

THE COMPLETE ENUMERATION OF LEAFY VEGETABLES IN TELANGANA STATE, INDIA

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ABSTRACT

This study reports on a systematic floristic survey of leafy vegetables in Telangana State, India, with the goal of documenting their diversity, ecological distribution, traditional usage, and therapeutic characteristics. An extensive field survey was done throughout several areas and environments, resulting in the identification of 29 leafy vegetable species from 13 plant groups. Amaranthaceae, Brassicaceae, and Convolvulaceae were the most common families. Both wild and cultivated species were identified, with many of them playing an important role in the local diet and traditional healthcare practices. The study emphasizes these plants' ecological adaptation to the region's diverse agro-climatic conditions, as well as its nutritional, cultural, and medicinal relevance. This inventory is a significant resource for encouraging the conservation and sustainable use of leafy vegetables in Telangana, benefiting food security, biodiversity preservation, and rural livelihoods.

KEYWORDS: Leafy vegetables, Floristic diversity, Telangana, Amaranthaceae, Medicinal plants, Sustainable utilization.

INTRODUCTION

A floristic study on leafy vegetables in Telangana involves the documentation, classification, and understanding of the diverse varieties of leafy vegetables found in the region. The study focuses on several key aspects such as their scientific classifications, ecological conditions, cultural uses, and importance in the local diet and medicinal practices.

Leafy vegetables are an essential component of human diets, providing vital nutrients and health benefits. Telangana State, with its diverse agro-climatic conditions, is home to a wide range of leafy vegetables. Despite their importance, there is a lack of comprehensive documentation on the floristic diversity of leafy vegetables in the state.

Telangana, a state in southern India, is characterized by a wide range of climatic and ecological zones, including semi-arid regions, river valleys, and hillocks. This ecological diversity supports a wide variety of flora, including a number of leafy vegetables that are cultivated and consumed in local diets. The region's agricultural practices, such as irrigation and crop rotation, contribute to the production of these vegetables.

Telangana's landscape, especially the Godavari and Krishna river basins, and the presence of both dryland and irrigated areas, makes it an ideal environment for the cultivation of a variety of vegetables, including leafy greens. These vegetables have a rich nutritional profile, which contributes significantly to the health of the local population.

Ecological Conditions

Telangana has a tropical climate with distinct summer, monsoon, and winter seasons. The hot and dry conditions during summer, followed by the cooling effects of the monsoon, provide a suitable environment for the cultivation of leafy vegetables.

- Soil Types: Telangana's soils vary from black cotton soils in the northern regions to red soils in the southern parts, which are highly fertile and well-suited for cultivating a variety of crops, including leafy vegetables.
- Climate: The region experiences high temperatures, especially in summer, with average rainfall of around 900-1,100 mm annually. This climate allows for both seasonal and year-round cultivation of leafy greens.

- Water Availability: With the help of irrigation systems, particularly from rivers like the Krishna and Godavari, as well as various reservoirs, water availability plays a critical role in the cultivation of these vegetables.

Identification and Classification of Leafy Vegetables

Here is a list of some commonly found leafy vegetables in Telangana, along with their scientific classifications.

A. Wild and Indigenous Leafy Vegetables

1. Gongura (*Hibiscus cannabinus*)
 - Family: Malvaceae
 - Gongura is a sour-leaved plant commonly used in Telangana's cuisine. It thrives in hot, dry climates and is used to make Gongura chutney, pachadi, and Gongura pappu (dal).
2. Moringa (*Moringa oleifera*)
 - Family: Moringaceae
 - Known for its highly nutritious leaves, Moringa grows well in the region's semi-arid climate. It is widely used in cooking, especially in soups and curries. Moringa leaves are a rich source of vitamins A, C, and iron.
3. Jute leaves (*Corchorus olitorius*)
 - Family: Malvaceae
 - These leaves, also called Sena Kura, are cultivated for their fiber and edible leaves. They are rich in iron and folic acid and are used to prepare Jute leaves curry.
4. Amaranth (*Amaranthus spp.*)
 - Family: Amaranthaceae
 - Commonly known as Thotakura, amaranth is a fast-growing leafy vegetable rich in iron, calcium, and vitamins. It is a major part of the regional diet and is used in various forms such as curries and pulses.

