

Drying or toasting

After separation, the resulting fine and coarse mash with a moisture content of 38–42% needs to be dried properly for better storage. On sunny days, drying is feasible and the fine and coarse mash can be dried by spreading thinly over commonly available surfaces (e.g. plastic and metal sheeting, cement slabs) with frequent stirring of the materials at hourly intervals.



Properly drying the mash until it reaches 10–12% moisture level requires a period of 6–8 hours. On rainy days, when sun drying is not feasible, the sieved mash can be toasted over a metal pan using firewood, coal or other materials,

e.g. palm kernel shells. Dried material should have 10–12% moisture before being packed into bags and can be stored safely for 4–6 months and used for feeding without any spoilage. Fine mash is appropriate for poultry, fish, and pigs while coarse mash is targeted at feeding cattle, goat, sheep and pigs.



Maintaining hygiene and feed quality

The machines and processing areas have to be maintained in hygienic conditions to prevent fungal contamination. All machines and the production area should be washed after each day's processing and be kept clean. The disposal of waste water should be through porous underground tanks.

This simple innovation results in two major products

- i) Wet cassava cake with a shelf life of one week and suitable for feeding cattle, sheep, goats, and pigs.



- ii) Dried high quality cassava peel mash with a shelf life (4–6 months) and is suitable for feed industry. Fine mash has higher economic value, while coarse mash is cheaper.

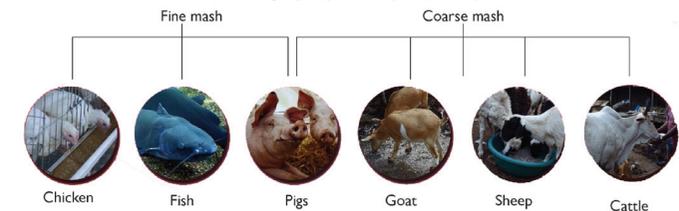
Contact

Iheanacho Okike
 ILRI Senior Agricultural Economist
 Country Representative—Nigeria
 i.okike@cgiar.org
 ILRI, C/O IITA, Oyo Road, Ibadan PMB 5320
 Oyo State, Nigeria 200001
 Tel: 234 8034035281/82/83
 Fax: +44 208071 13786



This document is licensed for use under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 Unported License.

Innovative processing of cassava peels into livestock feed



Introduction

Cassava is an important food crop in many African countries. Cassava processing generates cassava peels, stumps, and other undersized/damaged tubers, which together account for up to a third of processed whole-tuber weight. Cassava peels are perishable and are mostly disposed of by burning or allowing them to rot in heaps, causing pollution. In collaboration with its CGIAR research partners, ILRI has developed an innovative processing technology for converting fresh peels into high quality cassava peel (HQCP) mash for use as livestock feed. The process is simple and can be carried out by small-scale processors, more than 80% of them women, to transform waste into a valuable feed resource, generate new incomes, create employment, improve livelihoods, and clean up the environment around cassava processing centres.



The various steps followed in processing peels into HQCP mash are briefly described below:

Sorting

The quality of the finished product is as good as the quality of the raw material used, so cassava peels that enter the process should be fresh (harvested the same day) and free from contaminants. When processing is delayed beyond a day, the peels start to ferment and become soggy/slippy and difficult to grate. Stumps, large-sized wood tubers, and other foreign materials have to be sorted out and discarded before grating the peels to avoid damage to the rasper.



Grating

Grating has to be done three times because of the tough nature of peels. With each grating, the particle size reduces gradually. The reduced particle size facilitates rapid dewatering, drying, and easier handling.



1st grating



2nd grating



3rd grating

Pressing

Pressing the grated peel requires a hydraulic jack, wooden planks, woven bags, and a metal frame which holds loaded bags of freshly grated peels. Grated peels are packed in small quantities of 8–10 kg and the bags are stacked in the metal frame. Using planks and jacks, the grated peels are squeezed to rapidly get rid of as much water as possible.



Approximately 50% of the weight of grated material is lost as the water is removed during this process.

The resulting cassava peel cake after dewatering has around 38–42% moisture and has a shelf life of 5–7 days. As is, cassava cake can be fed directly to cattle, goats, sheep, and pigs.



Pulverising and sieving cassava peel cake

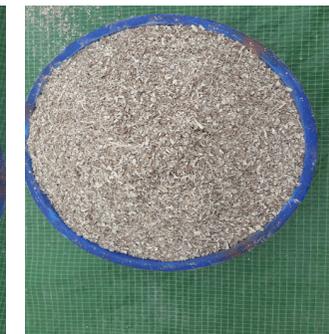
To process it further into dry mash, cassava peel cake is re-grated to loosen it into a free flowing material that can be subjected to sieving to separate the fine mash (lower fiber, high energy content) from coarse mash (higher fiber, lower energy content). Sieving can be done manually or by using a mechanical device.



High quality cassava peel (HQCP)



Fine mash



Coarse mash