

CASSAVA PROCESSING TRAINING MANUAL

BATON DE MANIOC

RAW MATERIAL: CASSAVA ROOTS

Process

- Harvest mature roots
- Weigh all raw material

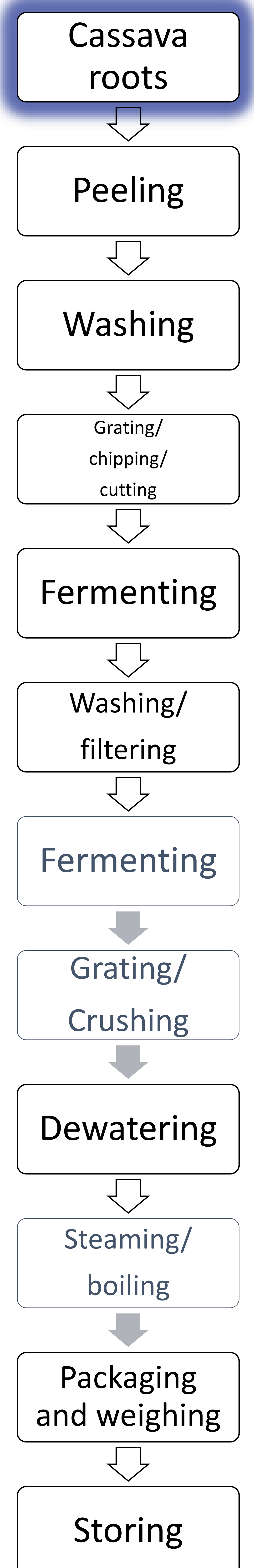
Equipment

- 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

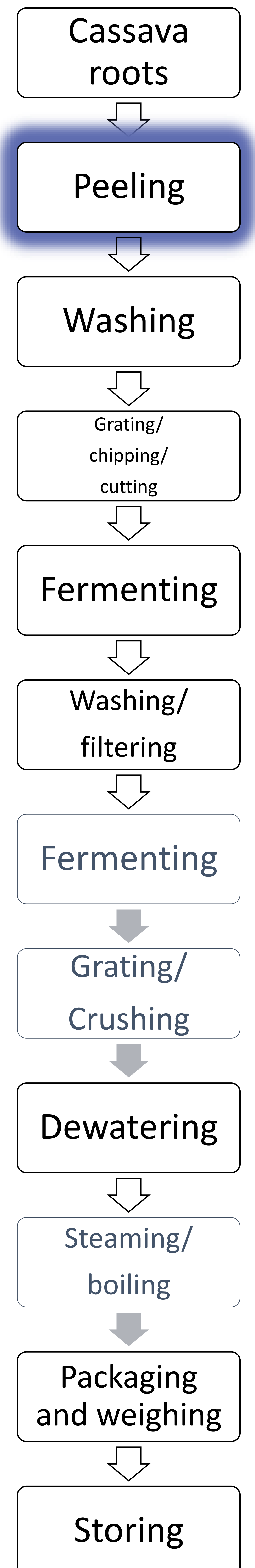
Clean, sharp edge stainless steel knife (sharpen and visually check blades on a regular basis)

- 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
- Grating 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

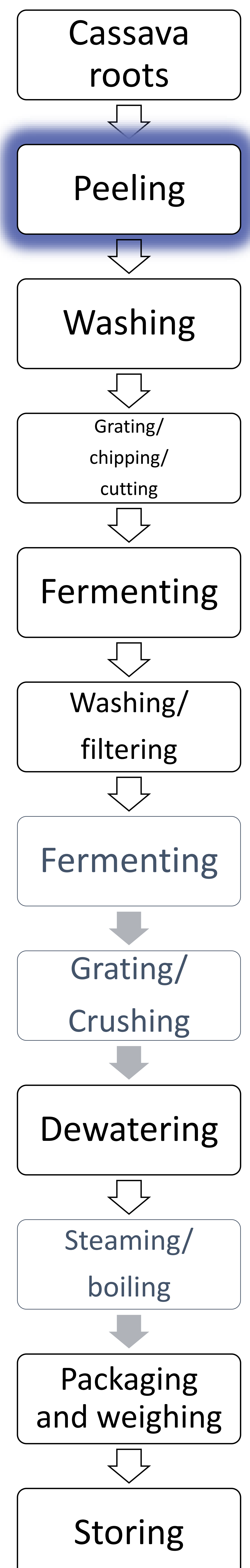
Equipment

- 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/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