B. Cultivated Leafy Vegetables

1. Spinach (*Spinacia oleracea*)
 - Family: Amaranthaceae
 - Spinach is widely grown in Telangana, particularly in areas with irrigation facilities. It is used in several dishes such as Spinach dal and Spinach curry.
2. Fenugreek (*Trigonella foenum-graecum*)
 - Family: Fabaceae
 - Methi or fenugreek is another important leafy green. Known for its slightly bitter taste, it is rich in fiber, iron, and vitamin C and is often used in curries, parathas, and stews.
3. Cabbage (*Brassica oleracea*)
 - Family: Brassicaceae
 - Though native to temperate climates, cabbage is cultivated in cooler regions of Telangana. It is used in curries and salads.
4. Mustard greens (*Brassica juncea*)
 - Family: Brassicaceae
 - These greens are especially grown in the winter season and are popular in making mustard greens curry and salads. They are high in vitamin K and fiber.
5. Coriander (*Coriandrum sativum*)
 - Family: Apiaceae

- Coriander leaves are widely used as a garnish and in curries and sauces. They are rich in antioxidants and essential oils.

C. Other Notable Leafy Vegetables

- Remaining all leafy vegetables.

MATERIALS AND METHODS

An extensive survey was conducted across different districts of Telangana State, covering various habitats, including agricultural fields, forests, and wastelands. Specimens of leafy vegetables were collected, identified, and voucher specimens were deposited at the herbarium. Local people and farmers were interviewed to gather information on the traditional uses and medicinal properties of these leafy vegetables.

RESULTS AND DISCUSSION

During the floristic study undertaken across Telangana State, 29 species of leafy vegetables from 13 botanical families were identified. These species include both wild and cultivated forms, with many being widely used in local cuisine and traditional medicine.

The green vegetables were found in a variety of environments, including agricultural fields, home gardens, woodland borders, riverbanks, and wastelands, suggesting their ecological flexibility.

Table 1 provides a complete overview of Telangana's leafy vegetable diversity. Traditional use includes nutritional replenishment and therapies for inflammation, gastrointestinal ailments, diabetes, hypertension, skin diseases, and respiratory concerns.

The survey also indicated that many of these plants are grown during both the Kharif (monsoon) and Rabi (winter) seasons, ensuring year-round food security and nutritional sustainability for local communities.

The current floristic study emphasizes the vast diversity and cultural relevance of leafy vegetables in Telangana state. The identification of 29 species from 13 botanical families demonstrates these plants' ecological adaptability across a variety of agro-climatic zones, as well as their nutritional, medicinal, and socioeconomic relevance.

Ecological adaptation and distribution

The prevalence of leafy vegetables in a variety of habitats, from cultivated areas to forest borders and wastelands, illustrates their endurance and adaptability to Telangana's tropical climate, which is marked by unpredictable rainfall, high summer temperatures, and fertile soil. Dominant groups such as Amaranthaceae, Brassicaceae, and Convolvulaceae thrive in the region's semi-arid to sub-humid climates, both rain-fed and irrigated.

Nutritional and medicinal value

Many of the recorded species are high in vitamins (A, C, and K), minerals (iron and calcium), fiber, and antioxidants, all of which are essential for correcting micronutrient deficits in rural diets. For example, *Moringa oleifera* has a diverse medicinal profile that includes antioxidant, antidiabetic, and anti-inflammatory effects.

Gongura (*Hibiscus cannabinus*) is highly valued for its iron content and digestive properties. Amaranthus species, which are commonly consumed throughout the state, play an important role in the treatment of anemia, skin disorders, and digestive problems.

These applications are deeply established in indigenous knowledge systems and benefit basic healthcare practices, particularly in remote places with limited access to contemporary medical facilities.

Conservation and sustainability

The study also highlights the possibility of genetic degradation and cultural neglect of traditional leafy

vegetables as a result of: Modern agriculture favours high-yield cash crops and Urbanization and diet changes. There is a lack of documentation and awareness about the importance of wild and indigenous species. To combat these trends, promote sustainable behaviors such as: Organic farming, Rainwater harvesting and Agroforestry is Crop rotation is important. These measures not only protect the environment, but also improve the availability and quality of these greens all year.

Policy and Ethnobotanical Implications

The inventory gathered serves as a foundation for future ethnobotanical, nutritional, and pharmacological research. Furthermore, it provides useful input for policymakers and agricultural extension programmes.

Tables and Figures

A total of 29 species of leafy vegetables belonging to 13 families were recorded. The plant list was added in the tables with table No 1.

Table 1: List of leafy vegetables recorded in Telangana State along with their scientific names, local names, family names and traditional / primary uses.

