CTA Practical Guide Series, No. 5

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partageons les connaissances au profit des communautés rurales
sharing knowledge, improving rural livelihoods

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Making High-Quality Cassava Flour



CTA

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Importance and benefits of cassava

Cassava is not fully utilised in Eastern Africa compared to West Africa (Nigeria, Ghana). Cassava can earn you extra income, provide employment opportunities and serve as a reserve food in times of scarcity.

Cassava is drought tolerant, easy to grow and simple to harvest. All parts of the cassava plant are valuable. Cassava leaves can be used to make soup or as feed for livestock, the stems can be used for planting more cassava, for mushroom production or as firewood, the root can be cooked and eaten fresh or processed into flour. Cassava can also meet industrial needs such as the production of bio-fuel and starch for use in paper- and drug-making industries.

High-quality cassava flour is made within a day of harvesting the root. It is very white, has low fat content, is not sour like traditional, fermented cassava flour, does not give a bad smell or taste to food products and can mix very well with wheat flour for use in bread or cakes.

What you need to make high-quality cassava flour

To establish a small-scale enterprise to make high-quality cassava flour, you require:
- space for processing the cassava
- a store
- a facility for safe disposal of waste materials
- cassava roots
- processing equipment (knife, bowl, drying platform, grater, press and milling machine)
- trained machine operators along with casual workers for peeling, washing, grating, pressing, drying, milling, sifting and packing.

You may be able to hire a press and grater locally. Local fabricators of processing equipment are also available in some areas – ask your local extension officer or agricultural research station.



Accessible markets include bakeries, millers and paper industries, schools, hospitals, shops, kiosks, hotels, restaurants and local famine relief agencies.

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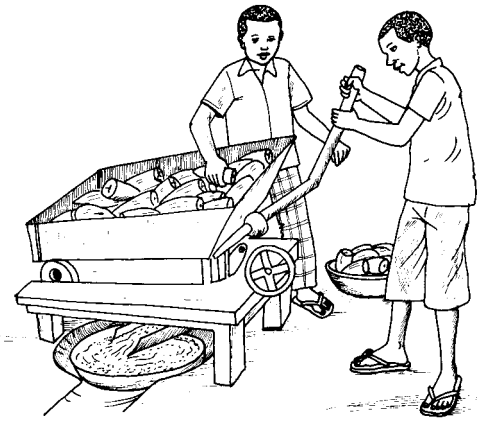
How to make high-quality cassava flour



Step 1: Selecting roots

Harvest or buy healthy, mature, firm, freshly harvested cassava roots. These should have no bruises. The flesh of the roots should be white with no cracking and few fibrous roots.

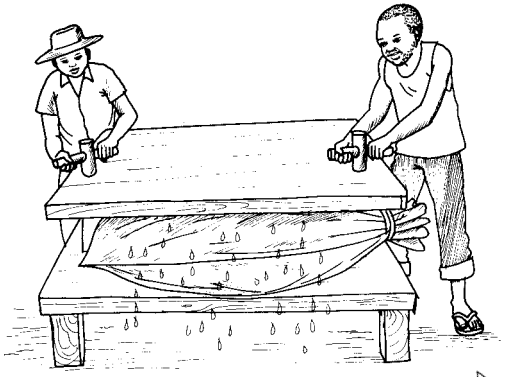


Step 2: Peeling

Peel the roots and remove the stalk, woody tips and any fibrous roots using a sharp knife. Failure to peel properly will result in off-colour in the final product. Cassava peel (after drying) can be used for animal feed or composting – so do not waste it!

Step 3: Washing

Wash peeled cassava roots with clean water to remove any dirt, including sand, soil, leaves or other impurities.



Step 4: Grating

Use a simple perforated iron sheet or mechanical grater to grate cassava roots into a fine mash.

Step 5: Pressing

Pack the grated cassava mash into a clean bag, such as a jute or sisal sack that will allow extra water to escape. Press the sack using a screw press or hydraulic jack to remove excess water until the cassava is crumbly.

