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Exploration and documentation of some wild edible plants used by the aboriginals from Gadchiroli District (M.S.) India

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Abstract: The present study deals with the exploration, identification, documentation and ethnobotanical aspects with respect to food value of wild edible plants consumed by aboriginals from Gadchiroli District of Maharashtra State-India. The Forest adjoin is of dry deciduous to moist deciduous type. The prominent tribes in Gadchiroli District are Raj Gond, Gond, Madia, Pardhan and Kanwar, etc. and other than these tribes the large population is scheduled caste and other backward cast and nomadic tribes which are dwelling on this land since ancient time and no such investigation has been undertaken in this District. Investigation results in 61 plant species of 40 families consumed as food during various situations.

Keywords: Gadchiroli, Wild edibles, Tribal, Aboriginal, Ethnobotany, Indigenous knowledge.

INTRODUCTION

Since the ancient time Mother Nature is the ultimate caretaker of human beings and she has blessed human beings with all the necessary food requirements. In the beginning, the Human beings were arborous, hunter-gatherers and they could eat only what was available there in the nearby areas like some fruits and probably some vegetables. But during the race of Civilization, human started domestication and farming so turned their attention towards the cultivated species but still large number of population in rural areas have depended on the wild varieties of plants. Especially the tribal people used these to fulfill their food requirement from the adjoining forest.

The forests provide a large number of edible varieties of plants to the human beings; even today aboriginals are dependent on wild edibles. They prefer wild vegetables over the cultivated as they grow naturally; provide better taste and good health. By selling these wild edible to the nearby urban markets could earn them extra income. Aboriginals believed that some of the seasonal wild vegetables are good for health and also provide the immunity during the rains which is supposed to be the most suspicious period to become ill by various disorders. These vegetables are nutritious, delicious and cheap as well. Along with this many of the people get temporary employment by collecting these vegetables and selling it to the nearby towns and the urban area. Use of wild plants as a food source is an integral part of the culture of indigenous people that dwell in the remote forest areas. FAO reported that wild food is a part of rural people diet not only during periods of food shortage but also on a daily basis, and the daily consumption of wild products contributes to overall nutritional well beings of tribes[1,2]. The nutritional value of traditional leafy vegetables is higher than several conventional vegetables. They also contain antioxidants which offer protection against many chronic diseases like heart disease and the certain type of cancers. The potential of traditional vegetables may help to meet the increasing demands of the growing population. Increased use of traditional vegetables can contribute to enhancing people's health and standard living as well as the economic and social status of the food producers themselves[3].

STUDY AREA

Gadchiroli District (Figure 1) is located on the North-Eastern side of Maharashtra State and lies between 18º 43' and 21º 50' North latitude, and 79º 45' and 80º 53' East longitude in Deccan Plateau, covered by beautiful forest and hilly area (Chiroli and Surjagad hill ranges). 78% of the area is covered by forest and it is of dry and moist deciduous type. Since the ancient times, the land is inhabited by tribal community. This land is far away from urbanization. Agriculture is the backbone of the economy in District.

Excluding 4-5 medium scale industries, no big industrial set up is there in the District and that's why away from industrial pollution too. The District is also blessed with many beautiful rivers out them most are annual flowing.

Waingangā is the main river of Gadchiroli District which confirms the Western Southern boundary of District and many small river and rivulets flowing from the Eastern and Northern side of District merges in Waingangā. The District is neighbored by two States Chhattisgarh and Telangana State (Previously Andhra Pradesh) (Gadchiroli District Gazetteer).

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EARLIER WORK

Jain[4] in 1963, Jain and Sinha[5] in 1988 reported various food resources from Indian aborigines. Documentation of wild edibles from various tribes in India has regularly been carried out through various remarkable efforts like Uniyal et al.[6] in Western Himalaya; Kar[7] in Arunachal Pradesh; Rajasab and Mamamad[8] in North Karnataka; Nene[9] in 2004 , Sinha and Valeria[10] in Orissa; Dangwal et al.[11] in Jammu & Kashmir; Bandyopadhyay and Mukharjee[12] in Koch Bihar District, West Bengal;. Satyavani et al.[13] in North – Coastal Andhra Pradesh and so many in many parts of India.

Also several workers like Kulkarni[14] , Bhogaonkar et al.[15], Deshmukh and Shinde[16], Jadhav et al.[17], Deshmukh and Waghmode[18], Reddy[19], Dhore et al.[20], Deshpande and Kulkarni[21], Vijigiri et al.[22], Satpute[23], Oak et al.[24], etc have explored and documented various wild edibles throughout various regions of Maharashtra State. And recently Patle et al.[25] have investigated ethnobotanical studies on wild edible plant among the Gond, Halba and Kawar tribes of Salekasa taluka in Vidarbha's Gondia District of Maharashtra State and recorded 80 plant species from monocot and dicots.

Figure 1- Gadchiroli District Location.

