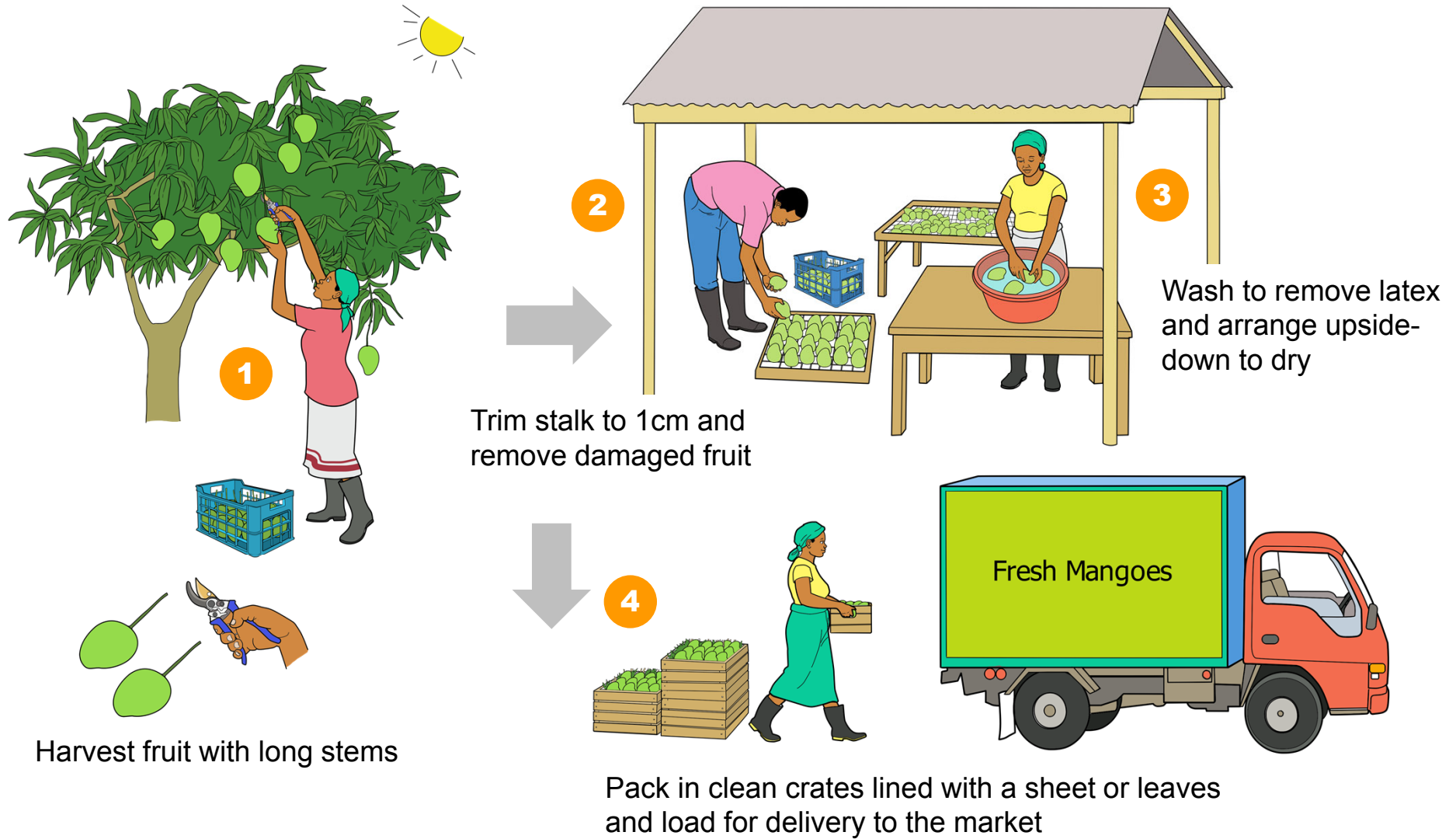
Polyethylene bags of different sizes



Recommended harvesting procedures



After-harvest handling of mangoes



Quality criteria for mango according to the Codex Alimentarius

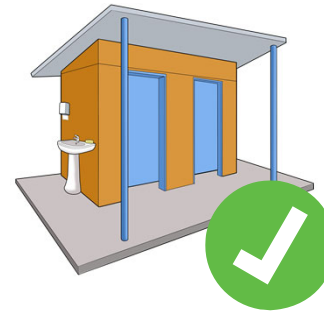
- ✓ Whole, firm, sound and fresh in appearance
- ✓ Clean, practically free of any visible foreign matter
- ✓ Free of black necrotic stains or trails
- ✓ Free of marked bruising
- ✓ Free of abnormal external moisture, excluding condensation following removal from cold storage
- ✓ Free from damage caused by low or high temperature
- ✓ Free of any foreign smell and / or taste
- ✓ Free of damage caused by pests
- ✓ Sufficiently developed and of satisfactory ripeness
- ✓ If peduncle, then not longer than 1.0 cm
- ✓ Comply with the residue levels of heavy metals, pesticides and other food safety parameters as laid down by the Codex Alimentarius Commission



Employee sanitation practices checklist



Provide access to restroom facilities, soap, single-use paper towels, and clean water at all times.