S.No	Scientific name	Common name	Family name	medicinal uses
1	<i>Allium fistulosum</i> L.	Ulli naaru	Amaryllidaceae	anti-obesity, anti-viral, antimicrobial, anti-tumor, anti-oxidant, anti-inflammatory, and immuno modulatory activities also boost immunity against COVID-19
2	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Ponnaganti kura	Amaranthaceae	ulcers and cuts and wounds, fevers, ophthalmia, gonorrhoea, pruritus, burning sensations, diarrhoea, skin diseases, dyspepsia, haemorrhoids, liver and spleen diseases
3	<i>Amaranthus acanthochiton</i> J.D.Sauer	Erra thota kura	Amaranthaceae	cholic, gonorrhoea, and eczema
4	<i>Amaranthus dubius</i> Mart. ex Thell.	koyagura	Amaranthaceae	Hydrate, detoxify soothe, improve elasticity and reduce wrinkles.
5	<i>Amaranthus retroflexus</i> L.	Thota kura	Amaranthaceae	profuse menstruation, intestinal bleeding, diarrhoea
6	<i>Amaranthus viridis</i> L.	Pacha thota kura	Amaranthaceae	eczema, psoriasis and rashes anti-inflammatory agent of the urinary tract, venereal diseases vermifuge, diuretic, anti-rheumatic, antiulcer, analgesic, antiemetic, laxative, improvement of appetite, antileprotic, treatment of respiratory and eye problems, to treatment of asthma
7	<i>Apium graveolens</i> L.	Naranji vaamu	Apiaceae	Arthritic conditions, gout, and urinary infections.
8	<i>Basella alba</i> L.	Bachali kura	Basellaceae	Dysentery, diarrhea, wound healing, anemia, cancer.
9	<i>Boerhavia diffusa</i> L.	Tella galigeru	Nyctaginaceae	anti-aging, life-strengthening, brain power-enhancing, disease-preventing

10	<i>Brassica juncea</i> (L.) Czern.	aavaalu	Brassicaceae	antibacterial, antifungal and wound healing properties
11	<i>Brassica oleracea</i> L.	Kale aaku / kosu	Brassicaceae	Diabetes, cancer, gastric, inflammation, hypertension, hypercholesterolemia, bacterial, oxidation and obesity.
12	<i>Chenopodium album</i> L.	chakrantham aaku / Pappukura	Amaranthaceae	cancer, viral infections, parasitic diseases, gastrointestinal disorders, Antianemia, depurative, and diuretic
13	<i>Coriandrum sativum</i> L.	Kotthi mira	Apiaceae	relieving gastrointestinal discomfort, respiratory and urinary complaints, the whole plant of coriander has folk medicinal uses to treat flatulence, dysentery, diarrhea, and vomiting
14	<i>Hibiscus cannabinus</i> L.	gongura	Malvaceae	anticancer, antioxidants, analgesic, anti-inflammatory, aphrodisiacs, and hepatoprotective activities
15	<i>Hibiscus sabdariffa</i> L.	Erra gongura	Malvaceae	High blood pressure, reduce levels of sugar and fats in the blood, reduce swelling, and work like antibiotics
16	<i>Ipomoea aquatica</i> Forssk.	Thuti kura/ neeti paalakura	convolvulaceae	diabetes, liver malfunction, constipation, opium poisoning, heavy metal toxicity, piles and ringworm
17	<i>Ipomoea batatas</i> (L.)	Chilagada dumpa	convolvulaceae	anti-cancer, anti-diabetic, and anti-inflammatory activities
18	<i>Leucas aspera</i> (Willd.) Link	Thummi kura	Lamiaceae	chronic rheumatism, psoriasis, scabies, chronic skin eruptions and their juice used as antibacterial agent
19	<i>Moringa oleifera</i> Lam.	Munaga aaku	Moringaceae	Antioxidant activity Cardiovascular activity Anticancer activity Hepatoprotective activity Immuno modulatory activity, Analgesic activity Antidiabetic properties Antimicrobial activity Anti-inflammatory activity, Cancer, Diabetes, Diuretic Neuropharmacological activity, Anthelmintic activity, Anti-obesity activity, Antispasmodic Anti-ulcer/gastroprotective activity, Antiasthmatic activity, Antidiarrheal activity, Antimicrobial and antifungal activity, Antitumor activity, Asthma Hematological activity and Hypertension
20	<i>Nasturtium officinale</i> W.T.Aiton	Adelu kura	Brassicaceae	Infection of the airways. Infections of the kidney, bladder, or urethra (urinary tract infections or UTIs), Cough., Bronchitis, pulmonary diseases, hypertension and cardiovascular diseases

