

CASSAVA PROCESSING TRAINING MANUAL

GARI

RAW MATERIAL: CASSAVA ROOTS

Process

- Harvest mature roots
- Weigh all raw material

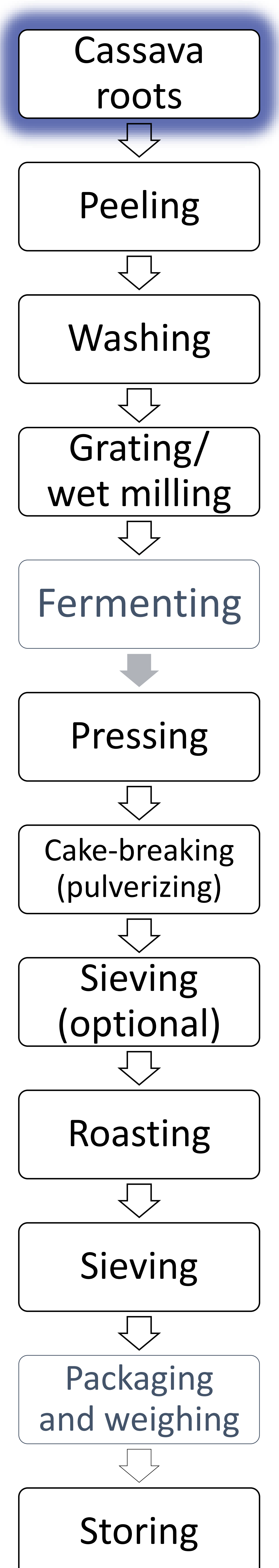
Equipment

- 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

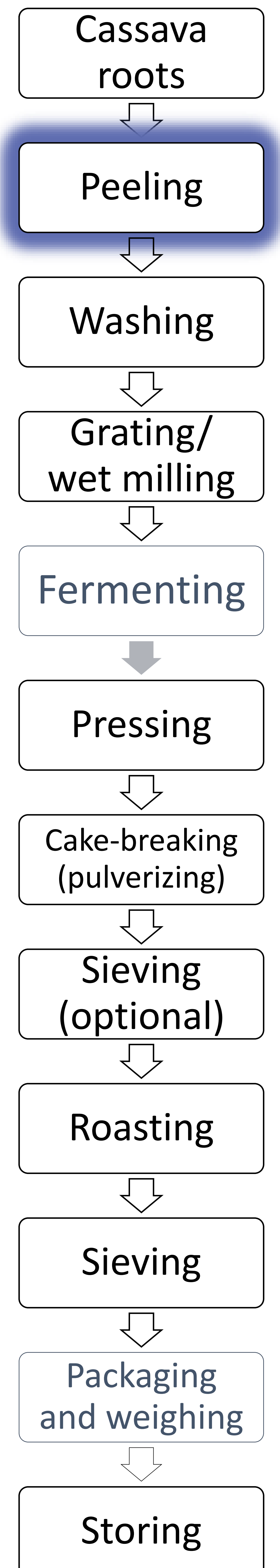
Clean, sharp edge stainless steel knife (sharpen and visually check blades on a regular basis)

