

## Medico-botany of leafy vegetables used in rituals and festivals in Balasore district of Odisha, India

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### Abstract

In India, amongst Hindu the use of leafy vegetables in religious functions, rituals and festivals are well known. In addition to their culinary uses, they are often used for worshipping different gods and goddesses, garlanding and in preparation of 'Prasad' in various rituals and festivals of Hindu religion. Despite its wider use, the traditional beliefs and myths related to usage of leafy vegetables in religious practices are disappearing day by day. Therefore, present survey was carried out in Balasore district of Odisha, India in order to investigate the use of leafy vegetables in rituals and festivals. A total of 36 leafy vegetables belonging to 32 genera under 19 families were found to be used in different rituals and festivals in Balasore district of Odisha. Most of the leafy vegetables used in rituals and festivals have medicinal value in addition to their nutritive value. Hence, the need of the hour is to safeguard the traditional knowledge related to the use of leafy vegetables in different religious practices and exploring its potential for the benefit of humankind. Furthermore, culture and tradition plays a vital role in the conservation of nature.

**Keywords:** ritual, worship, culinary, traditional medicine, leafy vegetables, conservation

### Introduction

The plant-religion nexus has its origin in the pre-historic times. In Hindu mythology, plants are being worshipped from ancient to modern era. Many communities worship trees as symbols of deities, who are believed to reside on them. Worshipping for blessings and betterment of life is common in all human beings. During worshipping, traditional rituals are being performed by offering appropriate plant materials to the Deities right from the ceremony of birth till mourning for death. This custom has been observed in tribal communities too. Besides using different plant parts for worshipping to various god or goddess, they are also used in different ceremonial rituals and several folk cultural performances [1-4]. Being an important centre of ancient culture of Odisha, Balasore has the distinction of introducing and observing a diverse group of rituals and therefore, still retain its geo-cultural identity. Plants which are believed to be sacred and exhibit supernatural power are generally worshipped and protected. In general plants which are utilized for various socio-religious functions are selected by the people based on the availability of the plants in that area. Ingredients of plants that form part of a festival or culture are naturally safeguarded because besides fulfilling the necessities they have ritual significance. Ritual beliefs of the indigenous people are one of the important tools to understand the local communities and to assist in the conservation of nature [5, 6]. Leafy vegetables besides adding their delicacy to our cuisine forms an important part in religious practices of Hindu religion. Nature has endowed India with a wide array of leafy vegetables which are used as food, medicine and in various religious rituals and festivals. Many leafy greens are offered to god and goddesses during worship. Some specific leafy greens are also consumed on special festive occasions. For instance, in Bengali tradition, eating of "Choddo Shaak", a dish made with 14 different leafy vegetables, on the night before Kali Puja is celebrated as 'Bhoot

Choturdoshi'. Choddo" means fourteen and "Shaak" means leafy vegetables in Bengali. It is believed that eating "Choddo Shaak" will boost immunity and lighting "Choddo Pradeep/Lamp" after sunset for 14 ancestors will protect them from the evil power. Therefore, it is high time to unravel the values of our ancient rituals instead of ignoring them as mere superstitions [7]. Scientific exploration on the use of leafy vegetables in religious practices and its conservatory role in India are sporadic. Moreover, there is hardly any report related to traditional use of leafy vegetables in religious ceremonies and practices in Balasore district of Odisha. Therefore, the present paper focuses on the survey of leafy vegetables used for various socio-religious functions such as worships, traditions, rituals and festivals of Balasore district. The main objective of the study is to evaluate the role of leafy vegetables used in religious practices for conservation of biodiversity in general of that area. In addition, documentation of these leafy vegetables will be helpful for the conservation of nature thereby popularizing its economic potential and exploring its potential for the development of value added products in the near future (Fig.1).