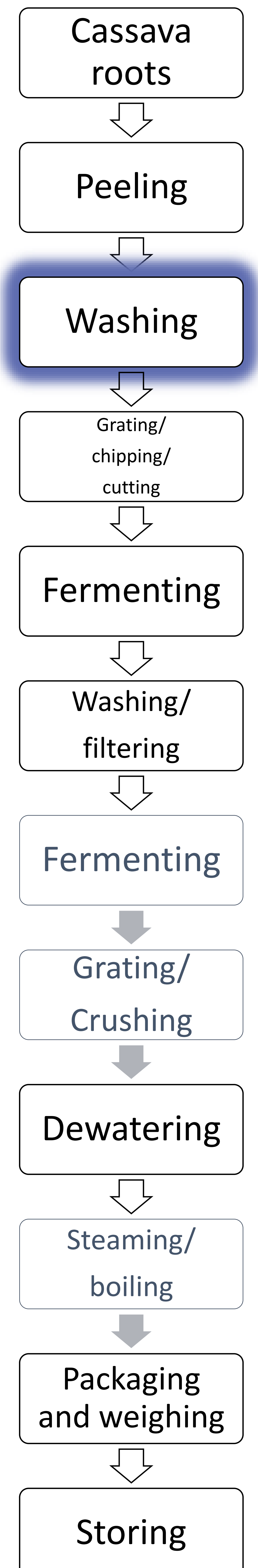
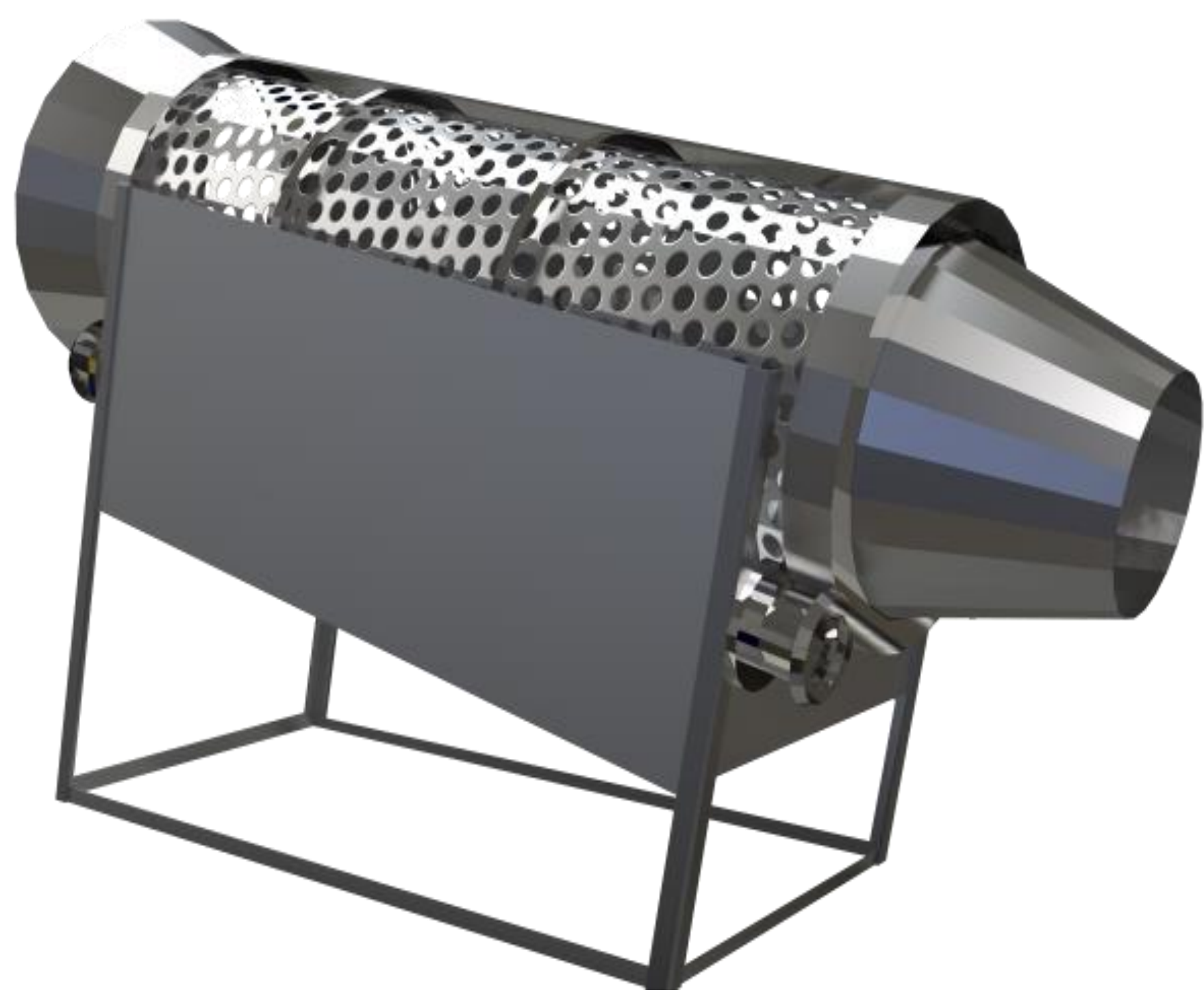
Equipment

