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Greater Yam: The Forgotten Super Tuber of the Tropics

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Yams (*Dioscorea spp*.) are important tropical tuber crops cultivated in Africa, Asia, South America, the Caribbean, and the Pacific Islands. Yams are regarded as a famine food and the fourth most significant crop after potato, cassava, and sweet potato, and it has a significant impact on the food habits of small and marginal agricultural families. Yams are rich in carbohydrates, flavonoids, dietary fibre, vitamins, and essential minerals. Yams are a relatively healthy alternative to other tubers like potato as they have a lower glycemic index. There is enormous diversity in the wild and domesticated species that are being used by tribal communities as traditional food. However, systematic characterization of food quality traits in wild species is a major prerequisite for more consumption and cultivation. Yams belong to the family Dioscoreaceae under Monocotyledons that include more than 600 species. Yams bring food security to 300 million people in the low-income food-deficit countries of the tropics.

Among the cultivated yam species, Greater yam (*Dioscorea alata* L.) is the most widely grown and economically important species. As one of the world's oldest cultivated tuber crops, it remains underutilized despite its exceptional nutritional value, climate resilience, and economic potential. Therefore, this article highlights its importance, cultivation, and utilization. Greater yam is a climate-resilient crop that performs well under diverse agro-climatic conditions and can tolerate short periods of drought better than many annual crops. It has high yield potential compared with several other yam species, making it attractive for both subsistence and commercial cultivation. The tubers can be processed into a variety of value-added products such as flour, chips, starch, noodles, bakery products, and instant mixes, creating opportunities for rural entrepreneurship. Greater yam contains bioactive compounds such as diosgenin, phenolics, and antioxidants, which are associated with antioxidant, anti-inflammatory, and other health-promoting properties. Promoting greater yam cultivation can help conserve indigenous landraces, diversify farming systems, and reduce dependence on a few staple crops, thereby strengthening sustainable agriculture.

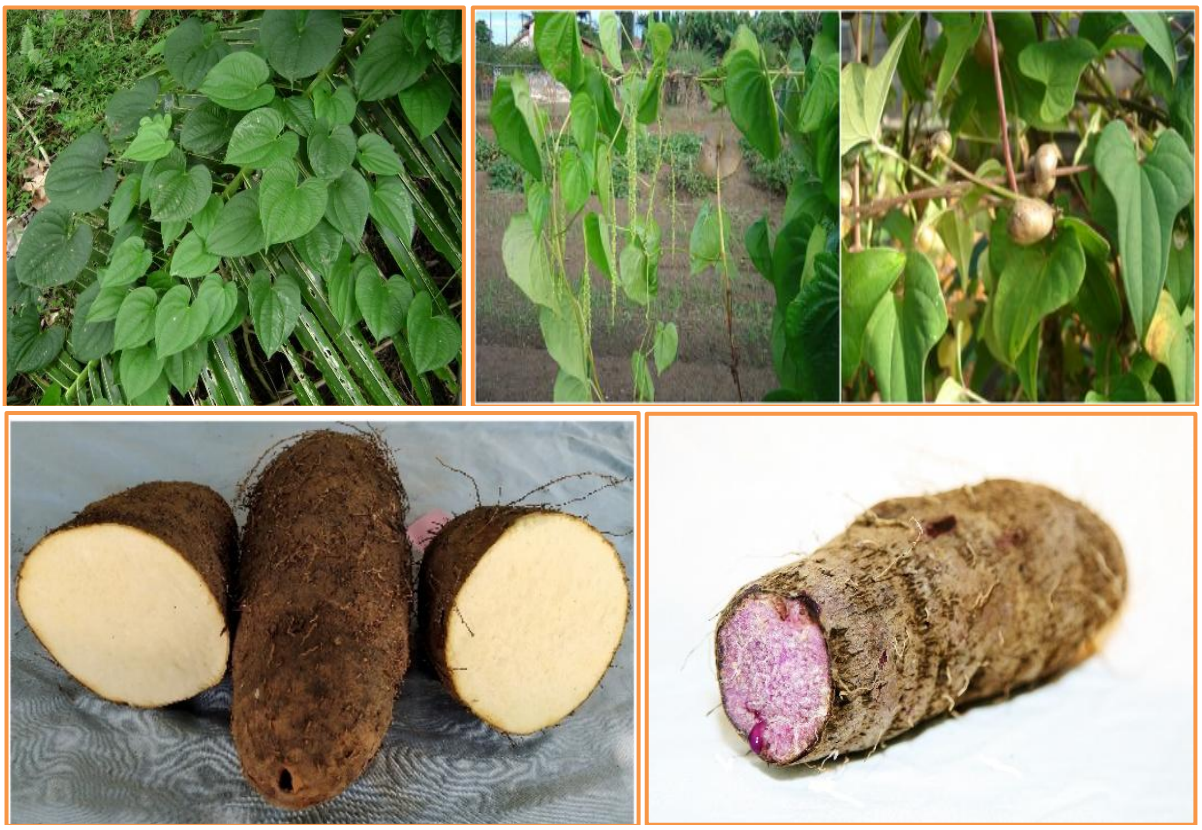
Nutritional values of greater yam

Component	Value
Moisture	67.97–72.54%
Crude protein	4.88–6.06%
Crude fibre	1.57–1.83%
Crude lipid	0.07–0.10%
Ash	1.12–1.92%
Starch	17.50–21.50%
Polyphenols	1.67–4.72%

Source: Adapted from ICAR-CTCRI Technical Bulletin No. 101 (2023)