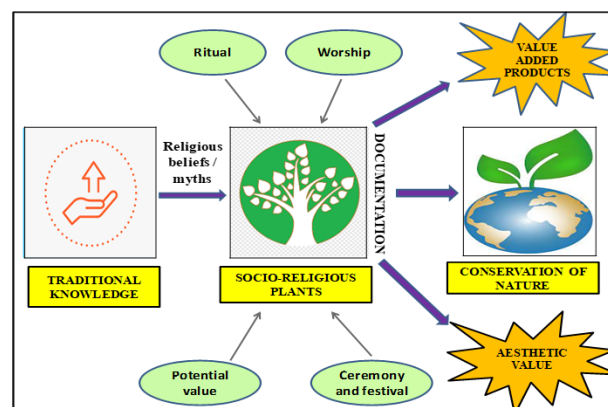


Fig 1: Future perspectives of use of socio-religious plants.

## Materials and Methods

Balasore district (21°3' to 21°59' N latitude and 86°20' to 87°29' E longitude) is located in the north-eastern frontier of the state of Odisha. It comprises an area of 3,806 km<sup>2</sup> with a population of 2,320,529 (2011 Census). The average altitude of the district is 19.08 metre. It is surrounded on the north by Midnapur district of west Bengal, on the south by Bhadrak district, on the west by Mayurbhanj and Keonjhar districts and on the east by the Bay of Bengal (Fig.2). The historical evidence depicts the name of the district is being kept on the name of Lord Baneswar which is a form of Lord Shiva. The Baneswar gradually changed to Balasore and it is also believed that the district gets its name from the Persian word Bala-e-Shore, meaning 'Town in the Sea'. The district comprises 2 sub divisions, 7 tahasils, 12 community development blocks and 19 police stations. This district is considered as the economic and cultural hub of North Odisha. Broadly district can be divided in to three geographical regions, namely, the coastal belt, the inner alluvial plain and the Northern-western hills. Shrimp culture and salt manufacturing units are being developed in coastal area recently. The deltaic alluvial plain is a wide stretch of highly fertile and irrigated land. The north eastern hilly region covers most of Nilgiri sub-division with hilly terrain and vegetated with tropical semi-ever green forests. The hills of Nilgiri have the highest peak of 543 metres above the sea level and the only abode of the scheduled tribes of the district. The district is inhabited by various ethnic,

linguistic, religious and tribal groups with rich diversity of heritage. Besides the local dialect i.e. Baleswari bhasa, other languages spoken in the Balasore are Odia, Bengali, Urdu, Hindi, Santali etc. Due to rich in both biological and cultural diversity, various plant parts are used in various religious ceremonies and practices in Balasore district.

Field survey was conducted consecutively for two years (2018-2020) in different seasons and at definite intervals to collect leafy vegetables present in different religious places of different blocks of Balasore district. Vernacular name of the leafy vegetables, plant parts used in traditional practices and mode of use were collected through semi-structured personal interview with the specialized persons like priests, who performed different ceremonies and rituals, temple gardeners, knowledgeable old persons who are involved in different religious practices. The plant list was prepared based on the interviews and questionnaires. The photographs of leafy vegetables were taken and collected specimens were then dried and preserved as voucher specimens using the techniques described by Jain and Rao [8]. The identification of voucher specimens was authenticated with reference to the regional floras [9, 10, 11] and in consultation with standard literatures. The plant specimens were deposited as herbarium samples in the herbarium unit of Department of Botany, Centurion University of Technology and Management, Bhubaneswar, Odisha.

