



Ministry of Industry, Commerce,
Agriculture & Fisheries (MICAFA)



EXPORT PACKAGING FACILITY GUIDELINES

(All export packaging facilities must comply with these minimum requirements.)

STRUCTURAL REQUIREMENTS

Packing house must be strong enough to withstand the elements of nature. The structural frame of the packing house must be established using material that will facilitate proper washing, disinfecting and other means of sanitation.

SPACE

- Minimum operational floor space requirement is 92.9m² (1,000sq.ft)
- A portion of the 92.9M² should be used for storage – sawdust or coir dust storage, chemicals, boxes etc. However, an independent storage facility may be established outside the packing-house structure.

This 92.9M² area does not include space for office, sanitary convenience, storeroom, lunch room etc.

BUILDING STRUCTURE

- Must be a separate building from dwelling house in accordance with the public health standards.
- Must be of sound structure, established for fresh produce processing; the structure could be established using the following model:
 - *Constructed using concrete or suitable material (board not recommended for the main structure such as sides and floors). See figure 1.*
- The layout should be designed to allow for loading, off-loading, packing and dispatch of produce.



Figure 1: Model packing house built using concrete

FLOOR

- Concrete flooring for safe and easy movement of people and produce.
 - Floor must be steel, floated to allow free flow of water and washing after packing.
 - Floor must be sloped towards drain.
- It is recommended that where the floor meets the wall it should be curved with no right angles (semicircle/curves to prevent water settling and allow for easy cleaning).



Figure 2: Steel floated floor surface

WALL SURFACE

- Wall surface must be smooth and painted with light-colour food-grade paint (fungus resistant).
- Wall surface must be an easy-to-clean surface and not prone to growth of mould.

VENTILATION

Adequate ventilation is crucial for proper storing and drying of agricultural produce. This can usually be provided by walls which leave a wide ventilation space beneath the overhanging roof.

- ✓ At least one-third of wall space should facilitate proper air flow.



Windows

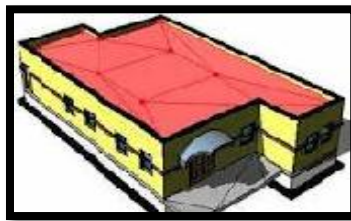
Figure 3: Windows one-third of the wall space will facilitate air flow

ROOFING

- Building must have adequate protection from the elements of nature.
- Roofing types: concrete slab, aluminium or galvanized zinc sheeting, or any other suitable roofing material - roofing tiles, shakes, and shingles.
 - Material for roofing must be clean and undamaged.
 - Translucent sheets could be used to enhance lighting inside packing house. However, this must only be done if ventilation is excellent. Translucent sheets may result in temperature build-up in the packing house.
 - Roof eaves should hang at least one metre all around
 - Roof must be constructed to prevent water settling
 - Packing house that is built with slab roof may require additional ventilation.



Roof tiles



Slab roof



Zinc roof

Figure 4: Types of roofs

LIGHTING AND ELECTRICITY

- Building should have electricity and adequate lighting to facilitate washing, sorting and packing. (Lighting should be a minimum 540 lux)
 - ✓ Choice of lights inside the packing house should be yellow lights; yellow lights act as a repellent for insects
 - ✓ White lights could be used away from the packing house to pull insects away from operation areas.
 - ✓ Bulbs are to be covered in order to prevent contamination of produce due to glass from broken bulbs.



Uncovered light



Covered light

Figure 5: Lighting

SCREENS (PROTECTION)

- Openings should be screened to protect against entry of insects, birds, rodents and other vermin or anything likely to contaminate the produce.
- ✓ Screen specification: insect-proof screen



Window screen



Door screen

Figure 6: Examples of insect-proof screens

Road

- Through-road access to the property; road should be relatively smooth and able to accommodate small to large trucks and cars.

Doors

- All screen doors leading to the operational area in the facility must be self-closing
- Must be flushed at the top and floor
- Wooden doors painted with fungus-resistance oil paint
- Easily cleaned, smooth, non-absorbent surfaces

DRAINS AND CHEMICAL DISPOSAL

Drains

- Drainage must be designed to handle run-off as well as water used in processing operations, without posing threat to the environment.
- ✓ Drains and wastage conveyance outlets: open-drain system to facilitate cleaning, and inclined to allow flow of waste from the packing house (must be designed to prevent the entry of rodents).