- 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



CUTTING/CHIPPING/GRATING

Process

- If using a grater or chipper, 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

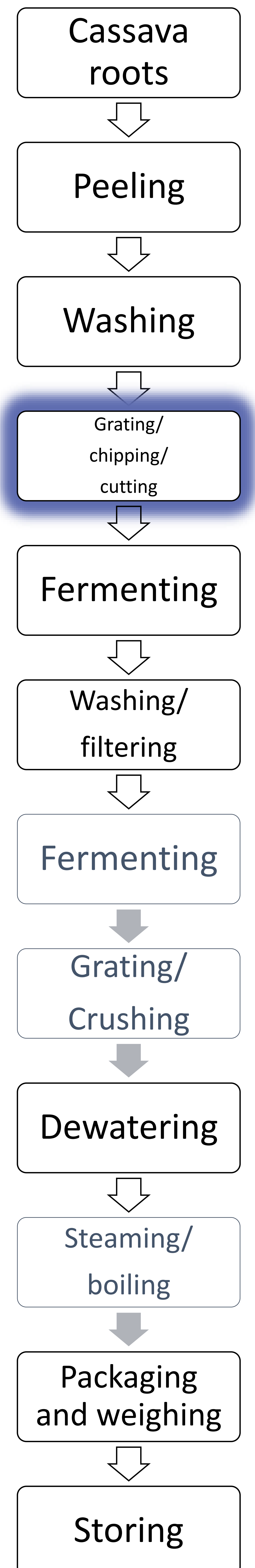
Equipment

- 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



WET FERMENTATION

Process

- Place peeled washed roots in a clean fermentation container
- Add clean water (or previous fermentation water) –sufficient to just cover the fresh roots
- Cover the container with a lid until fermentation is complete (determined through bubbles present on surface/characteristic fermentation aroma/softness of roots)

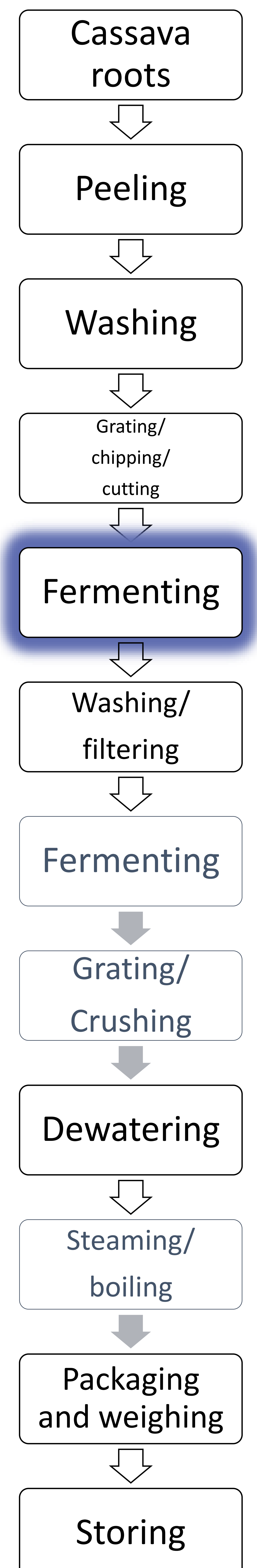
Equipment/materials

- Stainless steel fermentation tanks or plastic drums
- Clean scoop, bowls/containers
- Clean water
- Fermentation accelerator (optional)

Tips

- The length of fermentation (3-10 days) will depend on ambient temperature conditions, as well as the desired final pH of the product. Use a pH meter to verify
- Cut the roots for uniformity in achieving fermentation
- Clean all equipment and utensils after each use
- Store both product and equipment in hygienic conditions