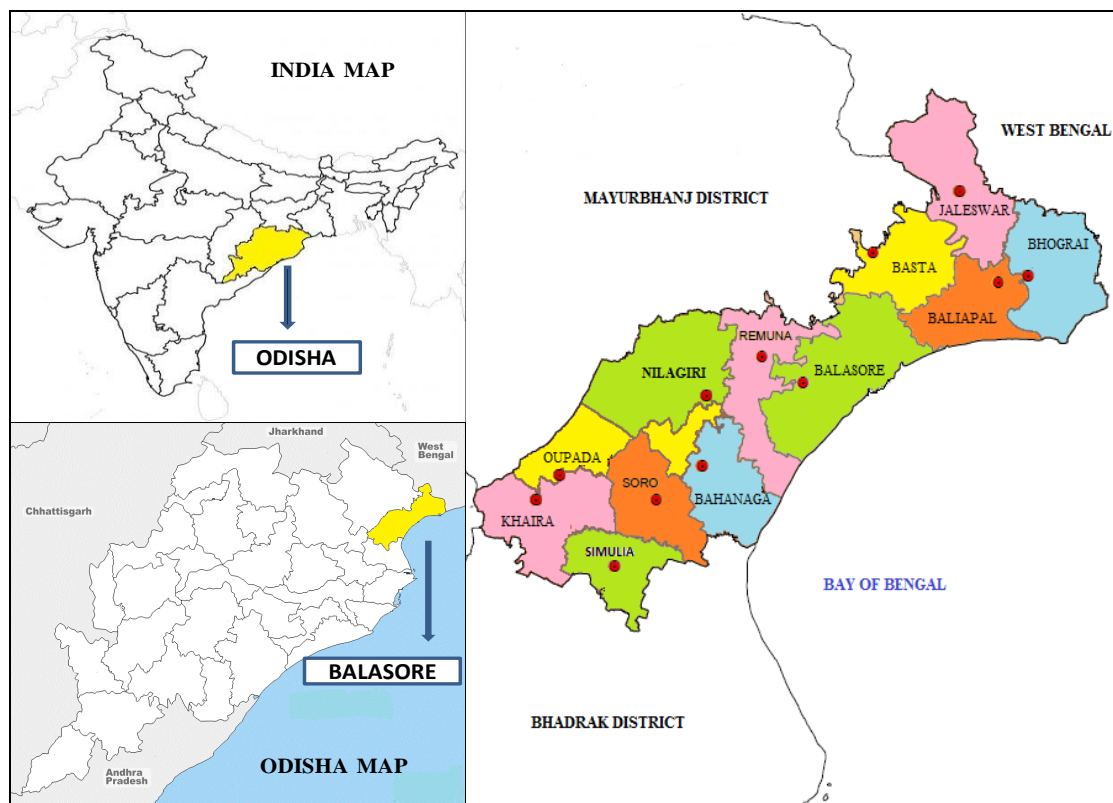


Fig 2: Map of Balasore district of Odisha.

## Results and Discussion

A total number of 35 angiosperms (30 dicotyledonous species under 26 genera included in 15 families; 5 monocotyledonous species under 5 genera included in 3 families) and 1 pteridophyte were recorded to be used in various rituals and festivals of Balasore district (Table-1).

Habit-wise grouping of leafy vegetables shows 19 (53%) are herbs followed by 7 (19%) trees, 7(19%) climbers, 2(6%) shrubs and 1(3%) pteridophyte (Fig. 3). Among the families of the leafy vegetables used in rituals and festivals, Amaranthaceae with 7 species is dominant followed by Cucurbitaceae (5), Fabaceae (3), Araceae (3) and

Asteraceae, Lamiaceae, Malvaceae with 2 species each (Fig. 4). *Amaranthus* is the dominant genus with 3 species followed by *Corchorus* and *Sesbania* with 2 species each (Fig. 5). In Hindu folklore, it has been believed that different gods and goddesses have some specific character and they love different plants depending upon their colour, fragrant etc. [8]. Among the leafy vegetables *Sesbania grandiflora*, *Amaranthus viridis*, *Ficus religiosa*, *Moringa oleifera* and *Amaranthus blitum* are exclusively used in various rituals and festivals. Flowers of *Nyctanthes arbor-tristis* are used for both worshiping and garlanding of gods and goddesses whereas fruit of *Cucumis sativus* is used for preparing prasad. Among the enlisted leafy vegetables, the widely used species for medicinal purposes are *Tinospora cordifolia*, *Nyctanthes arbor-tristis*, *Achyranthes aspera*, *Eclipta prostrata*, *Azadirachta indica*, *Cheilocostus speciosus*, *Moringa oleifera*, *Leucas aspera*, *Ficus religiosa* etc. Some of the underutilized/less common leafy vegetables