METHODOLOGY

The Ethnobotanical investigations were undertaken in the study area with respect to study the wild edible plants during 2013 – 2015. Different parts of Gadchiroli District were frequently visited including Northernmost Korchi Tahsil to Southernmost Sironcha Tahsil to Easternmost Bhamragad Tahsil to Westernmost Chamorshi Tahsil including extreme terrain like Binagunda which is highly threatened Naxal prone area, and information on indigenous knowledge about wild edible plants was collected from knowledgeable people in the region.

Data was collected using semi-structured questionnaire and group discussions based on the standard procedures suggested by Jain (1989), similarly adjoining forest were also scanned for the presence of particular plants and locality as well as for the status of observation. The Detailed information regarding the plant part eaten and various preparation was noted. Plants were identified using relevant scientific literature[27, 28,29,30,31].

OBSERVATIONS

The recorded plants are arranged in a tabulated manner (Table-1). They are arranged in alphabetical order genera wise with information as local names, botanical name and family, habit, plant part used, the method of consumption, the season of availability and its commercial status.

RESULT

The recorded plants belong to 61 plant species from 40 families, out of which 32 are dicotyledonous and 8 are monocotyledonous. Their habit wise analysis indicates the dominance of trees (36%) in feeding the aboriginal population (Figure 2) and fruits of 24 and leaves of 18 plant species as most preferred edible plant parts (Figure-3).

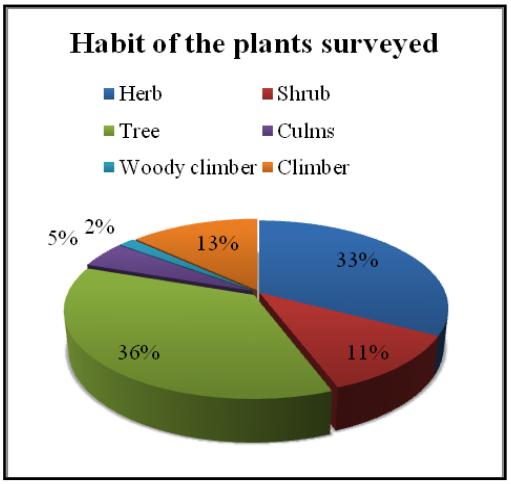

Figure 2- Habit of the plants surveyed.

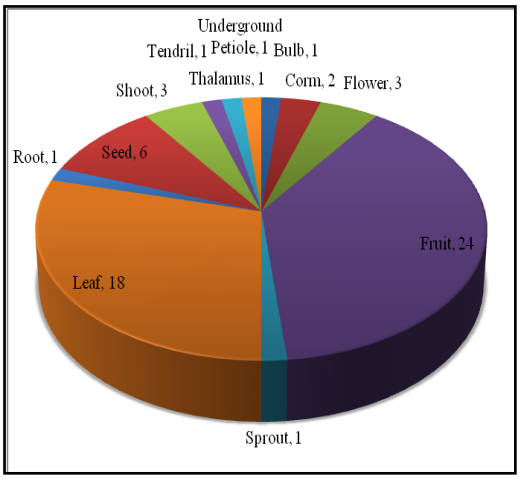

Figure 3- Edible plant parts of surveyed plants.

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Photo plate I : a. Fruits of *Dillenia pentagyna* Roxb. b. Collected leafy vegetable of *Glinus oppositifolious* (L.) A. DC. c. Ripened fruits of *Flacourtia indica* (Burm. f.) Merr. d. Collected dried fleshy flowers of *Madhuca longifolia* (Koen.) Mac Bride e. Ripened edible fruit of *Tamilnadia uliginosa* (Retz.) Tirveng. & Sastre f. Collected leafy vegetable of *Allmania nodiflora* (L.) R. Br. ex Wight.

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Photo plate II : a. Collected edible rhizomes of *Cheilocostus speciosus* (J.Koenig) C.D. Specht b. Youngman selling Fruits of *Borassus flabellifer* L. in nearby markets c. Tribal man with collected edible ripened fruits of *Phoenix sylvestris* (L.) Roxb. d. Old man selling young shoots of *Smilax zeylanica* L. in nearby urban markets e. Tribal woman selling boiled edible sprouts of *Borassus flabellifer* L. in nearby markets.

DISCUSSIONS

During famine and before the regularization of conventional agriculture the wild edibles were the only source of food and as the modern day food fashion expanded not even the deep tribal packets were remain unaffected and the result is so that their younger generations are having very less knowledge about these plants. So it is of the immense need to document the indigenous knowledge of wild edibles among the old age aboriginal population. This is the first of its kind of attempt in the study area as the area is Naxal-affected and extreme terrain of forest, so difficult to reach the interior land of it. But this was a dared attempt and fortunately, safely the studies went right. Also, the nutraceutical evaluation of these wild edible is also needed, similarly a study can be undertaken to explore the commercial use of these fruits and vegetable.

