



Diversity of wild edible food plants and their contribution to livelihood of tribal people in Nabarangpur district, Odisha

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ABSTRACT

Quite a good number of wild plants are used as food by tribals and other local people living in and around the forests in several parts of India. The diversity of wild species not only offers varieties in family food diet and contributes to household food security but also help in generation of income by selling the excessive food plants in the local markets. The present papers deals with 80 species of wild edible food plants belonging to 56 genera and 41 families used by tribal communities of Nabarangpur district of Odisha. This includes 71 species of flowering plants, 7 wild edible mushroom species and 2 species of ferns. Botanical name, local name, habit, parts used and first-hand information on use value of each species has been provided. The aspects of marketing, value addition and conservation of potential wild edible plants of Nabarangpur district have been emphasized.

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1. Introduction

The majority of the tribal communities of India live close to or within forests and depend on wild products and biomass for food and energy needs (Mohapatra and Sahoo, 2010; Bahuguna, 2000; Mahapatra and Mitchell, 1997). Such communities have distinct socio-cultural traditions and food habits. Wild edible plants provide staple food for indigenous people, serve as complementary food for other local inhabitants and offer an alternative source of cash income through sale in local market places (Shrestha & Dhillon, 2006). These are important nutrient and vitamin supplements for indigenous people and contribute to reduce the vulnerability of local communities to food insecurity by providing a buffer in times of food shortage (Misra *et al.*, 2008). Historically, tribal and rural people identified and collected plants for food and medicine from forests and developed a range of processing methods in accordance with their needs. With modernization and settled agriculture, this knowledge is becoming lost, a trend that may lead to decreased diversity of indigenous diets and poorer nutrition

(Dwebe and Mearns, 2011). Site specific studies have recorded consumption of wild edibles by tribals and the rural poor in a few locations in India (Mahapatra & Panda, 2012; Sundriyal *et al.*, 2004; Misra *et al.*, 2008), but generally, information on edible indigenous plants is scattered in botanical monographs, informal notes and tribal oral traditions. The useful properties of non domesticated crops known in local communities requires proper study and documentation in order to validate, quantify and spread this useful knowledge (Edison *et al.*, 2006). In the present study, information on the use values of whole plants, leaves, flowers, fruits, tubers, seeds of plants used by Gond, Kandha, Paraja and other tribes of Papadahandi, Umerkot, Dabugaon and Jharigaon blocks of Nabarangapur district has been provided.

2. Methodology

2.1. Study area

The ethnobotanical study of wild edible food plants were conducted in the Nabarangpur district, lying on the

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western part of the Odisha state of India. The district is surrounded on the north and west by Bastar and Raipur districts of Chhattisgarh state, and on the east and south by the Kalahandi and Koraput districts of Odisha. The district is more or less an elevated plateau of Eastern Ghats with valleys and peaks. It lies between 19°10'42" and 20°6'12" N" latitudes and between 81°51'30" and 82°52'36" E longitudes (Fig. 1). The maximum temperature of the district is 40°C during the month of May, while the lowest temperature falls down to 9°C during January. The average annual rainfall is 1423 mm. In the present piece of work, special emphasis was given to collect first-hand information on wild edible food plants used by Gond, Paraja, Kandha and Bhottonda tribes of Papadahandi, Umerkot, Dabugaon, Jharigaon revenue blocks of the district.

2.2. Data collection

An extensive field survey was conducted in four tribal dominated revenue blocks namely, Papadahandi, Umerkot, Dabugaon, Jharigaon of Nabarangpur district of Odisha during July 2012 – October, 2013 covering various forest types, forest-fringe villages, adjoining farmlands and hamlets. The aim of the fieldwork was to study the diversity of wild food plants of the region and to collect field level first-hand information from the beneficiaries on their utilization, processing, value addition and marketing through local channels. Primary data were collected through interviews of key informants and random households and through distribution of questionnaires. Local forest officials and key informants helped in collection of plant samples to



Fig.1: Location map of Nabarangpur district of Odisha

authenticate the identity of the plants and relate the same to vernacular/ local names.