- 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

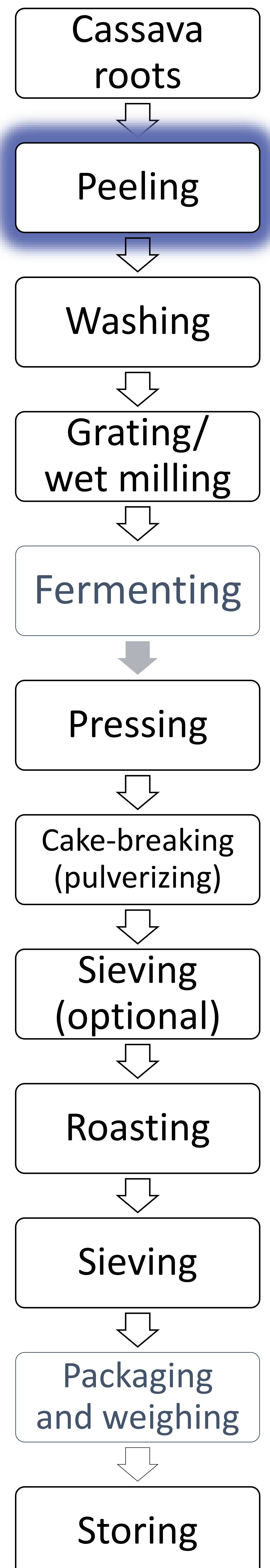
Equipment

- 