

Chekurmanis (*Sauropus androgynus*): A Multivitamin Green Underutilized Vegetable Crop

*Sreeja S, Saravanan R, Anitha S and Anto Jeya Priya

Department of Horticulture, Faculty of Agriculture, Annamalai University,
Chidambaram, Cuddalore, Tamil Nadu, India

*Corresponding Author's email: sreejasree112004@gmail.com

Chekurmanis (*Sauropus androgynus*) is native to Indo Burma region. This crop is also known as Katuk (or) Star gooseberry. It is also known as Multi- vitamin, Multi - Mineral packed leafy vegetable and popularly known as 21st century vegetable. This crop was introduced into kerala from Malaysia in 1953. In Malayalam it is known as (madura keera). In Tamil it is known as (Thavasi Murungai). It is an underutilized vegetable crop in kerala and Kanyakumari district. This crop has high nutritive values. The tender leaves are consumed as raw (or) cooked. It is generally grown as a live fence around the kitchen garden. This crop contains high nutritive value and has some medicinal properties. Based on older plant classification system it belongs to the family Euphorbiaceae. Based on modern plant classification systems. Now this crop belongs to the family Phyllanthaceae. Chromosome number- $2n=2x=24$.



Nutritive Value

Leaves contain high nutritive value Energy (103kcal), Moisture (73.6%), Protein (6.8g), Carbohydrate (11.6g), fat (3.2g), Vitamin A (9510 IU), Thiamine (0.48g), Riboflavin (0.32 g), Vitamin C (247mg), Calcium (570mg), Phosphorous (200mg), Iron (28 mg) per 100g of leaves. Chekurmanis leaves contain high concentration of alkaloid called **papaverine**. Papaverine is a Natural antispasmodic compound that relaxes smooth muscles. 100g of fresh leaves contain 580mg of Papaverine. Excessive (or) raw consumption of leaves may lead to dizziness, sleepiness, constipation, respiratory difficulties.

Medicinal uses

Chekurmanis leaf juice, pomegranate roots and jasmine leaves used to treat eye disorders. Leaves contain good antibacterial efficacy against *Klebsiella pneumoniae* and *Staphylococcus aureus*. It is very useful for women after childbirth in terms of stimulating milk production and womb repair. Eating raw leaves can lower the high blood pressure in humans. It is also used to cure anaemia. Decoction of its roots is recommended to treat fever in rural areas.



Area and Distribution

Chekurmanis originated from hot and humid lowland forest of Borneo. It was introduced to India in the 1950s and then found in cultivated and wild state in Sri Lanka, Southern China and throughout South East Asia. In India, it is found in Sikkim, Himalayas, Khasi, Abor and

Arka hills at 1200m elevation and in western ghats of Kerala from Wayanad northwards at altitudes of 300 -1200m.

Systematic Position

Kingdom	Plantae
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Malpighiales
Family	Phyllanthaceae
Genus	<i>Sauropus</i>
Species	<i>androgynous</i>

Botanical Description

- **Habit:** It is a perennial, evergreen, multi-branched shrub that grows 1–3 m in height. Erect growth habit with numerous slender branches.
- **Root system:** Well developed taproot with many lateral roots. The extensive root system enables the plant to tolerate short periods of drought.
- **Stem** is cylindrical, smooth (glabrous), green when young and becoming woody and light brown with age. Highly branched and capable of producing new shoots after pruning.
- **Leaves** are simple, alternate, and arranged in two rows (distichous), Shape: Ovate to elliptic, Size Approximately 2–6 cm long and 1–3 cm wide, Apex Acute to obtuse. Base Rounded, Margin Entire (smooth), Surface Smooth, dark green on the upper side and lighter green beneath, Petiole Short (2–5 mm).
- **Flowers** are solitary or borne in small clusters in the leaf axils (axillary) small reddish inflorescence.
- The fruit is a small, globose to depressed-globose capsule. Diameter: About 5–8 mm. Green when immature, turning white or pale pink to purplish at maturity. Usually divided into three lobes.
- **Seeds** are black, each fruit capsule contains three seeds.

Mode of pollination

Highly cross pollinated and Entomophilous (due to its protogyny and monoecy in nature).

Edible parts

Succulent shoots and tender leaves.

Cultivation Practices of Chekurmanis

Climate and Soil

A Warm and humid tropical climate, optimum temperature for cultivation is 24-35°C, grows well under partial shade and full sunlight. Suitable soil for cultivation is well-drained loamy (or) sandy loam soil. pH 5.5-7.5 are ideal.

Propagation

Propagated mostly by semi-hard wood Cuttings (15-20cm long with 3-5 nodes). Rooting occurs in about 20-25 days. Also propagated by seeds but seed has low germination percentage and the seed is viable for 3-4 months. Cutting should be taken from 6-12 month old pencil thickness cuttings were selected. Before planting the cuttings in poly bag the cuttings were dipped in IBA or IAA solution to increase the rooting.

Planting

Best planting season is April to May (or) May to June. Then the cutting is planted in shallow furrow. Spacing is 30-40cm x 30-40cm. transplanting of seedlings to the main field is done at 25 to 30 days.

Manures and fertilizer

Application of Farm yard Manure (FYM) at the rate of 5kg per plant per year. NPK (7:10:5) Mixture applied at the rate of 30g per plant.

Irrigation

Chekurmanis is a drought-resistant crop, during summer season if we irrigate the crop will produce more new shoots and increase more cuttings.

Plant growth regulators

IBA or IAA is a only plant growth regulator used in chekurmanis to enhance rooting in cuttings. Dipping of cuttings in 50 ppm IBA (or) IAA solution.

