

Arrow root Processing

The extraction process of arrowroot starch from the rhizomes is laborious and tedious while a manual and inefficient mechanical extraction process result to low percentage of starch recovery of about 10-20% considering 90-80% by-products. There are bulks of agricultural waste left unutilized by the arrowroot starch processor which can be turned into more useful products through value-adding. Very low starch recovery hampers the productivity resulting to minimal expansions which further hinder the product to compete in the world market. Increasing starch recovery needs further research and studies focusing on; pre and postharvest activities and facilities on how to minimize losses and maximize volume of starch recovered.

Only 13%- or 390-grams dried starch out of 3 kilograms of fresh rhizomes was recovered. A huge percentage of waste from starch extraction process was water which is almost 59% out of fresh rhizomes. Potentials to utilize waste water into wine with 7% and 9% alcohol content and for other products such as bioethanol and biogas. The arrowroot wastes identified which were further developed into different novelty items and products through value adding also foresee potentials but must be creative enough to conceptualize a more competitive product promoting green entrepreneurship.

While the potentials for paper and pulp are below standard, this can be used for other purposes such as textile and fly board for construction materials considering its chemical properties. Further research can be done to promote arrowroot waste rhizomes that will provide other source of income and employment opportunities. We can start this business with moderate capital investment.

ARROW ROOT

Arrowroot (*Maranta arundinacea*) is a tropical tuber native to Indonesia. Many of several species of the genus *Maranta*, members of the family Marantaceae, the rhizomes, of which yield an edible starch. The most commonly used species is *M. arundinacea*. This vegetable is mostly employed in the kitchen, as it works well in sweet and savoury dishes alike, although it may have medicinal properties as well. Arrowroot is a starchy root vegetable similar to yam, cassava, sweet potato, and taro.



Botany

The creeping rootstock has fleshy tubers (underground storage organs), and its many-branched stem, reaching a height of 1.5 metres (5 feet), bears numerous leaves, having long narrow sheaths and large spreading ovate blades, and a few short-stalked white flowers. Plants are harvested when the tubers are gorged with starch, just before



the plant's dormant season. The roots are peeled and then grated in water. The resulting mixture is dried to a powder and purified by several washings.

ARROWROOT FARMING

Arrowroot is a widely used agricultural product across Kerala. This is chiefly consumed after cooking. It is also used in powdered form. Arrowroot is available in mostly 3 colours-yellow, white, and blue. However, it is not commercially cultivated. Only a few farmers grow arrowroot.



In Kerala, mostly the yellow and white coloured arrowroots are cultivated. The leaves of arrowroot plant are similar to that of turmeric. This plant grows well even in shades away from sunlight. This factor, along with the commercial value of the arrowroot powder, and its infinite possibilities as an ingredient in value added goods, open many doors of possibilities for the cultivation of arrowroot plant in Kerala.

Farming Method

The ideal time to start Arrowroot farming is during April-May, the time of summer rains. The climatic conditions of Kerala, with sufficient heat and humidity, is conducive for the farming of arrowroot plant. They can be grown in coconut palm groves, areca palm groves or even in arid land as Mixed farming. They can also be grown under the shade of mango trees or jack fruit trees.



Since there are no seeds for growing this plant, pieces from the arrowroot measuring 4 to 7cms can be cut. They will have 2 to 4 buds and will weigh 15 to 20 grams. Dig holes and fill them up with cow dung, chicken or goat manure or any economical bio manure. Plant them with a gap of 1 ft. In a month of planting, they will start to leaf. Manure it twice. There is no need for expensive fertilizers. It is best to fertilize these plants during July, and September-October. Within 6 months of planting the arrowroot cuts, the leaves of the plant will start to wilt and turn yellow. This is the perfect time for harvest.

NUTRITIONAL PROFILE

Like many starches, it's high in carbohydrates but offers various nutrients. 120-gram of sliced, raw arrowroot contains the following nutrients:

- Calories: 78 calories
- Carbohydrates: 16 grams
- Fibre: 2 grams
- Protein: 5 grams
- Fat: 0 grams
- Folate: 102% of the Daily Value (DV)
- Phosphorus: 17% of the DV
- Iron: 15% of the DV
- Potassium: 11% of the DV



- ✚ Arrowroot has a higher protein content than other tubers, packing 5 grams per 120 grams, compared with 2.3 grams in the same amount of yam.
- ✚ Additionally, it provides over 100% of the DV for folate (vitamin B9), which is essential for development during pregnancy and DNA formation
- ✚ Arrowroot offers significant amounts of phosphorus, iron, and potassium.