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

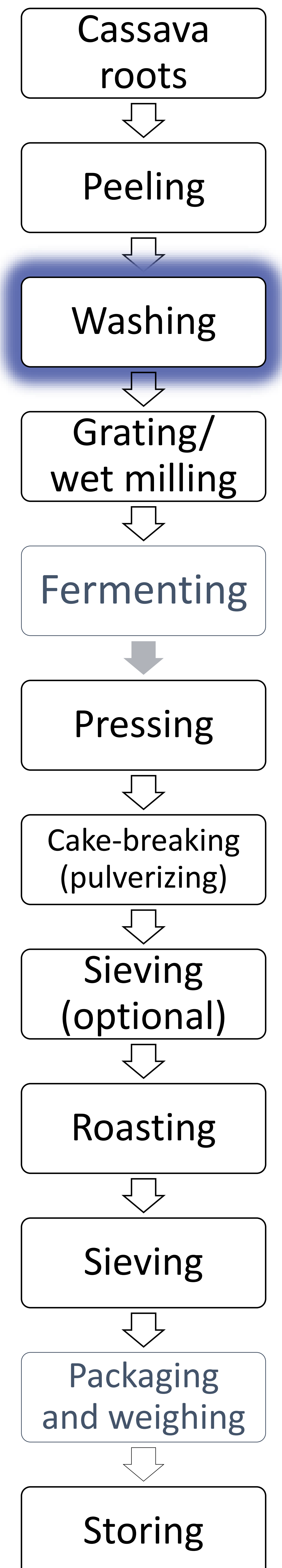
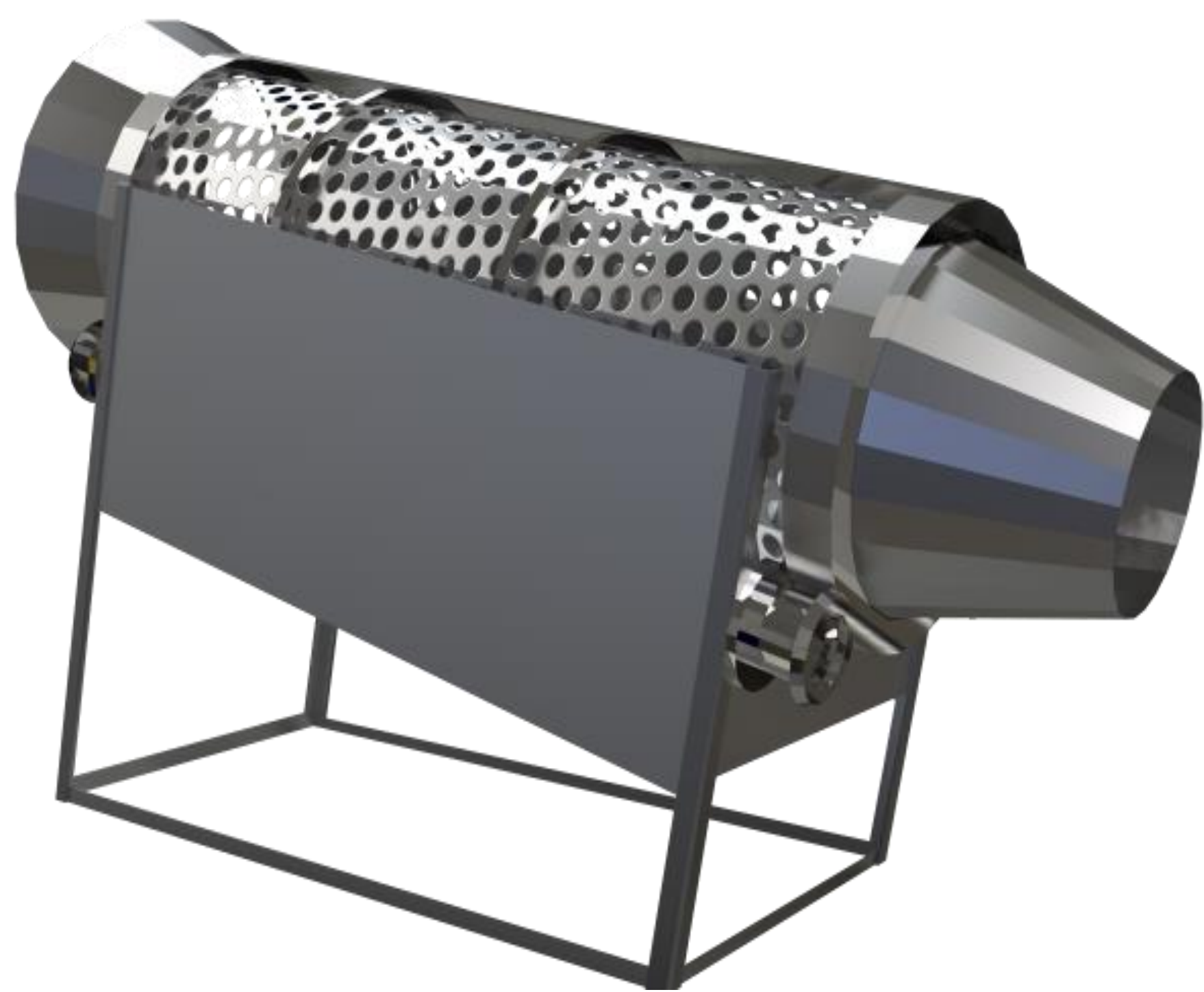
Equipment