Step 6: Drying

Spread the pressed cassava mash thinly on a clean black plastic sheet placed on a gentle slope in full sun. Ideally this should be raised off the floor. Dry mash until it is very floury. Cover with netting to keep off flies and birds.

Though solar, stove and hot-air dryers are more expensive, the drying process is more reliable and of higher quality.

Step 7: Milling

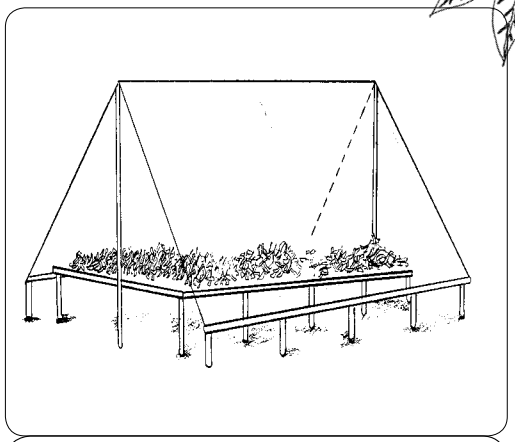
Mill the dried cassava mash to produce flour. Milling can be done using a hammer mill (village posho mill).

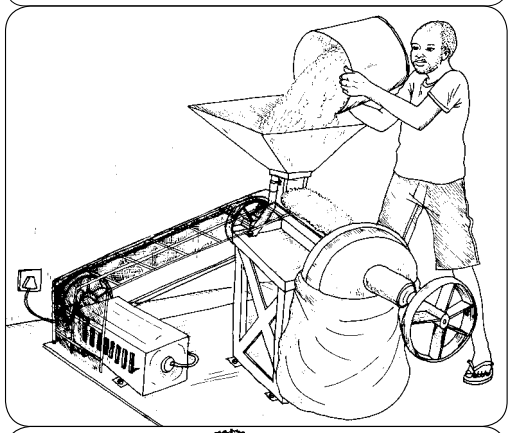
Step 8: Sifting

Using a simple home-made sieve, sift the milled flour to remove fibrous materials and any lumps. This is important to obtain high-quality free-flowing flour, free of fibre with a good particle size.

Step 9: Packaging and storing

Pack sifted cassava flour in airtight moisture-proof black plastic bags. Seal the bag using a burning candle (or an electrical polysealer if electricity is available) and label with date of manufacture and expiry date (after six months). Pack bags in a carton to protect them from light. Store the cartons in a well-ventilated, cool, dry place. The packaged flour will keep for about six months.







What can go wrong and how to deal with it

Potential problems	Caused by	How to prevent and/or solve it
Spoilt cassava roots	Roots that are too old or damaged	Use 10- to 12-month old cassava roots Harvest carefully to avoid damaging roots
Mould in stored flour	Improper drying leaving flour too wet	Ensure complete drying of mash. Flour must be free-flowing after milling
Bad smell of flour (fermented odour)	Rusty equipment Delay in pressing and drying the grated mash	Use stainless steel knives Wash and dry equipment after use Process cassava within 24 hours of harvesting
Muddy environment	Poor drainage system	Ensure proper flow of cassava waste water into a soak pit and keep your processing area clean
Contaminated flour	Dirt and insects in mash while drying Use of porous or damaged packaging materials Poor ventilation in storage area	Avoid dirt and insects by raising the platform and cover with netting while drying mash Use clean, strong plastic bags Avoid storing flour in warm or damp places
Sickness/poisoning from eating bitter roots	Use of very bitter cassava roots Improper processing methods	Use proper processing methods and low-cyanide (less bitter) varieties