Depictions



WASHING/FILTERING

Process

- Use a scoop or bowl and place fermented roots over a sieve and manually crush/rub, using clean water as an aid (optional)
- Periodically remove residual fibre/clumps from sieve, adding more roots to the sieve when required
- Allow filtered product to settle in a container or semi-porous bags for further fermentation until the desired level is reached
- Once settled, pour off (decant) residual water

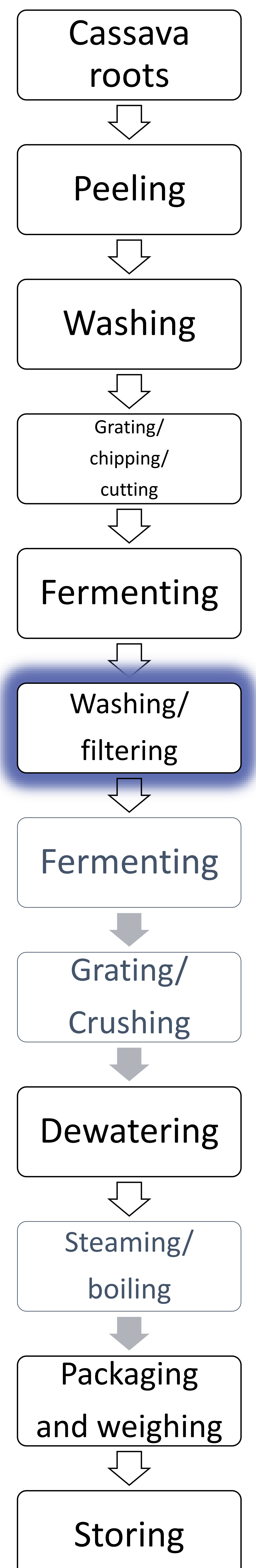
Equipment

- Clean bowl/containers
- Sieve or mesh (preferably stainless steel where in contact with product)
- Collector or other suitable container
- Dewatering press (optional)

Tips

- Wash all equipment in clean water after each use and store in hygienic conditions
- Sedimentation and dewatering can take place simultaneously in porous bags

Depictions



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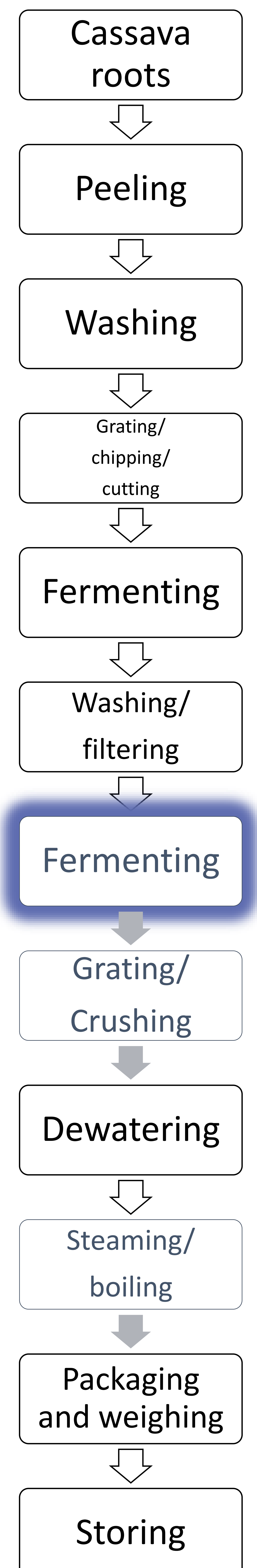
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Depictions



GRATING/CRUSHING

Process

- Use a scoop or bowl and place fermented roots over a sieve and manually crush/rub, using clean water as an aid (optional)
- Periodically remove residual fibre/clumps from sieve, adding more roots to the sieve when required
- Allow filtered product to settle in a container or semi-porous bags for further fermentation until the desired level is reached
- Once settled, pour off (decant) residual water
- If using a grater instead of manual crushing, decant off the water, then pass the residual product through a grating machine