- 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

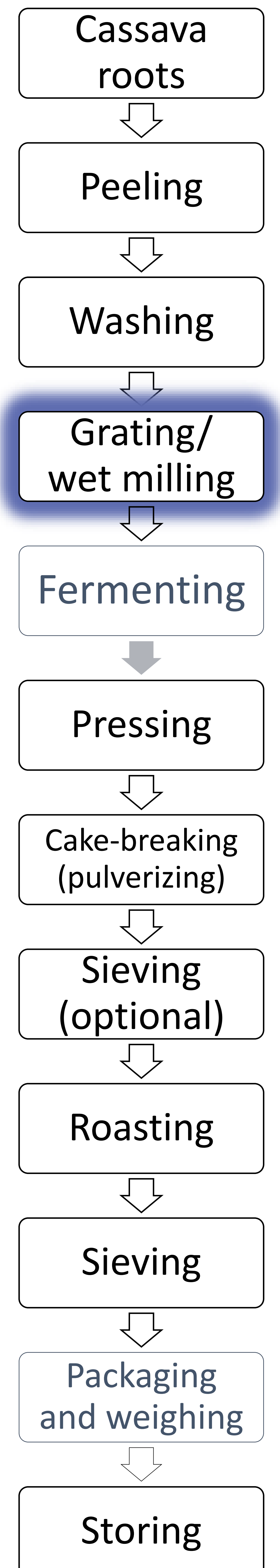
Equipment

- 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

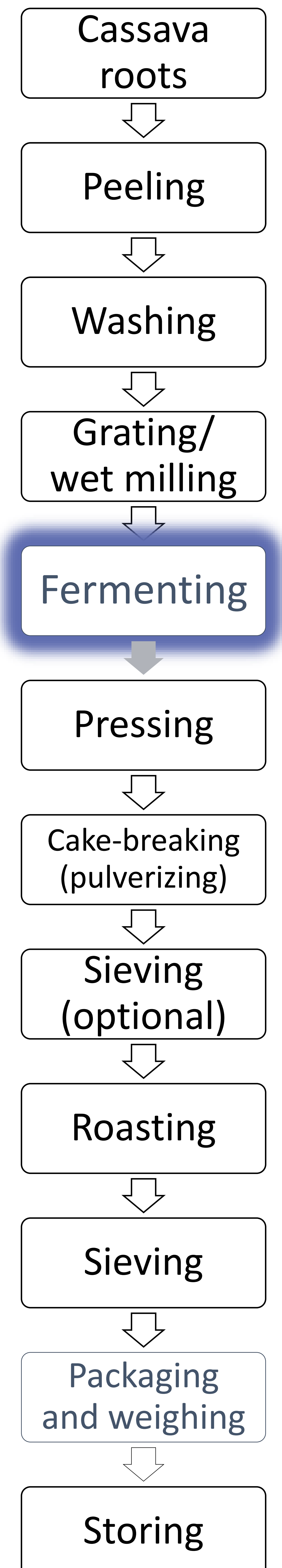
Equipment

- 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

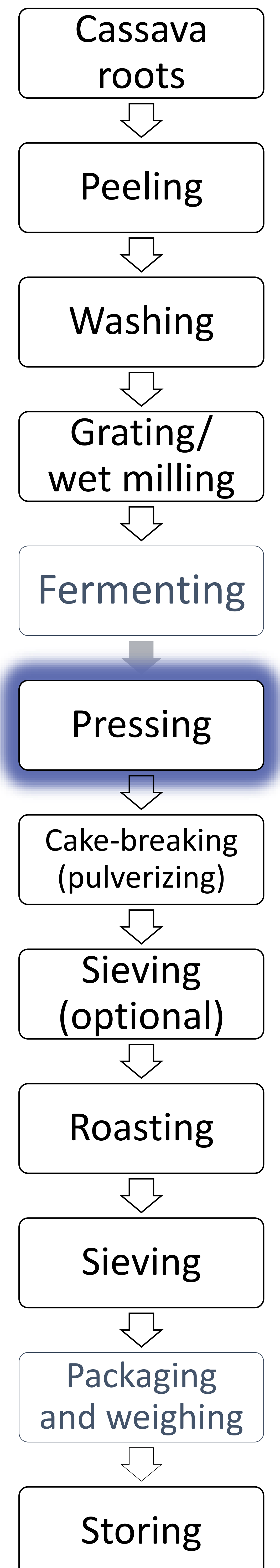
Equipment

- 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

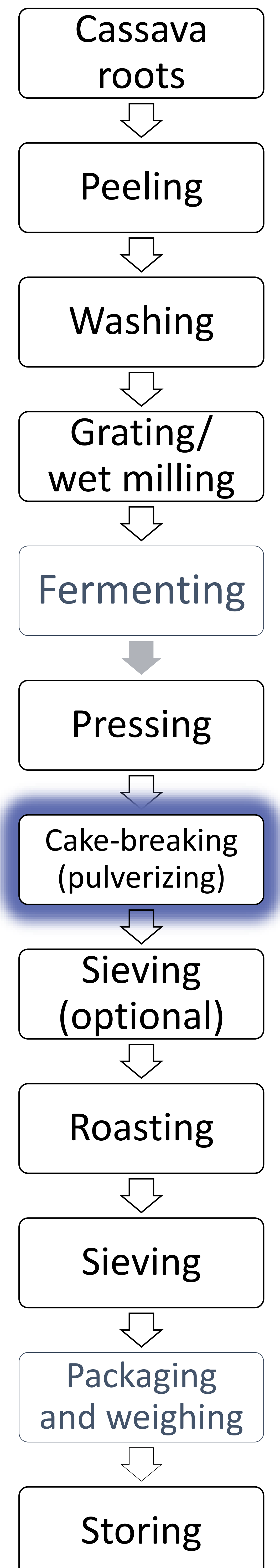
Equipment

- 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

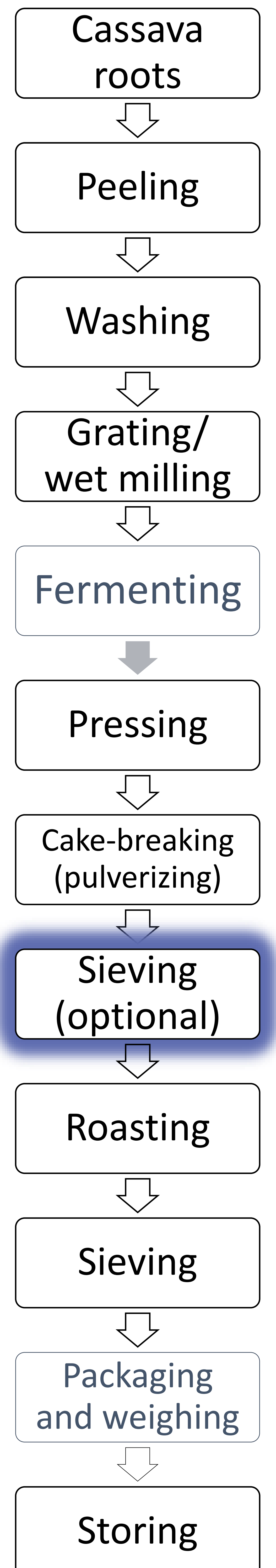