2.3. Collection of voucher specimens and identification

The plant specimens (whole plants and plant parts) were collected from the field with the help of tribal people and were preserved as voucher specimens. The herbarium specimens were dried and preserved using the techniques described in Jain and Rao (1967) and Bridson & Forman (2013). The plant specimens were identified in consultation with the Botany of Bihar and Orissa (Haines, 1921-1925), The Flora of Orissa (Saxena and Brahamam, 1994-1996) and matching with authentic herbarium specimens in different Indian Herbaria. The herbarium specimens have been deposited in the Herbarium of Regional Plant Resource Centre (RPRC), Bhubaneswar.

3. Results and discussion

A thorough exploration of the forests, forest-fringe villages and homesteads in four revenue blocks namely, Papadahandi, Umerkot, Dabugaon, Jharigaon of Nabarangpur district of Odisha revealed that a total 80 wild plant species are consumed as food items by local tribals (Table 1). These 80 species belong to 56 genera under 42 families and includes 71 species of flowering plants (51 dicots and 20 monocots), 7 wild edible mushroom species and 2 species of ferns. In terms of habit, trees are represented by 32 species, shrubs by 8 species, climbers by 14 species and herbs by 19 species. Besides, 7 wild edible mushrooms are used by tribal people of the area. The family Dioscoreaceae was the most dominant family with 10 species of wild edible plants followed by Moraceae with 5 tree species.

Table 1
Diversity and traditional uses of wild edible plants by the tribals of Nabarangpur District, Odisha

Sl.No.	Botanical name	Odia Name	Family	Part (s) used	Habit	Use values and mode of consumption
1	<i>Abelmoschus moschatus</i> Medic.	Banabhendi, Khatabhendi	Malvaceae	Fruits, Leaves, Flowers	S	During scarcity of food, flowers are fried with other leafy vegetables and eaten. The fruits are sour in taste and chutney or fried vegetables are prepared out of it. Leaves are also consumed after boiling and frying.
2	<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	Madaranga	Amaranthaceae	Leaves	H	Young shoots and tender leaves are collected, cooked with spices and other leafy vegetables and eaten.
3	<i>Amaranthus spinosus</i> L.	Kanta leutia	Amaranthaceae	Leaves	H	Young shoots and tender leaves are cooked and consumed as leafy vegetables.
4	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	Olua	Araceae	Tuber, Stem	H	The tubers are boiled and fried with oil for consumption. During boiling, tamarind is added to reduce irritation of mouth. The stems are also fried with oil and added to make curry either alone or with fish and prawn.
5	<i>Annona reticulata</i> L.	Ramphala	Annonaceae	Fruits	T	The white or cream-colored, granular, sweet, aromatic pulp is edible.
6	<i>Annona squamosa</i> L.	Sitaphala	Annonaceae	Fruits	T	The ripe fruits are of sweet taste and pleasant aroma; directly taken as food.
7	<i>Artocarpus heterophyllus</i> Lam.	Panasa	Moraceae	Fruits, Seeds	T	The sweet, aromatic fruiting perianths are eaten. The unripe fruits are used as vegetables or for making pickles. After drying, the seeds are eaten after roasting or boiling, also taken as a vegetable.
8	<i>Artocarpus lacucha</i> Roxb. ex Buch.-Ham.	Jeuta	Moraceae	Fruits, Seeds	T	The sweet sour pulp is eaten raw when ripe..