21	<i>Ourel lanata</i> (L.) Kuntze	Pindi kura	Amaranthaceae	Antifertility, Anti-hyperglycemic and anti-diabetic
22	<i>Portulaca oleracea</i> L.	Ganga vaavili kura	Portulacaceae	Febrifuge, antiseptic, vermifuge, antibacterial, antiulcerogenic, anti-inflammatory, antioxidant, and wound-healing properties.
23	<i>Raphanus sativus</i> L	mullangi aaku	Brassicaceae	Treat constipation, chronic tracheitis, and hypertension
24	<i>Rivea hypocrateriformis</i> (Desr.) Choisy	Boddi kura	convolvulaceae	rheumatic pain, fever, urogenital problems, anovulatory, antifertility, antiarthritic, snake bites, cough, piles, malaria, and skin diseases
25	<i>Rumex acetosa</i> L	Chukka kura	Polygonaceae	constipation, diarrhea, jaundice, mild diabetes and as an analgesic, antihypertensive, against gallbladder, liver and skin disorders and inflammation
26	<i>Sesbania grandiflora</i> (L.) Poir	Avise aaku	Fabaceae	thrombosis, diarrhea, and inflammatory diseases and against few important bacterial pathogens
27	<i>Spinacia oleracea</i> L	paalakura	Amaranthaceae	Ethnomedical therapy of obesity, inflammation of lungs, lumbago, flatulence, and treatment of urinary calculi
28	<i>Tamarindus indica</i> L	Chintha chigiru	Fabaceae	Abdominal pain, diarrhea, dysentery, wound healing, constipation and inflammation.
29	<i>Trigonella foenum-graecum</i> L	Menthu kura	Fabaceae	antidiabetic, antihyperlipidemic, antiobesity, anticancer, anti-inflammatory, antioxidant, antifungal, antibacterial, galactagogue and improving women's health.

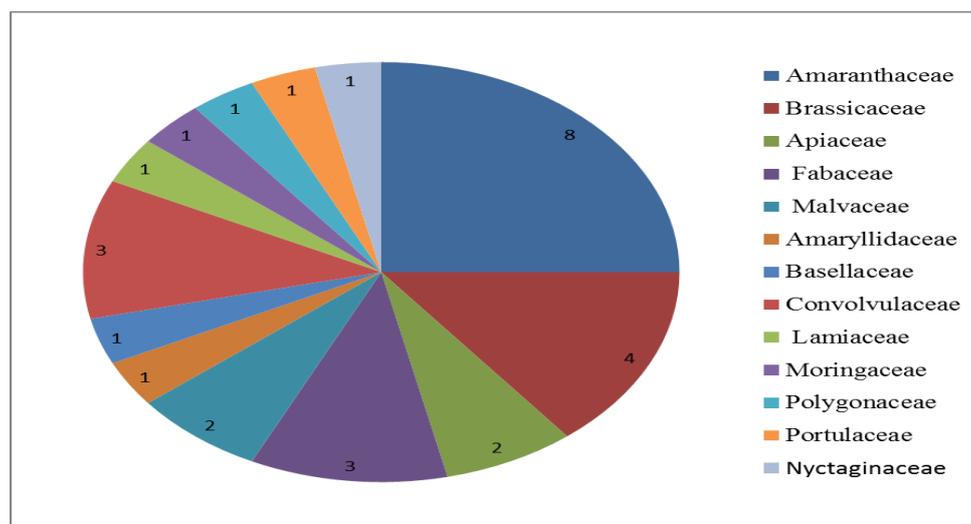


Figure 1: Family wise analysis.

Some selected leafy vegetable



Figure 2: A. *Amaranthus retroflexus* L., B. *Spinacia oleracea* L, C. *Alternanthera sessilis* (L.) R.Br. ex DC., D. *Coriandrum sativum* L., E. *Amaranthus viridis* L., F. *Allium fistulosum* L.

Some selected leafy vegetable



Figure 3: A. *Brassica juncea* (L.) Czern, B. *Rumex acetosa* L, C. *Trigonella foenum-graecum* L.

CONCLUSION

The floristic study of leafy vegetables in Telangana State found a remarkable diversity of 28 species from 13 botanical groups. Dominant groups like as Amaranthaceae, Brassicaceae, and Convolvulaceae highlight the leafy greens' ecological flexibility and cultural significance in the region. These vegetables are not only important dietary components since they are high in vitamins, minerals, and medicinal substances, but they also have traditional uses in local health cures and culinary practices.

The findings highlight the importance of documenting, conserving, and utilizing these plant resources in an environmentally responsible manner. Traditional leafy vegetables are in risk of being neglected or lost as agriculture modernizes and dietary patterns change. Promoting awareness, merging traditional knowledge with modern study, and supporting sustainable farming techniques like as rainwater gathering, organic cultivation, and crop rotation can help to assure their survival.

This inventory serves as a foundation for future ethnobotanical, nutritional, and pharmaceutical research.

It can also direct politicians, farmers, and academics toward solutions that protect biodiversity while improving food and health security in the state. To summarize, Telangana's diverse green vegetable production is not only a nutritional advantage, but also an important link to the region's cultural history, ecological balance, and sustainable development.

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