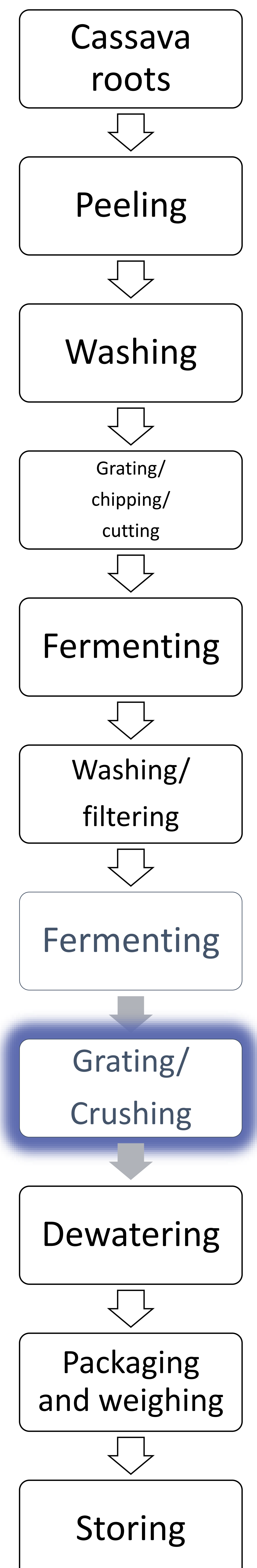
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- Collector or other suitable container
- Dewatering press (optional)

Tips

- Wash all equipment in clean water after each use and store in hygienic conditions
- Sedimentation and dewatering can take place simultaneously in porous bags

Depictions



PRESSING (DEWATERING)

Process

- Place standard amounts of fufu pulp into clean propylene (or other porous) bags
- Bags can be left on a clean surface until the water stops running out (approx. 2-3 hours)
- If dewatering using a press, place each bag in turn into the press and apply pressure.
- For cage presses, place a wood or metal plate underneath the jack (where used) before jacking and pressing operation
- Allow a fully loaded press 1.5-2 hours to dewater

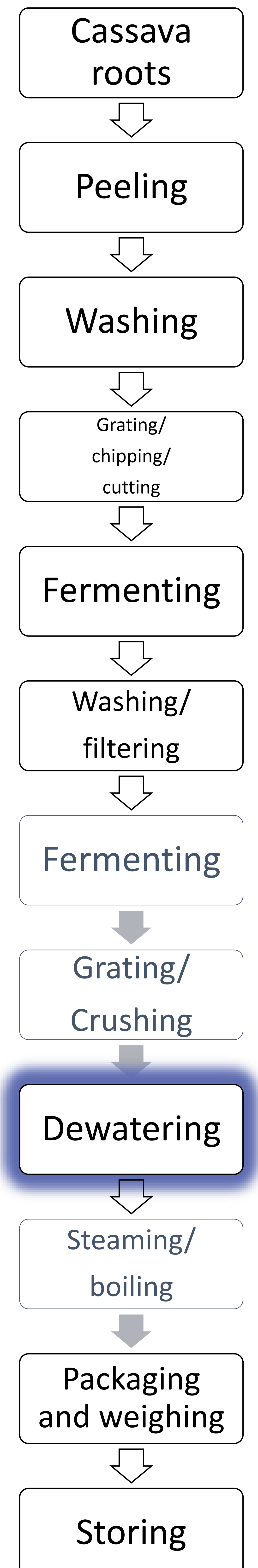
Equipment

- Press cage and hydraulic jack (30t or 50t), screw press
- Porous pressing bags (e.g. PP sugar bags)

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



STEAMING

Process

- Use a scoop or spoon and put a standard quantity of fermented paste into banana leaves, cling film, aluminium foil, or any other wrapping suitable for steaming (depending on target market)
- Wrap or tie to prevent leakage
- Place wrapped product into a steamer container clean water
- Steam for 30 minutes or until fully cooked