Sl.No.	Botanical name	Odia Name	Family	Part (s) used	Habit	Use values and mode of consumption
9	<i>Averrhoa carambola</i> L.	Karmanga	Geraniaceae	Fruits	S	The ripe sweet and sour fruits are eaten fresh and used for preparation of pickles and chutneys
10	<i>Azadirachta indica</i> A. Juss.	Nima	Meliaceae	Flowers, Leaves	T	The tender leaves and flower buds are fried and eaten, sometimes with other vegetables.
11	<i>Bambusa bambos</i> (L.) Voss	Kantabaunsa	Poaceae	Young Shoots	H	The tender sprouting rhizomes are chopped, boiled, fried with oil and curry is made out of it or after adding other vegetables or fishes with it. Often, the chopped stems are sun-dried and stored for use at the time of food scarcity
12	<i>Bauhinia purpurea</i> L.	Barada saga, Koliari saga	Caesalpinaceae	Leaves	S	The tender new leaves are collected, fried or boiled with other vegetables and consumed as a leafy vegetable.
13	<i>Bauhinia vahlii</i> Wight & Arn.	Siali, Sialipatra	Caesalpinaceae	Seeds	C	The seeds are roasted and eaten.
14	<i>Buchanania lanzan</i> Spreng.	Chara	Anacardiaceae	Fruits	T	The ripe fruits, which are tasty and sweet, are eaten. The seed kernels are also eaten.
15	<i>Careyota urens</i> L.	Salapa	Arecaceae	Stem, Juices	T	The sap extracted from the inflorescence before sun rise is consumed as a health drink and an alcoholic beverages is made using the sap by fermentation.
16	<i>Cassia tora</i> L.	Sanachakunda	Caesalpinaceae	Leaves	H	Tender leaves are fried or boiled along with other vegetables and eaten.
17	<i>Celastrus paniculata</i> Willd.	Pengu	Celastraceae	Leaves	C	Young leaves are consumed as leafy vegetables.
18	<i>Celosia argentea</i> L.	Nahanga	Amaranthaceae	Leaves	H	The tender leaves are cooked with other leafy vegetables and eaten.

Sl.No.	Botanical name	Odia Name	Family	Part (s) used	Habit	Use values and mode of consumption
19	<i>Chenopodium album</i> L.	Bathua	Chenopodiaceae	Leaves	H	The leaves are used as vegetables.
20	<i>Colocasia esculenta</i> (L.) Schott.	Saru	Aracea	Leaves, Tubers	H	The tubers are roasted or boiled in water and eaten. The petioles and leaves are also used as vegetable as such or after sun-drying.
21	<i>Commelina benghalensis</i> L.	Kansiri saga	Commelinaceae	Leaves	H	Young shoots and tender leaves are consumed after frying or boiling with/without other leafy vegetables.
22	<i>Commelina kurzii</i> C. B. Clarke	Kansiri	Commelinaceae	Leaves	H	Young shoots are eaten as vegetables.
23	<i>Cordia dichotoma</i> G. Forst.	Guala koli	Ehertiaceae	Fruits	S	The sweet and mucilaginous ripe fruits are edible. The sticky jellies like substances from the fruits have several medicinal uses.
24	<i>Costus speciosus</i> (Koenig) Sm.	Keu, Gaigobara	Zingiberaceae	Rhizomes	H	Boiled rhizomes are consumed during food shortage. The rhizomes are sliced, cooked with other vegetables and eaten.
25	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Baunsa karadi	Poaceae	Young Shoots	H	The young shoots are chopped, boiled or fried with oil to make a type of curry with other vegetables. The chopped stems are sun-dried and stored for use at the time of scarcity of food.
26	<i>Dillenia aurea</i> Sm.	Rai, Karmata	Dilleniaceae	Fruits	T	The ripe fruits are consumed as such. The fruits are also used to make chutney/pickles.
27	<i>Dillenia pentagyna</i> Roxb.	Rai	Dilleniaceae	Fruits	T	The fruits are sour in taste and used to prepare chutneys or curries. Ripe fruits are edible.
28	<i>Dioscorea alata</i> L.	Khamba alu	Dioscoreaceae	Tubers	C	The tuber is boiled and curry is prepared with it with other vegetables.