used in rituals and festivals include *Cordia dichotoma*, *Clerodendrum infortunatum*, *Sesbania sesban*, *Cheilocostus speciosus*, *Senna sophora*, *Achyranthes aspera*, *Ficus religiosa* etc. The study on leafy vegetables used in various Hindu rituals and practices reflects the important role of plants in human life. In most of the traditional rituals and festivals, leafy vegetables including both cultivated and wild are used which not only signify the importance of greens in our religious practices but also its consumption for the betterment of our health. Most of the leafy vegetables are endowed with medicinal values that helps in curing various diseases. Moreover, this old age tradition of worshiping and using plants in various rituals and practices help in protecting the inherent socio-cultural and religious activities thereby conserving a particular plant in a locality. Hence, traditional beliefs and myths of religious practices related to the utilization of plants play a significant role in conservation of nature.

**Table 1:** Socio-religious cum medicinal uses of leafy vegetables of Balasore district of Odisha

Sl. No.	Botanical name with voucher number & Family	Local Name	Habit	Parts used in rituals and festivals	Medicinal uses
1.	<i>Achyranthes aspera</i> L. [NN-298] [Amaranthaceae]	Apamaranga(O)	Herb	Leaf: Offered to Lord Ganesh during Ganesh Puja.	Leaves: Decoction of leaves (1 cup) is administered orally for two days for curing gastrointestinal disorders.
2.	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC. [NN-227] [Amaranthaceae]	Madaranga (O), Shalinche (B)	Herb	Leaf & Stem: Offered to goddess Durga during Dashami of Durga Puja and are also consumed by the devotees.	Leaves: Decoction of the whole plant (100 ml) with one cup of milk is recommended to enhance lactation in breast feeding mothers.
				Leaf & Stem: Consumed during 'Bhoot Choturdoshi'	
				Leaf & Stem: Offered to goddess Laxmi and are consumed by the farmers during 'Garbhana Sankranti.'	
3.	<i>Alocasia macrorrhizos</i> (L.) G.Don [NN-390] [Araceae]	Mana saru (O)	Herb	Whole plant: Offered to goddess Kali during Kali Puja.	Corm: Curry prepared from the corm is given to woman after delivery for increased lactation.
4.	<i>Amaranthus blitum</i> L. [NN-232] [Amaranthaceae]	Kosala (O)	Herb	Leaf & Stem: Offered to Shree Jagannath as part of Mahaprasad (Gouripaka).	Leaves: Poultice applied on the affected parts of the body to treat inflammations, boils and abscesses.
				Leaf & stem: Offered to Goddess Laxmi in Manabasa Gurubar.	
				Leaf & Stem: Offered to goddess Durga during Dashami of Durga Puja and are also consumed by the devotees.	
				Leaf & Stem: Offered to goddess Laxmi and are consumed by the farmers during 'Garbhana Sankranti.'	
				Leaf & Stem: Consumed by the young girls on the next day of Kumar Purnima.	
5.	<i>Amaranthus tricolor</i> L. [NN-235] [Amaranthaceae]	Khada (O)	Herb	Leaf & Stem: Offered to goddess Durga during Dashami of Durga Puja and are also consumed by the devotees.	Leaves: Fried and consumed as leafy vegetable against anaemia.
				Leaf & Stem: Consumed by the young girls on the next day of Kumar Purnima.	
6.	<i>Amaranthus viridis</i> L. [NN-233] [Amaranthaceae]	Leutiya (O)	Herb	Leaf & Stem: Offered to 'Shree Jagannath' as part of Mahaprasad	Root: Juice of the root is dropped into the nostril against headache.
				Leaf & Stem: It is one of the items offered to forefathers during Shraddha (death anniversary) ceremony.	
7.	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson [NN-388] [Araceae]	Olkochu (B), Olua (O)	Herb	Leaf & stem: Consumed during 'Bhoot Choturdoshi'	Corm: Corm was burnt and ground with sesame oil and common salt and taken to cure bleeding piles
8.	<i>Azadirachta indica</i> A.	Neem (B),	Tree	Flower and young leaf: Consumed during	Leaves: Mixture of turmeric and