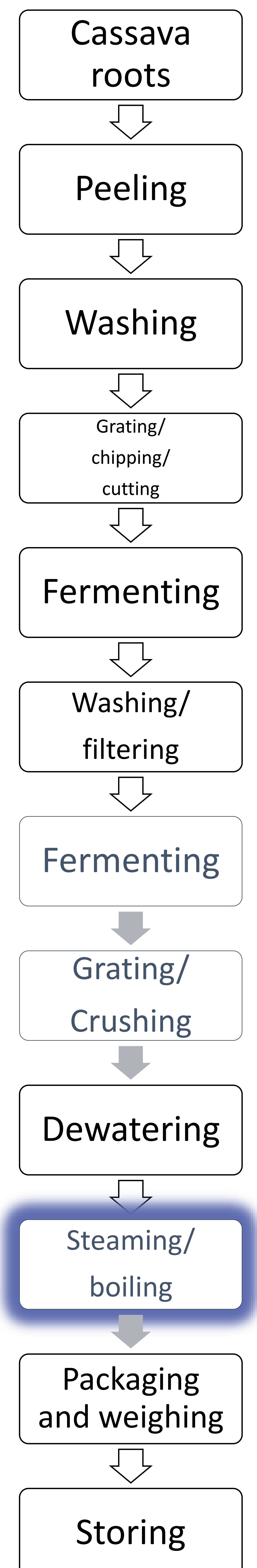
Equipment

- Clean scoop, bowl/containers
- Clean food grade packaging material (banana leaves, cling film etc)
- Clean water
- Steamer or pots (preferably stainless steel or other food grade material)
- Heat/energy source for cooking/steaming (e.g. gas, diesel, electricity)

Tips

- Wash all equipment in clean water after each use and store in hygienic conditions

Depictions



PACKAGING

Process

- Weigh all steamed batons
- Place steamed, cooled batons in food grade secondary packaging or container
- Select packaging according to marketing regime and shelf-life requirements

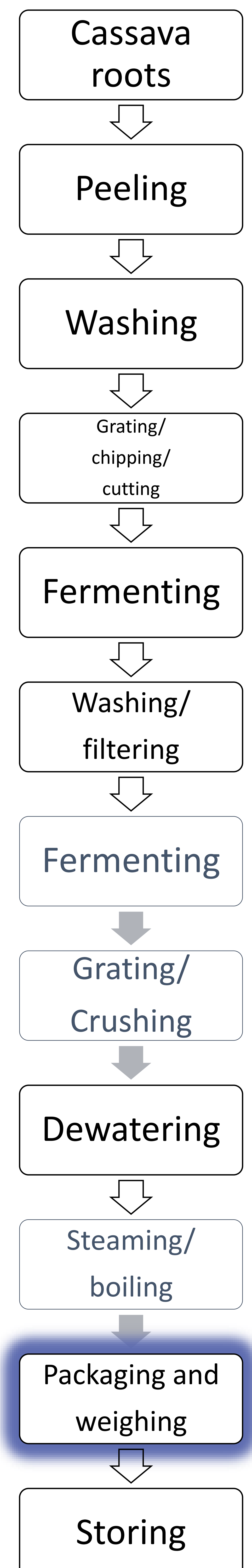
Equipment

- Packaging
- Sealer (optional)
- Pallets
- Containers

Tips

- Wash all equipment in clean water after each use and store in hygienic conditions
- Determine best packaging for optimum quality
- Ensure packaging storage facilities are hygienic

Depictions



STORING

Process

- Transfer bagged/packaged batons into clean, hygienic stores until marketing
- Packaged batons can be stored at ambient temperatures for a limited period (1-2 weeks depending on unit size, packaging type and ambient conditions), chilled, or frozen to extend shelf-life

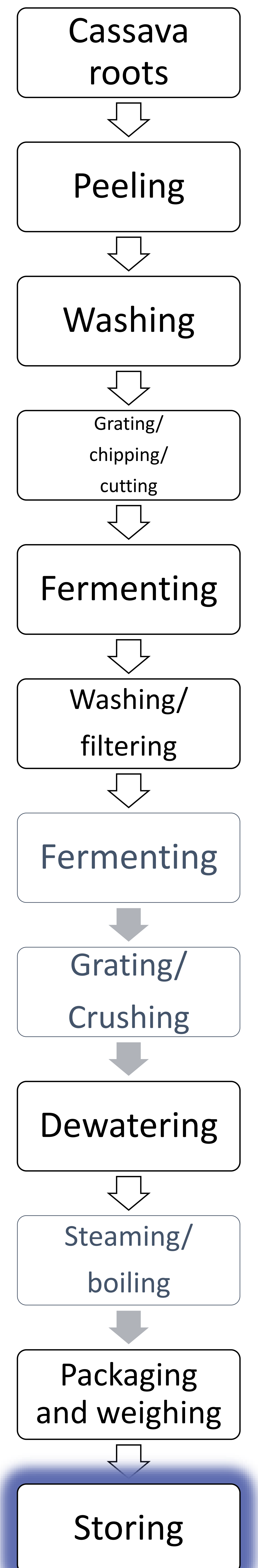
Equipment

- Pallets
- Chiller (optional)
- Freezer (optional)

Tips

- Determine the optimum shelf-life conditions for preserving safety and quality
- Adopt 'First in, First out' rule

Depictions



Acknowledgements

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