Sl.No.	Botanical name	Odia Name	Family	Part (s) used	Habit	Use values and mode of consumption
29	<i>Dioscorea belophylla</i> Voigt ex Haines	Bhatkanda	Dioscoreaceae	Tubers	C	The tubers are boiled and consumed as vegetables; also as a food item during the period of food shortage.
30	<i>Dioscorea bulbifera</i> L.	Pita alu	Dioscoreaceae	Tubers	C	The tubers are sliced and washed repeatedly by keeping overnight in running water. Next morning, the slices are boiled/ fried and eaten. This is also a distress food in lean period of the year.
31	<i>Dioscorea glabra</i> Roxb.	Kanta alu, Pindalu	Dioscoreaceae	Tubers	C	The tubers are collected, washed and cooked as vegetables.
32	<i>Dioscorea hispida</i> Dennst.	Banya alu	Dioscoreaceae	Tubers	C	The tubers are sliced, kept in running water overnight and then cooked as an ingredient of the curry. The tuber is also preserved after drying to be consumed as a famine period.
33	<i>Dioscorea oppositifolia</i> L.	Pani alu, Pitalakanda	Dioscoreaceae	Tubers	C	The tuber is cooked with other vegetables for preparation of curry. This tuber is also consumed during the period of food shortage.
34	<i>Dioscorea pentaphylla</i> L.	Masia kanda, Karaba	Dioscoreaceae	Tubers	C	Washed and sliced tubers are cooked as vegetable.
35	<i>Dioscorea pubera</i> Blume	Kasa kanda	Dioscoreaceae	Tubers	C	The tubers are used as vegetables and cooked using oil and spices. Also preserved in dried form for future use during critical periods.
36	<i>Dioscorea tomentosa</i> Koenig ex Spreng.	Taraga	Dioscoreaceae	Tubers	C	Tubers are boiled and washed repeatedly and then cooked as vegetable.
37	<i>Dioscorea wallichii</i> Hook.f.	Pita alu	Dioscoreaceae	Tubers	C	The tubers are sliced, boiled and cooked for preparation of curry.
38	<i>Diospyros melanoxylon</i> Roxb.	Kendu	Ebenaceae	Fruits	T	Ripe fruits taste sweet and are edible.

Sl.No.	Botanical name	Odia Name	Family	Part (s) used	Habit	Use values and mode of consumption
39	<i>Diplazium esculentum</i> (Retz.) Sw.	Lengudi saga	Athyriaceae	Leaves	H	The leaves are collected during rains and eaten as a leafy vegetable; sold in local tribal markets.
40	<i>Erydra fluctuans</i> Lour.	Hidimicha	Asteraceae	Leaves	H	The leaves and tender parts are fried or cooked and consumed as leafy vegetable. Sometimes the leaves are used in preparation of "Pakoda".
41	<i>Ficus hispida</i> L.f.	Dimiri	Moraceae	Fruits	T	Immature fruits are used as vegetables for making curries, while ripe fruits are consumes raw.
42	<i>Ficus racemosa</i> L.	Dumar, Dumri	Moraceae	Fruits	T	The ripe fruits are eaten after removal of maggots and insects.
43	<i>Ficus semicordata</i> Buch-Ham.ex Sm.	Podha Koli, Bhuin dimiri	Moraceae	Fruits	T	Immature fruits are used as vegetables.
44	<i>Gardenia gummifera</i> L. F	Ghurudu, Bhurudu koli	Rubiaceae	Fruits	T	The fleshy pulp of the fruit is eaten.
45	<i>Indigofera cassioides</i> Rottl. ex DC.	Girili, Giridi phul	Fabaceae	Flowers	S	The flowers are cooked as a vegetable, either alone or mixed with fish and dry fish. The dry flowers are sometimes preserved to be used at the time of need.
46	<i>Ipomoea aquatica</i> Forssk.	Kalama saga	Convolvulaceae	Leaves	H	The tender leaves are collected from wetlands, rice fields, cooked and consumed. Sometimes other leafy vegetables are also added to it.
47	<i>Lentinus fusipes</i> Cooke & Masee	Baunsa chattu	Polyporaceae	Mushroom	MUSH	The freshly collected mushrooms are used as vegetable for making tasty curries or consumed after frying or roasting in fire. Also these mushrooms are sun-dried and preserved for future use.
48	<i>Leucas aspera</i> (Willd.) Link.	Gayasha saga	Lamiaceae	Leaves	H	Fresh and tender leaves and shoots are eaten as leafy vegetable.