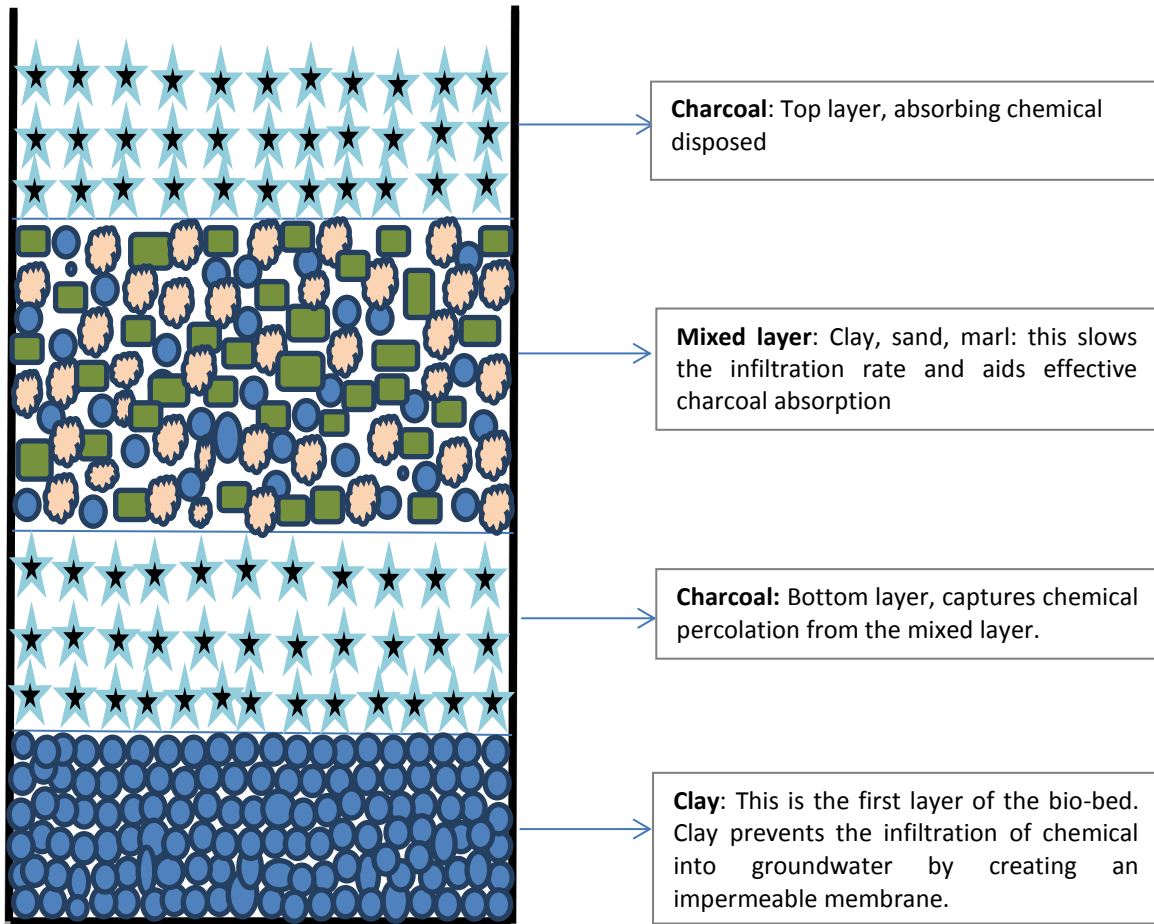
Figure 7: Open drains with suitable cover to prevent entry of rodents

CHARCOAL PIT

A charcoal pit should be constructed for the disposal of unused chemical mixture. The minimum pit dimension should be 90cm (3ft) wide and 120cm (4ft) deep. The pit should be layered, first with a layer of clay, then charcoal, then a mixture of sand, marl and clay (1:2:1:1 ratio) and topped with charcoal.



Figure 8: Charcoal pit made from plastic container



Key

- Clay
- ★ Charcoal
- Sand
- Marl

Figure 9: Cross-sectional layout of a charcoal pit

The composition of the charcoal pit should be in the ratio 1:1:2:1 that is, one part clay, one part charcoal, two parts mixed layer, and one part charcoal on top.

OPERATION AREA

Space layout/flow

From offloading through to finish, product should be in a unidirectional flow, with designated operational area. There should be a designated area for offloading, checking, sorting, treatment, packing, holding and dispatching

- Offloading
- Checking and selection
- Washing /cleaning
- Post-harvest treatment
- Drying
- Grading and sorting
- Packing
- Holding (finished product)

- ✓ Layout should be designed to allow free movement of produce and personnel throughout the packinghouse.
- ✓ Allow separate space for offloading, checking, and recording, washing, holding, treatments, packing and dispatch areas.
- ✓ Allot adequate space for equipment, chemicals, storage of packing supplies.
- ✓ Chemicals should be stored in a separate, secured, restricted, ventilated area.