Monitor workers to ensure proper use of facilities. Hand-washing stations located outside of restrooms can aid supervisors in ensuring employee hygiene.



Provide a place for workers to remove aprons, hair covers, and / or gloves and store them outside of the restroom.



Do not allow injured or ill workers to handle fruit.



Instruct workers to wash hands before and after eating, smoking, or using the restroom.



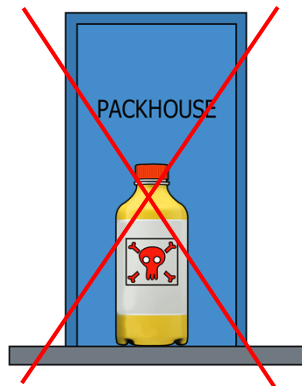
Do not allow workers to sit or stand on fruit handling containers and surfaces that will get into contact with fruit.



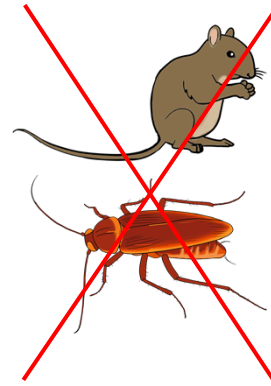
Packinghouse equipment and facilities sanitation checklist



Clean and sanitize harvesting crates, packing line equipment, refrigeration units, trucks, and other equipment prior to use. Use a chlorine solution of 200 ppm (parts per million) that is between 25 and 43 °C (77 and 110 °F) and adjusted to pH 7 with citric or acetic acid for sanitization.



Physically separate mangoes that have gone through the packing line from the rest of mangoes. Separate mangoes from any other materials like chemicals, or any other potential contaminants.



Exclude pets, rodents, birds, and insects from storage and enclosed work areas.

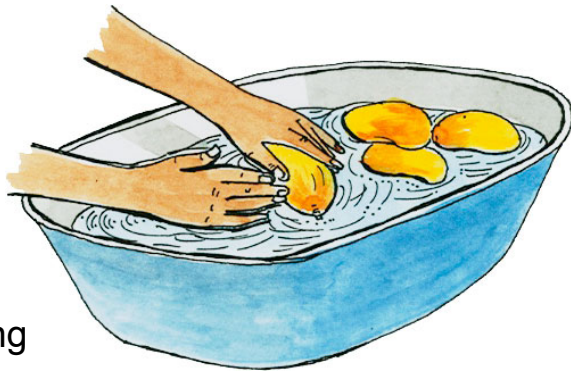


Do not transport soil, manure, chemicals, livestock, or other animals on trucks that are used to carry mangoes.



Mango fruit drying at farm level

1



Washing

2



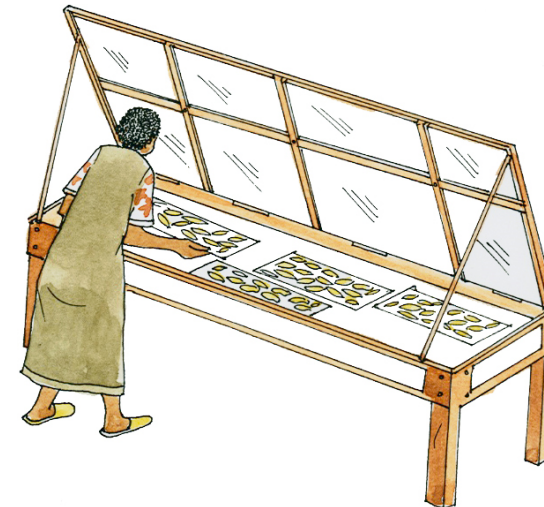
Peeling and slicing

3



Laying on drying trays

4



Drying



Handling mangoes for drying



1
Sorting and washing sufficiently ripe mangoes



2
Peeling and slicing



3
Laying on drying trays



4
Drying



5
Sorting dried mangoes



6
Packing



After-harvest management of the mango orchard