Equipment

- 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

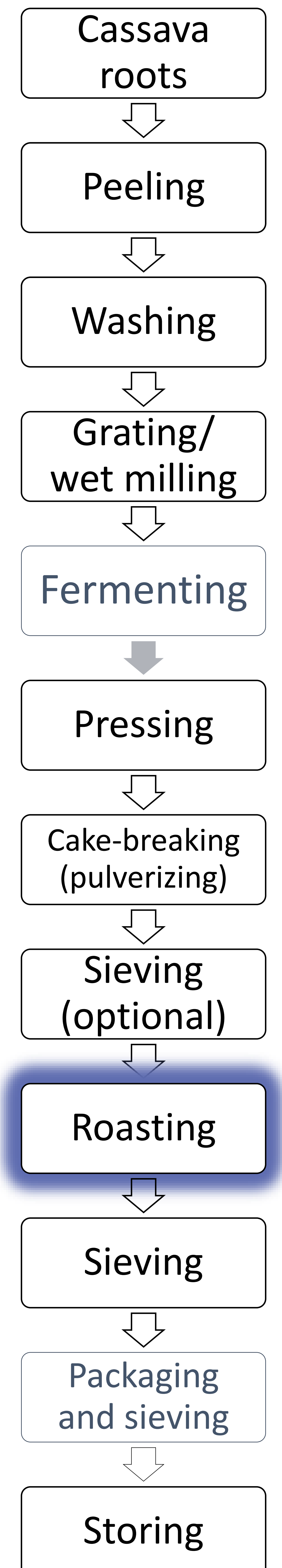
Equipment

- 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

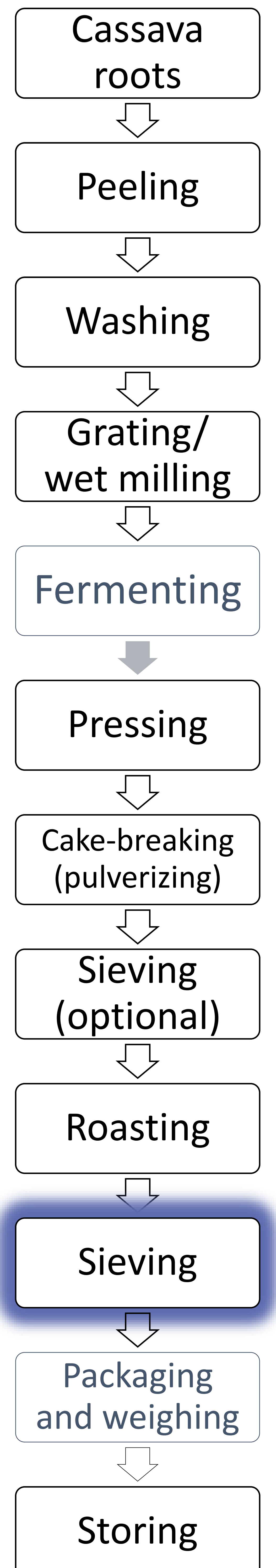
Equipment

- 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



PACKAGING

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

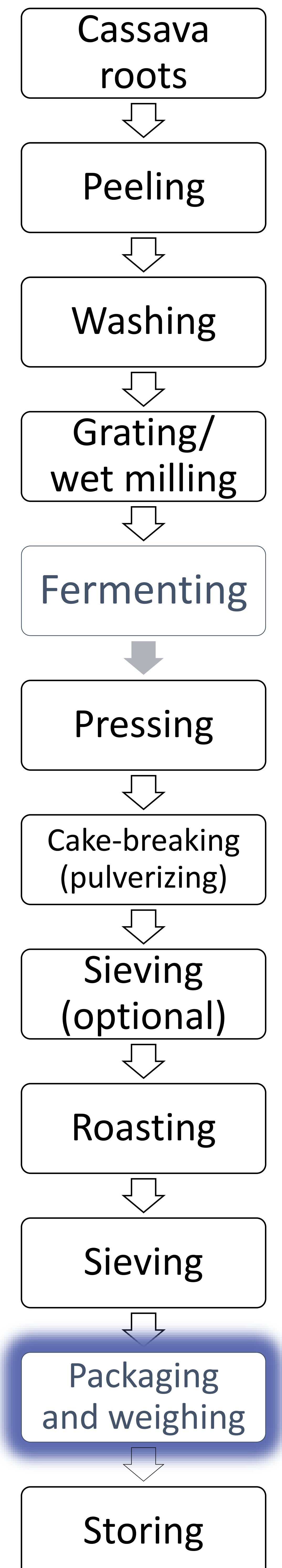
Equipment

- 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

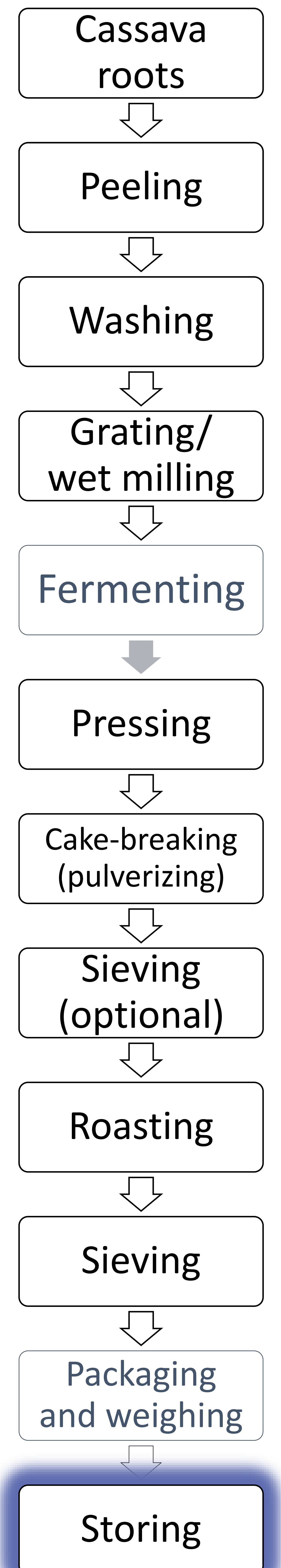
Equipment

- 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



Acknowledgements

The Natural Resources Institute, University of Greenwich, UK are grateful for funds from the 'Increasing the Performance of the Cassava Industry in WCA (IPCI)' and 'Cassava Adding Value for Africa (CAVA)' projects in developing these manuals. The authors acknowledge the contribution of partners, in particular, the Federal University of Agriculture (FUNAAB), Nigeria.



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