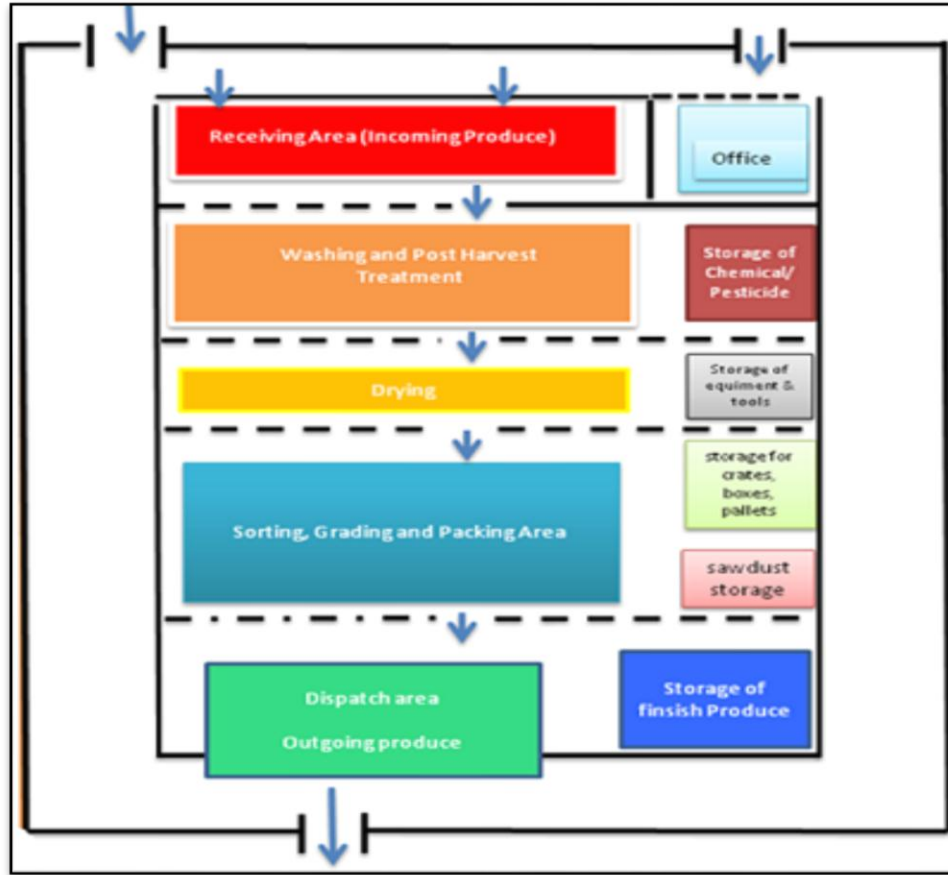


Figure 10: Unidirectional flow operations

EQUIPMENT, TOOLS & MATERIALS

Some tools, equipment and materials necessary for an effective operational flow in a processing and packaging facility.

Washing facilities

- Wash tank: Stainless steel, plastic (plastic must be food-grade finish) or concrete (smooth, impervious, non-absorbent, and cleanable).
- Elevated at a minimum of 75cm (2.5ft)



Concrete wash tank



Food-grade plastic wash tank

Figure 11: Wash tanks

Dip tank (plastic or concrete)

Treatment/dip tank [for post-harvest treatments]: high-density polythene supported on stands about 75cm high; concrete, smooth, impervious, non-absorbent, and cleanable)



Figure 12: Dip tank made from food-grade plastic and supported on a metal stand

Stools and chairs: Seating for workers must be suitable and provide the necessary support and comfort for the users.

Tables or drying racks

- Drying racks or tables made of plastic-covered wire mesh or diamond-shaped wire mesh are suitable. Dimension: 120cm x 240cm (4ft x 8ft)
- Sorting and grading table made from stainless steel or food-grade plastic. If constructed with board, the surface must be covered with a food grade plastic.
- Table and drying racks should be approximately 75cm (2.5ft) high.

Trays, bins: Produce bins, containers or trays should be preferably made of high-density polythene.

Knives: Knives must be stainless steel, well sharpened for cutting fresh produce

Pallets: Plastic or treated wooden pallets are recommended to be used inside the packing house

Produce wash brushes: Brushes must be available for washing ground produce

Cleaning equipment and supplies: These must be available – broom, mop, shovel, dust mask etc.