	Juss. [NN-261] [Meliaceae]	Nimba (O)		'Bhoot Choturdoshi'	neem leaves paste is used for treating acne, eczema, ring worms and other skin diseases.
9.	<i>Basella alba</i> L. [NN-284] [Basellaceae]	Poi (O)	Clim-ber	Leaf and stem: Offered to goddess Durga during Dashami of Durga Puja and are also consumed by the devotees. Leaf & Stem: Consumed by the young girls on the next day of Kumar Purnima.	Leaves: Leaf along with little salt is rubbed on the skin to remove stinging hairs of caterpillar.
10.	<i>Benincasa hispida</i> (Thunb.) Cogn. [NN-254] [Cucurbitaceae]	Panikakharu (O)	Clim-ber	Fruit: Offered to goddess Kali during Kali Puja	Fruit: Fruit juice is consumed for treatment of epilepsy, insanity and other nervous disorders.
11.	<i>Brassica napus</i> L. [NN-372] [Brassicaceae]	Sorisa (O), Shorshe (B)	Herb	Seed: Worshipping goddess Laxmi and Saraswati Leaf: Consumed during 'Bhoot Choturdoshi'	Seed: 3-4 crushed garlic cloves warmed with 50 ml of seed oil is used for massaging the body Against body ache.
12.	<i>Chenopodium album</i> L. [NN-237] [Amaranthaceae]	Bethua Shaak (B), Bathua saga (O)	Herb	Leaf: Consumed during 'Bhoot Choturdoshi'	Leaves: A poultice of the leaves is applied on the wounds and burns for healing.
13.	<i>Cheilocostus speciosus</i> (J.Konig) C.Specht [NN-392] [Costaceae]	Keu (B), Gai-gobara(O)	Herb	Tender leafy shoot: Consumed during 'Bhoot Choturdoshi'	Leaves: A poultice made from the leaves is applied on the affected parts of the body against leprosy.
14.	<i>Clerodendrum infortunatum</i> L. [NN-383] [Lamiaceae]	Ghetu (B), Genguti (O)	Shrub	Leaf: Consumed during 'Bhoot Choturdoshi'	Leaves: Leaf paste is used to treat scorpion sting.
15.	<i>Colocasia esculenta</i> (L.) Schott. [NN-394] [Araceae]	Saru (O)	Herb	Leaf: Offered during worshiping goddess Durga during Durga Puja.	Tuber: Tuber paste is applied twice a day for healing boils and burns.
16.	<i>Commelina benghalensis</i> L. [NN-223] [Commelinaceae]	Kaniseera (O)	Herb	Leaf: Offered to goddess Laxmi and are consumed by the farmers during 'Garbhana Sankranti' Leaf: Consumed by the young girls on the next day of Kumar Purnima.	Sap of leaf sheath: Sap is applied on the affected area of eyes for curing styes.
17.	<i>Corchorus capsularis</i> L. [NN-302] [Malvaceae]	Jhota (O), Titapat (B)	Herb	Fibre: Worshipping Goddess 'Durga' during Durga Puja.	Leaves: Leaf decoction is taken orally against stomach ache.
18.	<i>Corchorus olitorius</i> L. [NN-303] [Malvaceae]	Madhura nalita (O), Mithapat (B)	Herb	Leaf: Offered to Shree Jagannath as part of Mahaprasad.	Leaves: 10 ml of leaf juice with about 200 ml of cold water is taken in the morning for 15 days against painful urination.
19.	<i>Cordia dichotoma</i> G.Forst. [NN-361] [Boraginaceae]	Sheluka (B), Guali (O)	Tree	Leaf: Consumed during 'Bhoot Choturdoshi'	Leaves: Leaf juice (half cup) mixed with equal amount of water is taken orally once a day for three days for curing jaundice.
20.	<i>Cucumis sativus</i> L. [NN-255] [Cucurbitaceae]	Kakudi (O)	Clim-ber	Fruit: Used in the preparation of Prasad of different gods like Ganesh, Shiva and goddesses like Laxmi and Saraswati.	Fruit: Fruit paste is applied below the eyes for removal of dark circles under the eyes.
21.	<i>Cucurbita pepo</i> L. [NN-258] [Cucurbitaceae]	Kakharu (O)	Clim-ber	Leaf and stem: Offered to goddess Laxmi and are consumed by the farmers during 'Garbhana Sankranti' Leaf and stem: Consumed by the young girls on the next day of Kumar Purnima. Leaf and stem: Offered to goddess Durga during Dashami of Durga Puja and are also consumed by the devotees.	Leaves: Leaves are crushed and applied externally to treat fresh burns.
22.	<i>Eclipta prostrata</i> (L.) L. [NN-272] [Asteraceae]	Kesadura (O)	Herb	Leaf: Offered to Lord Ganesh during Ganesh Puja.	Leaves: Leaf juice mixed with castor oil is applied on scalp for preventing premature greying of hair.
23.	<i>Enydra fluctuans</i> Lour. [NN-311] [Asteraceae]	Helencha (B), Hidimichi (O)	Herb	Leaf: Consumed during 'Bhoot Choturdoshi'	Leaves: 2-3 teaspoonful of leaf juice is taken once a day in the morning for 7 days against diabetes and for reducing inflammation of body.

