CASSAVA PROCESSING TRAINING MANUAL

GARI
RAW MATERIAL: CASSAVA ROOTS

Process
• Harvest mature roots
• Weigh all raw material

Equipment
• Sharp implements for harvesting
• Calibrated balance/scales for weighing before and after processing

Tips
• Avoid immature, old, diseased, fibrous or woody roots
• Avoid damage during harvesting
• Process harvested roots within 24 hours for best quality and maximum recovery of processed products

Depictions
PEELING

Process
• Top and tail, and peel the roots using a sharp knife/peeler
• Remove the outer brown skin and inner thick cream layer
• Remove any diseased or woody parts from the roots
• Place the peeled roots in clean bowls of water or wash tank

Equipment
Clean, sharp edge stainless steel knife (sharpen and visually check blades on a regular basis)
• Clean containers or wash tanks/basin

Tips
• Be careful, do not remove too much peel to avoid too much wastage. Weigh all peels and gradeouts
• Grading and peeling can be done at the same time
• Peeled roots should not be left more than an hour in washing water to avoid fermentation

Depictions
PEELING: MOTORISED MECHANICAL

Process
• Top and tail the roots
• Remove any diseased or woody parts from the roots
• Operate peeling machine with batches of topped/tailed roots
• Place peeled roots in clean water
• Manually trim unpeeled areas

Equipment
• Clean, sharp edged stainless steel knife
• Clean water source
• Peeling machine
• Collection bowl/tank for roots/waste

Tips
• The peeling machine should not remove more waste than manual peeling - avoid wastage! Weigh all peels and gradeouts
• Grading prior to peeling - can be done at the same time
• Do not leave peeled roots for more than an hour in washing water to avoid fermentation

Depictions
WASHING

Process
• Manual or semi-automatic
• Place peeled roots in clean water
• Wash roots until all soil is removed, changing the water 2 to 3 times, or until clean
• Transfer clean roots to clean container or clean surface

Equipment
• Clean water source
• Basin, wash tank
• Scrubbing brush (optional)

Tips
• Do not leave cassava roots in water for more than an hour to avoid fermentation
• Wash roots soon after peeling to avoid discoloration and maximize whiteness of processed product

Depictions
GRATING OR WET MILLING

Process
• Turn on the grater or wet mill and run water through it to clear any surface dirt and provide lubrication to the abrasive drum
• Ensure there is a clean collector to discharge the pulp into
• Place washed roots into grater or wet mill until batch is complete

Equipment
• Grater or wet mill
• Collector or clean basin
• Small bowls for moving pulp

Tips
• Ensure equipment is maintained or regularly serviced
• Ensure abrasive grinding drum is sharp
• Clean machine after each use and store in hygienic conditions
• Wet milling produces a finer pulp and may improve recovery rates

Depictions
FERMENTING

Process
• During the grating process, the wet cassava mash can be collected directly into the clean fermentation bags. Alternatively, wet mash can be discharged into a basin then scooped into fermentation bags subsequently.
• The bags with wet mash are tied to contain the pulp.
• Filled bags are stacked in a clean designated area or within a dewatering press until desired level of fermentation is complete.

Equipment
• Grater or wet mill
• Fermentation bags/sacks
• Fermenting area or container, screw, hydraulic or other press
• The duration for gari fermentation is dependent on the desired taste specification.

Tips
• Ensure bags are clean before
• Load the same quantity in each bag
• Periodically test the pH of the wet mash to obtain a consistent product (desired level of fermentation) by increasing/decreasing fermentation period.

Depictions
PRESSING (DEWATERING)

Process
• Place standard amounts of grated pulp into clean propylene (or other porous) bags
• Place each bag in turn into the press. Place wood or metal plate underneath the jack (where used) before jacking and pressing operation.
• For high quality cassava flour (HQCF) press a fully loaded press for 1.5 hours.

Equipment
• Press cage and hydraulic jack (30t or 50t), screw press
• Porous pressing bags (e.g. PP sugar bags)
• Small bowls for moving pulp into pressing bags
• Other options e.g. centrifuge are available

Tips
• For optimum dewatering, load bags equally with 15Kg maximum of pulp for HQCF
• Flatten bags across the press cage and stack
• Load the corners with wood as the cage is filled
• Ensure jack is operated by trained staff
• Clean press and jack after each use and place in clean store

Depictions
CAKE BREAKING (PULVERISING)

Process
• Remove pressed cake from bags and onto a clean surface or container
• Turn on the grater or wet mill and run water through it to clear any surface dirt and provide lubrication to the abrasive drum
• Ensure there is a clean collector to discharge the pulp into
• Load cake into grater

Equipment
• Clean containers
• Grater

Tips
• Ensure equipment is maintained or regularly serviced
• Ensure abrasive grinding drum is sharp
• Clean machine after each use and store in hygiene condition

Depictions
SIEVING

Process
• Use a scoop or bowl and place pulverised cake into a sieve tray and manually shake into a bowl, or onto clean surface
• Periodically remove residual clumps from sieve, adding more cake to the sieve when required

Equipment
• Clean scoop bowl/containers
• Sieve (preferably stainless steel where in contact with product)

Tips
• Wash sieve in clean water after each use and store in hygiene condition

Depictions
ROASTING

Process
- Set the heat to the required level for the roasting pan
- Transfer pulverised cassava cake to the roasting pan in batches, stirring periodically
- Roast until the granules within the batch are visibly and uniformly gelatinised
- Allow roasted granules to cool in a clean area/container
- Once cool, keep in labelled container/packaging until sieving

Equipment
- Scoops
- Collection bags/sacks or other clean container
- Roaster- manual or motorised

Tips
- Avoid excessive heating of the roasting pan to avoid burning
- Allow collected gari to cool down to ambient temperatures before bagging to avoid condensation and prolong shelf-life

Depictions
SIEVING

Process
• Use a scoop or bowl and place pulverised cake into a sieve tray and manually shake into a bowl, or onto clean surface
• Periodically remove residual clumps from sieve, adding more cake to the sieve when required

Equipment
• Clean scoop bowl/containers
• Sieve (preferably stainless steel where in contact with product)

Tips
• Wash sieve in clean water after each use and store in hygiene condition

Depictions
Process
• Transfer cooled product into clean propylene or other suitable packaging
• Fill bags to a standard weight and weigh
• Label the bags with the production date
• Seal bags prior to storage and/or seal prior to marketing
• Label packaging prior to marketing

Equipment
• Bags or other packaging
• Stitching machine (optional) or manual stitching method

Tips
• Ensure product is checked regularly
• For High Quality Cassava Flour (HQCF), use polyethylene lined bags to prevent moisture ingress into the flour
• For correct stock rotation and quality control, bags should be labelled with the processing date

Depictions
STORING

Process
• Transfer packages onto pallets
• Transfer bags/packaging to a clean, dry and well-ventilated store until marketing

Equipment
• Pallets
• Store room

Tips
• Ensure product is checked regularly
• Store bags off the ground using pallets
• Keep perimeter around the bags accessible for inspection
• Follow ‘First in, First out’ rule

Depictions

[Images of cassava storage and handling equipment]
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