Sl.No.	Botanical name	Odia Name	Family	Part (s) used	Habit	Use values and mode of consumption
49	<i>Leucas cephalotes</i> (Roth) Spreng.	Gayasha saga	Lamiaceae	Leaves	H	Leaves and young shoots are cooked and eaten.
50	<i>Madhuca indica</i> Gmel.	Mahula	Sapotaceae	Fruits, Flowers	T	The fruits are eaten raw or cooked. The dry flowers are boiled in water with salt and eaten; they are also fermented using traditional methods to make country liquor called "Mahuli". The dry flowers are powdered and fried with linseed seed and eaten directly.
51	<i>Mangifera indica</i> L.	Amba	Anacardiaceae	Fruits	T	The fruits are used to make pickles, chutneys and a powder named "Amchur". The ripe fruits are used for preparation of jam, jelly, marmalades, squashes and drinks. The seed kernels are cleaned, washed, powdered and used by tribals as food item during food scarcity period.
52	<i>Manihot esculenta</i> Crantz	Kathalu, Simuli kanda	Euphorbiaceae	Roots	T	The tuberous roots are eaten raw or cooked as vegetables to make curry.
53	<i>Marsilea minuta</i> L.	Sunsumia saga	Marsileaceae	Leaves	H	The tender leaves are collected and cooked as leafy vegetable.
54	<i>Moringa oleifera</i> Lam.	Sajna saga, Munga	Moringaceae	Leaves	S	The leaves are commonly used as a vegetable. The fruits are the popular vegetables among the tribals and flowers are also edible, when cooked.
55	<i>Olax psittacorum</i> (Lam.) Vahl	Bhadabhadalia	Oleaceae	Leaves	C	The leaves are fried and consumed as vegetable.
56	<i>Paderia foetida</i> L.	Pasaruni, Gandhuli	Rubiaceae	Leaves	C	The young leaves are used for preparation of curry along with potato or brinjal. This is considered to be useful for stomach problems.
57	<i>Phoenix acaulis</i> Buch.-Ham. ex Roxb.	Bhuin khajuri	Areaceae	Fruits	T	The fruits with scanty and sweet pulp are consumed as such. The central pith of the stems are rich source of starch and are consumed raw due to sweet taste.

Sl.No.	Botanical name	Odia Name	Family	Part (s) used	Habit	Use values and mode of consumption
58	<i>Phoenix sylvestris</i> (L.) Roxb.	Khajuri	Arecaceae	Fruits	T	The ripe sweet fruits are eaten. The sugary sap of the plant is used as a country liquor after fermentation.
59	<i>Phyllanthus acidus</i> (L.) Skeels	Narakoli	Euphorbiaceae	Fruits	T	Fruits are sour but eaten raw; sometimes pickles are also prepared from the fruits.
60	<i>Phyllanthus embilica</i> L.	Aonla	Euphorbiaceae	Fruits	T	The fruits are acidic and rich source of vitamin-C. The fruits are used by tribals to prepare pickles and the dry fruits are used as medicine.
61	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Akasakaian, Sima Kaian, Bilati Kaian	Mimosaceae	Fruits	T	The sweet arils of ripe fruits are edible. The pulp is also used in fish curry to give a sour taste. Rarely, chutney is also made from the fruit.
62	<i>Protium serratum</i> (Wall. ex Colebr.) Engl.	Rimili, Sarupatri mai, Limbur	Burseraceae	Fruits	T	The fruits are acidic in nature and sour in taste. Ripe fruits are eaten raw and chutney is prepared out of it. The fruits are sold in local market places.
63	<i>Schleichera oleosa</i> (Lour.) Oken	Kusuma	Sapindaceae	Fruits	T	The ripe fruit pulp is edible and has acidic taste. Seeds are good source of cooking oil.
64	<i>Semecarpus anacardium</i> L. f.	Bhalia	Anacardiaceae	Fruits, seeds	T	The fleshy orange coloured peduncles are eaten when ripe. The seed kernels are eaten after roasting, which taste like almond.
65	<i>Sesbania sesaban</i> (L.) Merr.	Jayanti	Fabaceae	Leaves , Flowers	S	Leaves are fried with other leafy vegetables and eaten.
66	<i>Shorea robusta</i> Gaertn. f.	Sal, Sargi, Salua	Dipterocarpaceae	Seeds	T	The seeds are roasted and eaten at the time of food scarcity.
67	<i>Spondias pinnata</i> (L. f.) Kurz	Ambada	Anacardiaceae	Fruits	T	Unripe fruits are used as vegetables, while the ripe fruits are eaten raw and also used to make chutneys and pickles.
68	<i>Syzygium cumini</i> (L.) Skeels	Jamu	Myrtaceae	Fruits	T	The ripe fleshy fruits are commonly eaten. The seed power is used against diabetes.