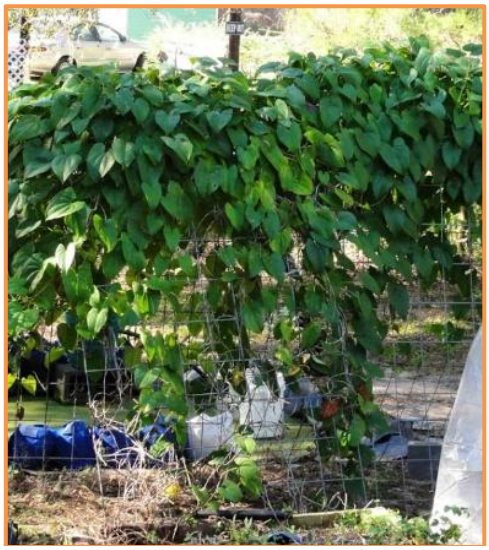
The greater yam (*Dioscorea alata* L.) provides medicinal and therapeutic benefits through bioactive compounds like diosgenin, flavonoids, and antioxidants that support blood sugar

control, reduce inflammation, and improve digestion. Greater yam is a herbaceous climber characterized by winged, right-twining stems, large opposite leaves, and large underground starchy tubers. Greater yam Tuber flesh is white, cream, yellow or purplish. Many cultivars produce aerial tubers or bulbils in the leaf axils.



Greater yam *(Dioscorea alata* L.) is the most economically important species originated in Southeast Asia specifically, in tropical Myanmar and Thailand, and is the most diversified and extensively distributed species throughout tropical Asia and the Pacific. In Tamil Nadu, Greater yam is locally known as Kavalai kizhangu, Vella kodi kizhangu, and Vettila valli kizhangu, is widely grown across several districts in Tamil Nadu. Greater yam is commonly referred to by farmers as *Kodi Kizhangu* because of its climbing growth habit. It is commonly cultivated as an intercrop in coconut gardens and trained on supports to maximize sunlight interception. In Coimbatore it is noted for local landraces like pannimuttan kizhangu and nuguli kizhangu. In Tirunelveli it is known for wild and traditional cultivars such as mulluvali kizhangu and kavala kilalngu. In Namakkal district it is found as traditional landraces like vettilavally kizhangu. In Nilgiris it is specific wild tubers accessions in distributed forest slopes.

Greater Yam is propagated vegetatively and seed yam (whole tuber) is the ideal source of planting material. Recommended size for planting material is 200 – 250 g setts. One or two ploughing or digging of the land up to a depth of 15 – 20 cm followed by opening of pits of the size 45 x 45 x 45 cm and filling of ¾ th size of these pits with a mixture of 1 kg dry farm yard manure and top soil is the usual agronomic practice followed. Seed yams or yam setts are then planted in it and the optimum spacing recommended for yams is 90 cm X 90 cm. Application of well rotten FYM @ 10 t/ha at the time of field preparation is essential. Chemical fertilizers may be applied in the form of NPK @ 100:50:100 t/ha in two split doses. Along with the fertilizer application, weeding and earthing up also should be essentially done. As soon as the yam vine emerges, it tends to climb on any available support. Staking can be done by allowing vines trail on poles or live trees. On maturity, vines dries up and tubers are harvested eight to ten months after planting.




Staking

The ICAR-CTCRI has released varieties in Greater yam suitable to different agro-climatic conditions of India varying for duration of maturity, trailing habit, tuber yield and nutritional quality.

Variety	Key characters
Sree Keerthi	High-yielding variety with large-sized tubers; suitable for intercropping in mature coconut gardens and with banana.
Sree Roopa	Produces medium-sized tubers with excellent cooking quality.
Sree Shilpa	World's first hybrid variety of *Dioscorea alata*; medium-sized oval tubers, easy to harvest, and good cooking quality.
Sree Karthika	High-yielding variety with long oval tubers and excellent cooking quality.
Sree Neelima	Purple-fleshed conical tubers with superior nutritional value and good cooking quality.
Sree Swathy	High-yielding, drought-tolerant variety with good cooking and nutritional quality; resistant to anthracnose disease.
Orissa Elite	Long cylindrical tubers with excellent cooking quality; field tolerant to leaf spot, scales, and mealy bugs.
Bhu Swar	Early-maturing variety with long cylindrical to irregular tubers and excellent cooking quality.
Sree Nidhi	High-yielding variety with cylindrical tubers, good cooking quality, and field tolerance to anthracnose.

Source: ICAR-Central Tuber Crops Research Institute (ICAR-CTCRI). 2023. *Yams*. Technical Bulletin No. 101, Sreekariyam, Thiruvananthapuram, Kerala.

Despite improvements in cultivation technology, Greater yam remains underutilized because of limited commercial cultivation, inadequate breeding efforts, poor market development, low consumer awareness, and post-harvest constraints. The crop has immense potential to contribute to food and nutritional security owing to its high nutritional value, climate resilience, and adaptability to diverse agro-climatic conditions. Increasing public awareness of its nutritional and health benefits, promoting quality planting material, strengthening value addition and processing industries, and developing efficient marketing channels can enhance its cultivation and consumption. Furthermore, continued research on high-yielding, pest and diseaseresistant varieties, along with conservation and utilization of indigenous germplasm, will be essential for realizing the full potential of greater yam as a sustainable and profitable underutilized crop.

Greater yam (*Dioscorea alata* L.) is a nutritious, climate-resilient, and high-yielding underutilized tuber crop with immense potential to enhance food and nutritional security. Promoting its cultivation through improved varieties, value addition, and farmer awareness can help unlock its full potential and contribute to sustainable agriculture and livelihood improvement.

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