24.	<i>Ficus religiosa</i> L. [NN-385] [Moraceae]	Aswatha (O)	Tree	Bark paste: Worshipping Goddess 'Durga'. Leaf: Offered to Lord Ganesh during Ganesh Puja and offered to goddess 'Laxmi' during Gajalakshmi Puja.	Leaves: 1-2 drops of leaf juice is nasally administered in each nostril to control epistaxis or nasal bleeding.
25.	<i>Ipomoea aquatica</i> Forssk. [NN-260] [Convolvulaceae]	Kalama (O)	Herb	Leaf: Offered to goddess Laxmi and are consumed by the farmers during 'Garbhana Sankranti' Leaf: Offered to goddess Durga during Dashami of Durga Puja and are also consumed by the devotees.	Leaves: Used as a laxative in treating piles and constipation.
26.	<i>Lagenaria siceraria</i> (Molina) Standl. [NN-377] [Cucurbitaceae]	Lau (O)	Clim-ber	Leaf and stem: Offered to goddess Durga during Dashami of Durga Puja and are also consumed by the devotees.	Fruit: Cooked immature fruits are prescribed for increasing lactation in the mother of a new born baby..
27.	<i>Leucas aspera</i> (Willd.) Link [NN-381] [Lamiaceae]	Gayasa (O)	Herb	Flower: Worshipping Shiva in Mahashivaratri. Flower: Garlanding Lord Ganesh.	Leaves: Fresh leaf juice or cooked leaves is given in anorexia. Juice obtained from the fresh leaves applied externally in skin eruption and painful swellings.
28.	<i>Marsilea quadrifolia</i> L. [NN-325] [Marsileaceae]	Shushni (B), Sunusunia saga (O)	Pteridophyte	Leaf: Consumed during 'Bhoot Choturdoshi' Leaf: Offered to goddess Durga during Dashami of Durga Puja and are also consumed by the devotees. Leaf: Offered to goddess Laxmi and are consumed by the farmers during 'Garbhana Sankranti'	Leaves: Fried and consumed as leafy vegetable for treating insomnia.
29.	<i>Moringa oleifera</i> Lam. [NN-229] [Moringaceae]	Sajana (O)	Tree	Leaf: Offered to Shree Jagannath as part of Mahaprasad. Leaf: Offered to 'Shashti Devi'.	Leaves: 1 teaspoonful of leaf juice administered orally every day once in the empty stomach for lowering blood pressure and for improving vision.
30.	<i>Nyctanthes arbor-tristis</i> L. [NN-399] [Oleaceae]	Singarahara (O)	Small tree	Flower: Worshipping and garlanding Lord Shiva, Lord Ganesh, goddess Durga, Saraswati and Laxmi.	Leaves: 2 to 3 teaspoonful of leaf juice is taken in empty stomach once a day for 3 days to cure intermittent fever.
31.	<i>Senna sophera</i> (L.) Roxb [NN-217] [Fabaceae]	Kalka-sunda (B), Chhota chakunda (O)	Shrub	Leaf: Consumed during 'Bhoot Choturdoshi'	Leaves: Leaf juice is applied against ringworm.
32.	<i>Sesbania grandiflora</i> (L.) Poiret [NN-213] [Fabaceae]	Agasthi (O)	Tree	Leaf: Offered to Lord Ganesh during Ganesh Puja. Leaf: Habisyalis (old women specially widows) eat the Habisa anna (rice), dalma (pulses) and Agasthi saga (leafy vegetable) during Kartika masa and observe Habisha (a set of rituals) to provide homage to the soul of their deceased husbands and their piousness.	Leaves and flowers: Decoction of leaves and flowers is recommended for gargling against throat infection.
33.	<i>Sesbania sesban</i> (L.) Merr. [NN-218] [Fabaceae]	Jayanti (O)	Tree	Leaf: Worshipping Goddess Durga during Durga Puja. Leaf: Consumed during 'Bhoot Choturdoshi'.	Leaves: Poultice of leaves promotes suppuration of boils and abscesses.
34.	<i>Spinacea oleracea</i> L. [NN-257] [Amaranthaceae]	Palanga (O)	Herb	Leaf: Offered to goddess 'Durga' during Dashami of Durga Puja and are also consumed by the devotees. Leaf: Offered to goddess Laxmi and are consumed by the farmers during 'Garbhana Sankranti'. Leaf: Consumed by the young girls on the next day of Kumar Purnima.	Leaves: Used in the treatment of inflammation of the lungs and the bowels.
35.	<i>Tinospora cordifolia</i> (Thunb.) Miers [NN-365] [Menispermaceae]	Gulancha (B), Guduchi (O)	Clim-ber	Leaf and stem: Consumed during 'Bhoot Choturdoshi'.	Leaves: Decoction of leaves or leaf juice is administered orally with honey for treating fever.
36.	<i>Trichosanthes dioica</i> Roxb. [NN-252] [Cucurbitaceae]	Patal Shaak (B), Potala (O)	Clim-ber	Leaf: Consumed during 'Bhoot Choturdoshi'.	Leaves: Decoction of leaves mixed with <i>Piper nigrum</i> fruit powder is given for treating diarrhoea.

