PROCESSING METHOD

It’s usually processed into a powder, also called arrowroot flour. The powder is extracted from the plant’s rhizome, an underground stem with multiple roots that store its starch and energy. Producing starch and flour from arrowroot tubers is laborious, time-consuming, and low-end product recovery.

Traditional processing of arrowroot involves:

Washing of rhizomes and careful peeling of skin

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Rewashing of peeled rhizomes and careful peeling of skin

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Rewashing of peeled rhizomes

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Grating to produce coarse pulp

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Mixing of the pulp with clean water

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Series of sieving to separate the fibre

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Allowing the liquid to stand and let the starch out

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Removing the starch, mixing it with more water

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Resettling overnight.

Some facts on traditional method of processing arrowroot

- 120 kg can be processed in an hour, resulting in 9-10% flour recovery
- It requires 2-5 days to produce flour during rainy days, with the same flour recovery.
- Washing by hand takes about 3-5 minutes per kilogram.
- It takes an hour to crush and rasp 15 kg of rhizomes.
- Sun drying the collected starch takes 3-5 days.
- Crushing of dried clumps of starch and sieving manually resulted in 9-11% fine starch recovery and 8% meal recovery.

If they are cultivated on commercial basis, this procedure is not possible. Proper equipment has to be used. Such instruments are available in the market. However, machines that would help in drying and retaining the quality of the produce are yet to be made.

` Mechanizing some aspects in the manual method will improve the processing system. Mechanization can be achieved in washing, rasping, juice extraction, drying, and milling of the processing system.

Mechanical Interventions

- ✓ Testing of mechanical washer for arrowroot showed that the machine can wash 1 t of tubers/hour, with washing efficiency of 98.44%.

- ✓ The granulator, which was used to cut the crop into, small pieces to facilitate juice extraction, increased starch recovery from 12% (without use of granulation) to 16%.

- ✓ The multi-crop extruder that performed crushing, juice extraction and milling generated an overall extraction efficiency of 86.9%. Juice extraction was 300 mL/minute, with juice recovery of 51.4%.

- ✓ The KOLBI tray- type dryer had a capacity of 250 kg/batch. Drying temperature ranged from 55 degree C to 65 degree C in 3-5 hours. The dryer was either rice hull fired or LPG-fuelled.

- ✓ The multi-crop micro mill showed an average milling capacity of 40 kg/hour, with a milling efficiency of 98%.

The development of mechanized technologies for arrowroot processing could increase production of starch, which has several uses in food enterprises and industry. This could provide additional source of income for farmers women, and out-of-school youth.

Mechanical Washer

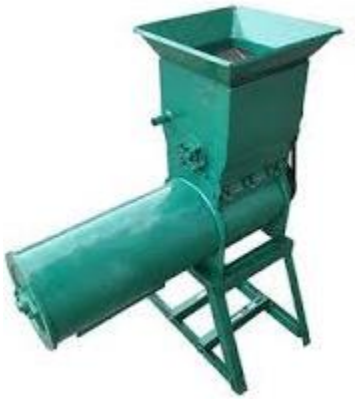
The machine for washing arrowroot had an average washing capacity of 200 – 300 kg/hr with 97.44% washing efficiency. The machine which is manually fed, has a rotating washing drum with a centre brush assembly and run by a 1 hp electric motor.

Multi-Crop Crusher, Juice Extractor, and Mill

The machine is composed of a hopper, extracting chamber, stand/frame, the transmission, and the prime mover with 1.5 hp electric motor. This machine had an average extracting capacity of 50-60 kg/hr for whole and chopped rhizomes and 100 kg/hr for grated rhizomes. The overall extracting efficiency of the machine is 86.90 %. The juice extraction rate is 300 ml/min with juice recovery of 51.40%.

Granulator

This grating equipment is used to decrease the size of the tubers for ease of juice extraction. This process increases the extruding capacity and starch recovery from 10% to 14%. The machine has a capacity of 200 kg/hr is run by a 1 hp motor.



Centrifuge

This machine is used to remove the excess water from the washed starch. Reduction in the water content of starch decreases the time of drying by 4 hours. It has a capacity of 12 kg per 12 min of centrifugation of the dripping wet starch. The

machine includes the provision of a 14” diameter basket made of cloth and is run by a 1.5 hp electric motor.

Multicrop Tray Type Batch Dryer

The KOLBI drying equipment is a tray type dryer with a capacity of 120 kg per batch of drying for 5 – 6 hours. Drying temperature ranges from 55 ºC to 65 ºC. It is a LPG fuelled dryer which could be converted to rice hull fired burner.

Multi crop micro mill

This machine is used to mill the starch and has a milling capacity of 30 kg/hr with a milling efficiency is 99%. It is run by a 1.5 hp electric motor

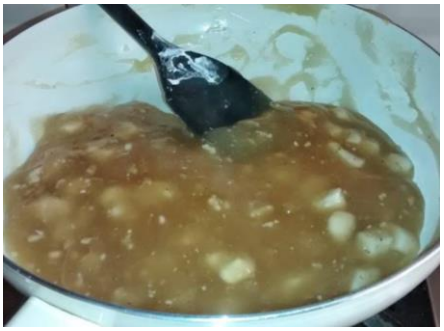
Arrow Root Powdering Machine

This is a machine developed by farmer innovation. Mr. A.T. Thomas, native of Kottayam district in Kerala is a 50-year-old marginal farmer is the person behind this invention. He has pursued several experiments to develop low cost, easy to use, hand operated processing machines. This machine to powder arrow root is, 1-ft square 3-ft height and 40 kg weight in dimension

with this machine 100kg of fresh arrow root can be powdered in 25 min. It can be transported in auto rickshaw. 100kg fresh arrow root will give 8kg powder and 1kg powder costs Rs. 250.

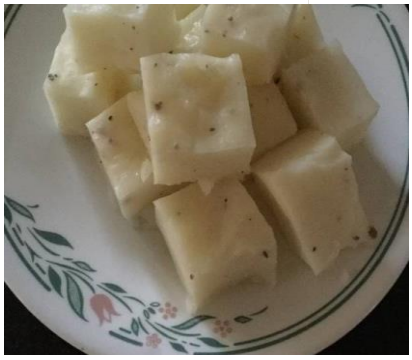
Something Yummy….

Arrowroot halwa



Typically made in Kerala on Thiruvathira festival

Pala Billalu (Milk with arrowroot powder Barfi)



Arrowroot powder (pala gunda) is a white, flavourless powder used to thicken sauces, soup and other foods. This dish is low fat and low calorie which can be taken by all.

Creams, Custards,