Scales

- Scales for weighing incoming fresh produce
- Scales for weighing finished commodity and
- Separate scale for weighing chemicals
- Scales should be calibrated and have metric units (kg)

Water: Potable running water (municipal or have proof of treatment)

Roller conveyors

Optional but recommended to facilitate better management, supported on stands, are ideal for the movement of bins or trays throughout the various stages of the operation.

CHEMICAL/PESTICIDE REQUIREMENTS

Pesticides should be stored under dry, cool conditions and be securely locked away. Pesticides must be stored separate from produce and packaging materials. Storage must be in accordance with Pesticide Control Authority regulations.

The appropriate chemicals should be used for the intended market.

See Post-Harvest Treatment guidelines.

Requirements for chemical/pesticide use in post-harvest operation

Gloves

- Rubber gloves. Must be sturdy
- 30cm (12 in) in length (from the base of the hand reaching to the elbow)

Mask and goggles (respirators)

- Use appropriate safety gears. *DO NOT USE DUST MASK*

Rubber boots and/or hard boots

- Must be worn within operational area

Measuring cylinders/cups

- Must be used to measure liquid chemicals correctly, e.g. Mertect

Scale (digital for small measurement)

- Small unit scale to measure powder-based fungicide, e.g. Botran

Spoon (teaspoon/tablespoon)

- Must be available and used to assist in measuring chemicals

Record books/sheet

- Proper record system must be in place and available for viewing upon request
- Records should be made of each post-harvest application
- Each application should be in compliance with the post-harvest fungicidal guidelines

For recommendations on approved pesticides for selected importing countries from Rural Agricultural Development Authority (RADA) and Pesticides Control Authority (PCA) see Annex III – Recommended postharvest chemical.

STORAGE

The operational flow chart that outlines the one-way-flow system will help to design designated areas for storing finish produce and material in a manner that will help to prevent cross-contamination.

Chemicals

- There should be a suitable storage area for detergent, soap, bleach, etc.
- Chemicals should be stored under dry, cool conditions and kept securely. Store chemicals separately from produce and packaging materials.

Stationery and shipment supplies: There should be suitable storage for boxes, tape, staples.

Finished product

- Designated storage area for finished product (finished products must not be stored in close proximity to untreated produce; cross-contamination must be avoided at all times).
- A chill room is considered the most suitable areas to store finished produce.

Packaging materials

- Proper storage for pallets
- Proper storage area for sawdust, coir fibre or dust.
- If sawdust is stored on the outside, a proper structure with a suitable roof that would prevent contamination from external factors (rain, dust, pathogens) should be constructed to facilitate covering and locking. This structure should be elevated at least 2ft from the ground.



Figure 13: Uncovered sawdust bin

PERSONNEL REQUIREMENTS

Protective gear

- Aprons, hair cover, hard boots should be worn at all times within the operational area in keeping with food safety standards.
- Protective gloves must be worn by personnel handling food

Personnel facilities:

Bathroom - Located away from operational area (must be properly maintained). Ratio of personnel to bathroom must be in accordance with public-health standards.

Hand wash station and Eye Wash Area - Provide adequate hand-washing facility with soap, hand sanitizer, disposable towels, and/or hand dryer



Hand wash station



Hand wash sink with sign

Figure 14: Hand wash facilities

Running water - Potable running water (municipal or proof of treatment for other sources)

Lunch room - Specific area for eating and relaxing located away from operational area

Changing room - Located away from the operational area with appropriate lockers for workers

Sickbay - Must be in place

First-aid kit

- Must be provided. All workers should know where the First-aid kit is located.
- Must have basic items (such as disinfectant, bandages, painkillers, activated charcoal (treatment for poisoning), smelling salts, rubbing alcohol).

Office

- Must be in place and accessible to staff
- Telephone, documentation processing, record storage etc.
- Provide records for review upon request e.g. the produce book
- Provide information on traceability programme, e.g. chemical usage

SANITATION

All packing houses must maintain proper operational hygiene in compliance with local and international standards.

Grounds

- Proper outdoor sanitation should be maintained. Shrubs, bushes and grass should be pruned.
- Animals are not allowed in the packing house or in the surroundings. There should be no rearing of goats, cows, pigs or other animals on the same compound.
- If dogs are used for security purposes, they must be secured during working hours in proper kennels.
- Covered bins, containers, garbage-disposal skips must be in place and conveniently located.

SIGNAGE

There should be adequate signage throughout the facility, for example: No Smoking, Please Wash Hands, Chemical Room, and No Eating