Case study 1

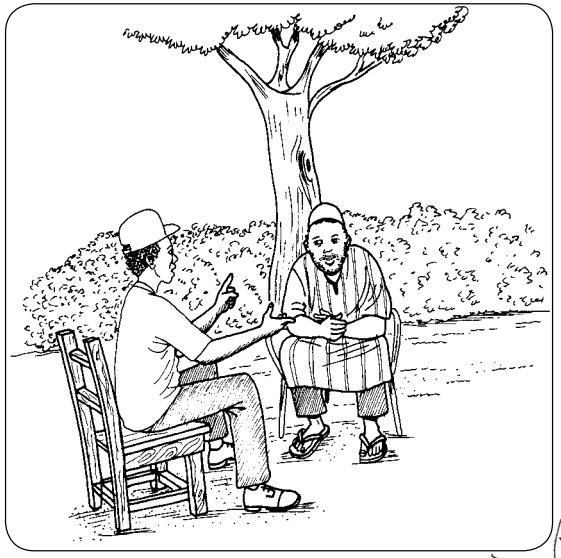
Before

Agnes and Paul grew cassava which they simply boiled and ate. Any remaining cassava was wasted and they had no income.



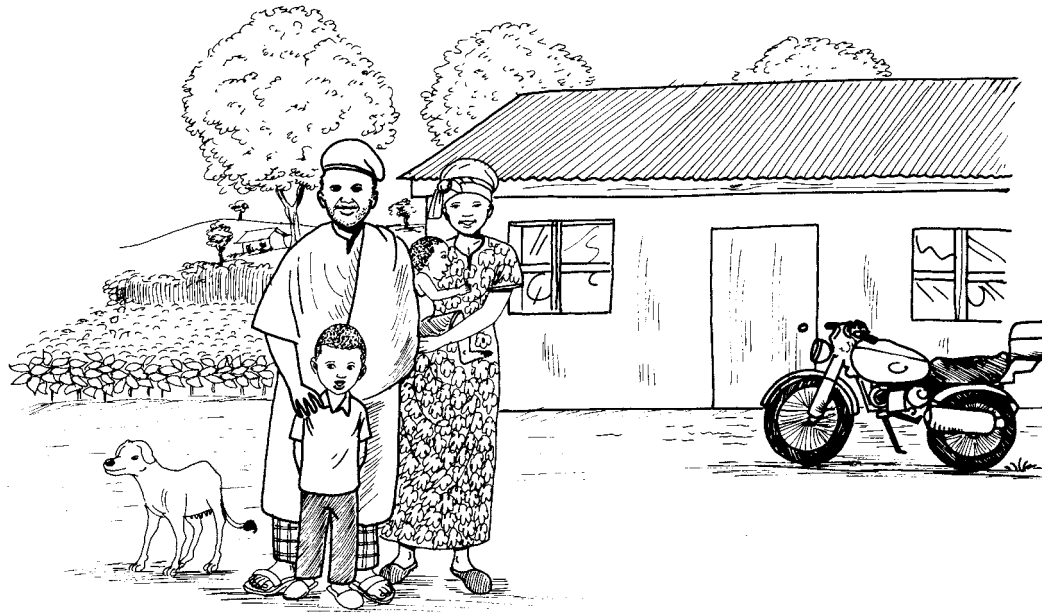
Then

They contacted their extension office for information and learned about making high-quality cassava flour.



Now

They process cassava into flour, which they mix with wheat and bake bread and cakes. They now use all their cassava and have a good income. Their family is well fed, happy and healthy.



Case study 2

The Fimpulu Cassava Processing and Marketing Association is made up of 30 farmers who jointly manage a cassava processing plant at Fimpulu, 25 miles from Mansa, in Luapula Province of Zambia. In the past, the farmers produced traditionally processed cassava chips. After training by local extension workers on different processing options for better cassava products, farmers now produce high-quality cassava flour. They process about 500 kg of fresh cassava and package the flour within 24 hours of harvesting. They sell their flour to biscuit manufacturers in Lusaka and copper belt towns in Zambia. The high-quality flour earns the group more income compared to traditionally processed cassava chips. The farmers comfortably support their children in schools and pay their rent regularly. The Fimpulu farmers are confident that making high-quality flour from cassava has great potential to reduce rural poverty in the region.