Inter cultural operation

- **Pruning** plays a important role in successful cultivation of Chekurmanis pruning helps to promote more new shoots.
- **Mulching** conserve soil moisture and suppress the weeds naturally.

Pests and their Management

White flies, aphids – suck sap from the leaves and young shoots and stems, yellow appearance of leaves and plant become stunted. Management- avoid using of chemical pesticides in leafy vegetables because leafy vegetable with high level of pesticides the accumulation of high toxic chemicals in leaves leads to side effects to the human who consume. Spraying of neem based products such as neem leaf extract, neem seed kernel extract to control white flies and aphids. Releasing of natural predators like coccinellid beetle.

Diseases and their management

Leaf spot – spraying of mancozeb (or) copper oxychloride, Powdery mildew symptom powder like appearance on the upper surface of the leaves. Control-spraying of wettable sulphur.

Harvesting

First Harvest – 4 months after planting, harvest tender shoots, frequent harvesting encourages the continuous production throughout the year.

Yield

5 Kg of leaves per plant.

Reasons why it is underutilized

- **Low consumer awareness:** Many people are unaware of its nutritional and medicinal benefit. Limited commercial cultivation. It is mostly grown in home gardens and small farms rather than on a commercial scale.
- **Poor market demand:** Consumer demand is low because the crop is not widely known. Lack of quality planting material Improved varieties and certified stem cuttings are not readily available.
- **Limited research and breeding:** Compared with major leafy vegetables, there are fewer breeding and crop improvement programmes. Short shelf life. The tender leaves wilt quickly after harvest, making storage and transport difficult. Inadequate post-harvest technology: There are limited facilities for grading, packaging, cold storage, and processing.
- **Weak marketing network:** Chekurmanis is rarely found in supermarkets or organised retail markets.
- **Lack of value-added products:** Few processed products, such as dried leaf powder, capsules, or ready-to-cook products, are commercially available.
- **Limited extension and promotion:** Farmers receive little training or technical support on its cultivation and marketing. Competition from common leafy vegetables Spinach, amaranth, fenugreek, and other leafy vegetables are more familiar to consumers and dominate the market. Health concerns from excessive consumption Very high intake of raw *Sauropus androgynus* has been associated with serious lung problems (bronchiolitis obliterans) in some reported cases, leading to caution about its use. Normal culinary consumption of cooked leaves is generally considered safe.

Future prospects

- **Nutritional Security:** Rich source of protein, iron, calcium, vitamins A and C, antioxidants, and dietary fibre. Can help improve nutritional security and reduce micronutrient deficiencies. Commercial Cultivation Suitable for commercial production due to its perennial nature and repeated harvesting. Provides a regular income from continuous leaf production. Organic Farming Well suited to organic and natural farming systems because it generally requires fewer chemical inputs.
- **Value Addition:** Can be processed into dried leaf powder, herbal tea, nutraceutical products, soups, and functional foods, increasing market value. Medicinal and Nutraceutical Uses increasing interest in medicinal plants and functional foods is expected to boost demand for Chekurmanis because of its antioxidant and health-promoting properties.
- **Climate Resilience:** Tolerates warm and humid tropical conditions and adapts well to different soil types, making it suitable under changing climatic conditions. Urban and Kitchen Gardening Ideal for kitchen gardens, terrace gardens, and container cultivation because of its easy maintenance and continuous leaf production.
- **Export Potential:** Fresh leaves and processed products have potential markets in countries with Asian communities familiar with the crop. Research and Crop Improvement.

Future research can focus on: High-yielding and nutrient-rich varieties. Improved propagation techniques. Pest and disease management. Post-harvest handling and shelf-life improvement. Development of value-added products.

Conclusion

Chekurmanis (*Sauropus androgynus*) is a highly nutritious perennial leafy vegetable with significant potential to improve food and nutritional security. It is rich in proteins, vitamins, minerals, antioxidants, and dietary fibre, making it an excellent functional food. The crop is easy to cultivate, requires relatively low inputs, and provides repeated harvests throughout the year, making it suitable for home gardens, organic farming, and commercial cultivation.

References

1. Petrus, A. J. A. (2013). *Sauropus androgynus* (L.) Merr.: A potentially nutritive functional leafy vegetable. *Asian Journal of Chemistry*, 25(17), 9425–9433.
2. Padmavathi, P. Rao, M. P., & Malleswari, K. (2013). Ethnopharmacological and phytochemical review of *Sauropus androgynus* (L.) Merr. *Asian Journal of Pharmaceutical and Clinical Research*, 6(1), 1–5.
3. Naveena, E., Janavi, G.J., Rameshkumar, D., Fathima Fahima, A. & Nivedha, C.K. (2025). Effect of different spacing level and growth stages of Chekkurmanis (*Sauropus androgynus* L.) on plant growth. *Indian Journal of Agricultural Research*, 59(6), 962–967.
4. Verma, A. & Sood, S. (2018). Chekkurmanis is a mineral-rich leafy green. *Indian Horticulture*, 63(2).
5. Anju, T., Rai, N.K.S. & Kumar, A. (2022). *Sauropus androgynus* (L.) Merr.: A multipurpose plant with multiple uses in traditional ethnic culinary and ethnomedicinal preparations. *Journal of Ethnic Foods*, 9, 1–29.
6. Kalpana, P. & Platel, K. & Srinivasan, K. (2017). Nutritional Profile of Chekurmanis (*Sauropus androgynus*), A Less Explored Green Leafy Vegetable. *The Indian Journal of Nutrition and Dietetics*, 54(3), 243–252.