[O: Odia, B: Bengali; NN: Name of the first author in abbreviated form]

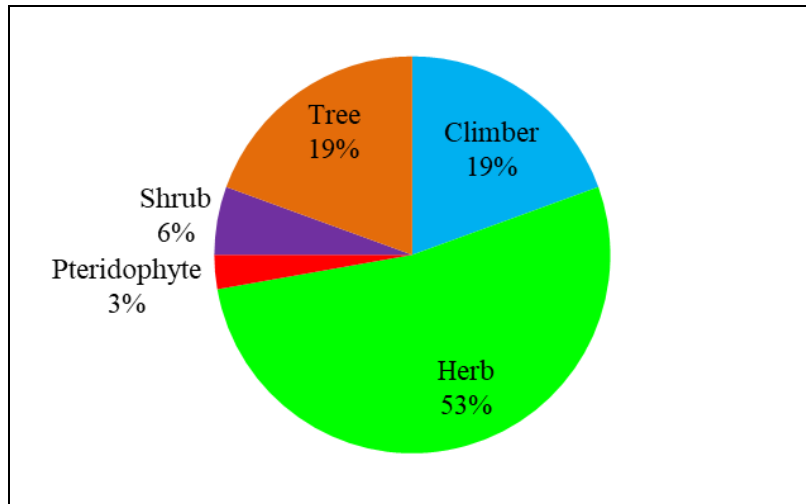


Fig 3: Habit-wise distribution of leafy vegetables (in %) used in rituals and festivals of Balasore district.