Sl.No.	Botanical name	Odia Name	Family	Part (s) used	Habit	Use values and mode of consumption
69	<i>Tamarindus indica</i> L.	Kainan, Tentuli	Caesalpiniaceae	Fruits	T	The ripe and unripe fruits are sour and are used for preparing chutneys, pickles, curries and several other preparations. The seed powder is also eaten at the time of need.
70	<i>Tamlinadia uliginosa</i> (Retz.) Tirv.& Sastre	Tolaka, Pendra	Rubiaceae	Fruits	T	The ripe fruits are eaten; also as a vegetable.
71	<i>Termitomyces eurrhizus</i> (Berk.) Heim.	Nada chhatu	Lyophyllaceae	Mushroom	MUS	Freshly collected mushrooms are fried or boiled to make curry with spices and other vegetables.
72	<i>Termitomyces heimii</i> Natarajan	Sravana chhatu	Lyophyllaceae	Mushroom	MUS	These are used for preparation of curries with other vegetables. Also sold in local markets during rainy season.
73	<i>Termitomyces medius</i> R. Heim. & Grasse	Bali chattu	Lyophyllaceae	Mushroom	MUS	It is fried and consumed; also used to make curry with other vegetables.
74	<i>Termitomyces microcarpus</i> (Berk.& Broome) Heim	Hunka chattu	Lyophyllaceae	Mushroom	MUS	After collection, the mushrooms are cleaned properly, fried or boiled and eaten
75	<i>Trapa natans</i> L.	Trapa natans	Onagraceae	Fruits	H	The white starchy portion of the fruits are sweet in taste and mostly eaten raw.
76	<i>Tuber rufum</i> Pico	Rutika chattu	Tuberaceae	Mushroom	MUS	Curries are made after peeling off outer cover; sold in local markets @ Rs.200-300/- per kg.
77	<i>Volvoriella volvaceae</i> (Bul. ex Fr.) Singer	Kuta chhatu	Pluteaceae	Mushroom	MUS	Used for preparation of curries; sometimes with salt and spices.
78	<i>Ziziphus rugosa</i> Lam.	Tinkoli, Chunkoli	Rhamnaceae	Fruits	S	Ripe fruits are sweet and are eaten raw. The salted and dried fruits are made to pickles.
79	<i>Ziziphus jujuba</i> Mill.	Barakoli	Rhamnaceae	Fruits	T	Fruits are consumed raw, cooked or as pickles.
80	<i>Ziziphus oenoplia</i> (L.) Mill.	Kanteikoli, Burukoli	Rhamnaceae	Fruits	S	The ripe fruits are sweet and sour in taste and consumed raw, mainly by children.

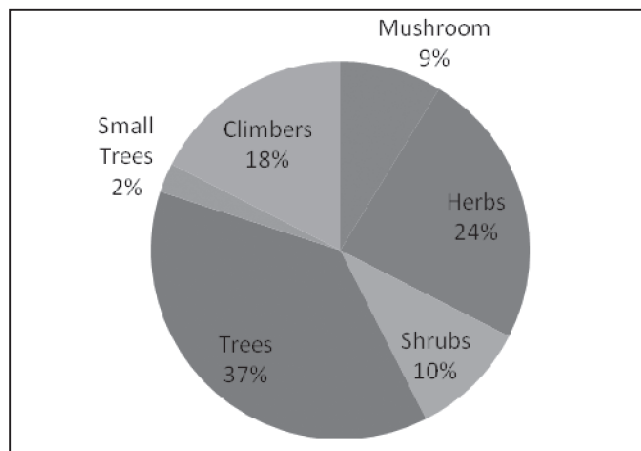


Fig. 2: Habit wise distribution of wild edible food plants studied in Nabarangpur district.

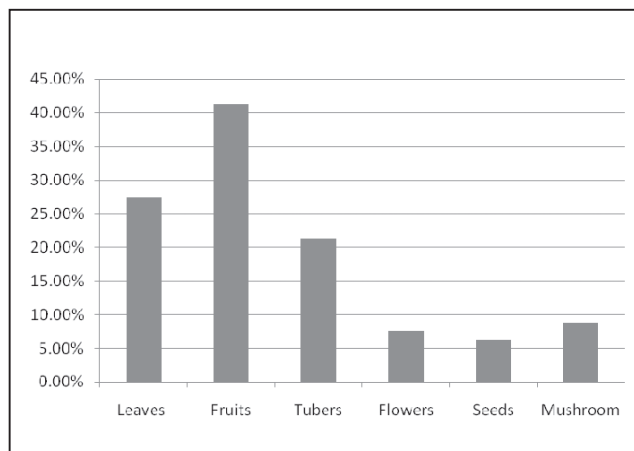


Fig. 3: Category wise use of wild edible food plants of Nabarangpur district, Odisha

Caesalpiniaceae and Anacardiaceae had 4 species each. Of the 80 plant species now listed, 33 species (41.25%) yield edible fruits, 20 species are used as leafy vegetables and 17 species have edible tubers/ rhizomes/ roots. Besides, flowers of 6 species and seeds of 5 species are consumed as edible plant parts (Fig. 3). Species such as *Abelmoschus crinitus*, *Amorphophallus paeoniifolius*, *Artocarpus heterophylla*, *Moringa oleifera*, *Mangifera indica* etc. have multipurpose uses. A number of leafy vegetables like *Alternanthera sesilis*, *Celosia argentea*, *Commelina* spp., *Leucas* spp. grow as weeds in cultivated fields and homesteads and are used as vegetables by all communities.

During the survey, it could be observed that, the tribals of Nabarangpur district prefer some wild edible plants over others because of their multipurpose use and long-term association. Some of them are *Tamarindus indica*, *Mangifera indica*, *Amorphophallus paeoniifolius*, *Artocarpus heterophyllus*, *Phoenix* spp., *Cassia tora* etc. Collection and harvesting of wild edible plants is a seasonal activity and depends on the availability of fruits in the locality and time of ripening of fruits. The tubers of *Dioscorea* spp. are mainly collected after rainy season, while fruits of *Mangifera indica* and *Diospyros melanoxylon* are collected during summer. Most of the leafy vegetables like *Cassia tora*, *Cleome viscosa*, *Celosia argentea*, *Commelina* spp. etc are found in abundance during rains and consumed in quantity. All kinds of mushrooms are available in the wild during this period and are commonly sold in markets throughout the season. Tribal people of Nabarangpur district have fairly good knowledge on preservation and storage of wild edible plants such as mushrooms, mango kernels, seeds of Mahua (*Madhuca indica*), Char (*Buchanania lanzan*), Kusum (*Schleichera oleosa*), fruits of tamarind (*Tamarindus indica*)

and few others. Of the products available in local market, tamarind fruits, Kusum seeds, yams of *Dioscorea* spp., flowers of Mahua and Girili phul (*Indigofera cassioides*), leaves of *Bauhinia* spp. and *Enydra fluctuans* need special mention as they contribute to the livelihood and income generation of the local people.

4. Conclusion

The tribals of Nabarangpur district of Odisha possess fairly good knowledge on utilization, harvesting, preservation and marketing of food plant available in the forests close to them. Some of these edible plants have great economic value and are highly linked with socio-economic development of tribal communities of the state. Though most of them depend on forest products for their livelihood, the traditional knowledge on wild food plants is declining day by day due to over-exploitation of forests, non-availability of resources close to their villages/ hamlets and availability of cultivated fruits and vegetables in local markets. The present study emphasized the need for the protection and conservation of these wild edible plant resources for the benefit of human kind through bioprospecting, quality improvement, domestication, value addition and development of market links.

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