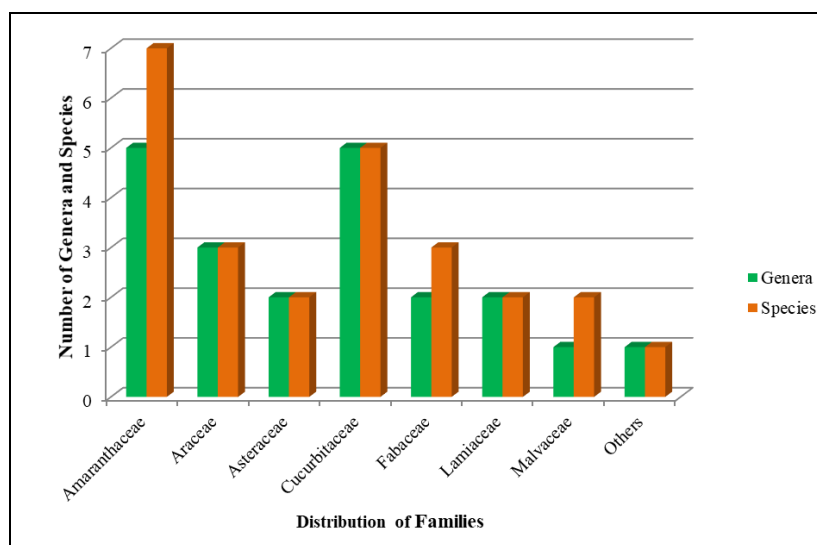


Fig 4: Family-wise distribution of genera and species of leafy vegetables used in rituals and festivals of Balasore district.

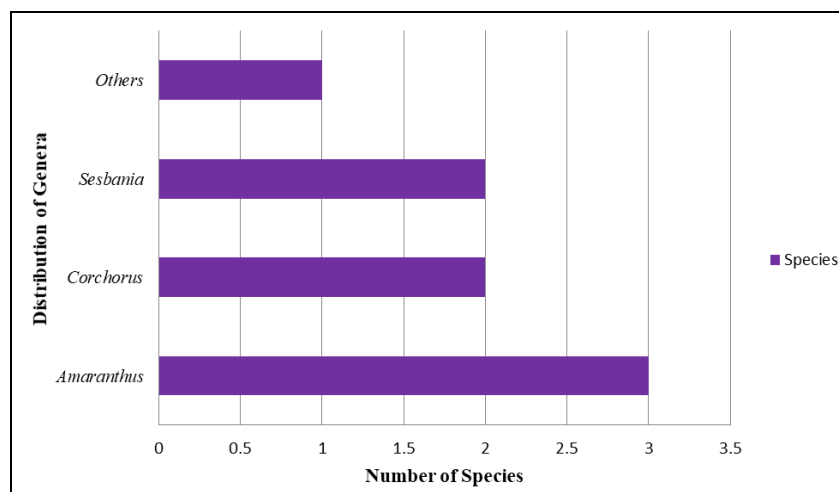


Fig 5: Genus-wise distribution of leafy vegetables used in rituals and festivals of Balasore district.

**Conclusion**

The worship of plants, offering of fruits, flowers, leaves etc. to the house-hold and temple deities, routine use of certain floristic objects at festivals and rituals show how close the religious people have been to the protection of plants. The present study revealed that Balasore district harbours a rich diversity of leafy vegetables which are utilized in different

rituals, ceremonies and festivals. Besides fulfilling our dietary nutritional requirements, they have religious significance too. However, with the invasion of western culture coupled with erosion of traditional religious beliefs and myths, knowledge pertaining to significance of leafy vegetables used in various religious practices is vanishing day by day. Furthermore, consumption of leafy vegetables

among the present generation is becoming less popular. Therefore, there is an urgent need for documentation and perpetuation of traditional knowledge related to usage of leafy vegetables in various religious practices before these are lost forever. Moreover, scientific data base of leafy vegetables used in several religious occasions not only reveal their religious importance but also help in conservation of plants of that region. It is high time to undertake necessary efforts to aware people about the significance of leafy vegetables and to explore its potential for the benefit of humankind.

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