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Table 1: – Observation on wild edible plants and associated study.

S.N.	Vernacular Name (Marathi, Gondi)	Scientific Name Family	Habit	Edible Plant Part	Method of Consumption	Season of availability	Commercially Sold
1	Aakola, Ankol	*Alangium salvifolium* (L. f.) Wangerin Alangiaceae	Tree	Fruit	Ripened Fruits are eaten.	Summer.	N
2	Dhan Bhaji, Mal Kukkur	*Allmania nodiflora* (L.) R. Br. ex Wight Amaranthaceae	Herb	Leaf	Leaves are cooked as vegetable.	Rains.	Y
3	Patur Bhaji	*Alternanthera paronychioides* St. Hil. Voy. Amaranthaceae	Herb	Leaf	Leaves are cooked as the vegetable.	Rains.	Y
4	Suran	*Amorphophalus paeonifolius* Dernst Araceae	Herb	Corm	The corm is boiled with some amount of tamarind and then cooked as the vegetable and eaten as food.	Winter.	N
5	Surpela	*Antidesma acidum* Retz. Euphorbiaceae	Shrub	Fruit	Ripened and semi-ripened fruits are eaten.	Rains.	N
6	Baswrael, Widhara, Samudrasok	*Argyreia nervosa* (Burm.f.) Bojer Convolvulaceae	Climber	Leaf	Wheat flour paste is applied over the leaf from both sides and steamed after that chopped to small pieces and fries are made and consumed as food.	Throughout the year.	N
7	Bamboo Vaaste, Katraanji	Bambusa *arundinacea* (Ritz.) Willd. Poaceae	Culms	Shoot	Young shoots of about 2 feet long are cut and outer covering is removed and then finely chopped and boiled, then by adding some spices vegetable is cooked. Finely chopped and boiled shoots are mixed with various flour to make delicious fries. Pickle also made from the same finely chopped shoots. Though it is prohibited to cut these shoots but still the tribal love to eat and cross the law and go for those in a rainy season. It is one of the prime tribal food since ancient time. Some tribal community used to wrap the shoots in Wild Turmeric Leaves and burry it in soil or covered earthen pot and sharp 24hr time is followed to take it out from same and then cooked as a vegetable and eaten as food.	Rains.	N

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S.N.	Vernacular Name (Marathi, Gondi)	Scientific Name Family	Habit	Edible Plant Part	Method of Consumption	Season of availability	Commercially Sold
8	Bamboo Vaaste, Barik Bamboo	*Bambusa glaucescens* (Willd.) Sieb. ex Munro Poaceae	Culms	Shoot	Same as above.	Rains.	N
9	Kowdel	*Bauhinia purpurea* L. Caesalpiniaceae	Tree	Seed	Tender pods are cooked as a vegetable. Seed are Roasted and eaten as food.	Rains.	N
10	Pawur	*Bauhinia vahlii* Wight & Arn. Caesalpiniaceae	Woody Climber	Seed	Seeds are roasted and eaten as food.	Summer.	N
11	Khaparfuti	*Boerhavia diffusa* (L.) Hook. Nyctaginaceae	Herb	Leaf	Leaves are cooked as a vegetable.	Rains.	N
12	Taad	*Borassus flabellifer* L. Arecaceae	Tree	Fruit, Sprouts	Fruits are eaten. Whole mature fruit is burie in a pit and after successful germination, the sprouts are plucked and boiled and eaten.	Summer and Winter.	Y
13	Kasai, Kassi	*Bridelia retusa* (L.) Spreng. Euphorbiaceae	Tree	Fruit	Ripened fruits are eaten.	Rains.	Y
14	Charoli, Rekka	*Buchanania cochinchinensis* (Lour.) Almeida Anacardiaceae	Tree	Fruit	Ripened fruits are eaten. Dried seeds are eaten.	Summer.	Y
15	Junglee tur	*Cajanus scarabaeoides* (L.) du–Petit–Thours Fabaceae	Climber	Fruit	Fresh and raw Seeds are eaten.	Winter.	N
16	Rui	*Calotropis procera* (Ait.) R. Br. Asclepiadaceae	Shrub	Fruit	Raw fruits are pilled off and chopped into small pieces and cooked as a vegetable.	Winter.	N
17	Tarota, Cherota	*Cassia tora* Sensu Baker. Caesalpiniaceae	Herb	Leaf	Tender leaves are cooked as a vegetable.	Rains.	N

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18	Pimpli cha baar, Warandul Tonda	*Celastrus paniculatus* Willd. Celastraceae	Climber	Flower	Flowers are boiled and water is removed and cooked as a vegetable.	Summer.	Y
19	Bramhi	*Centella asiatica* (L.) Urban Apiaceae	Herb	Leaf	Leaves are crushed to paste and pinch of Pepper and Salt is added and mixed to make chutney be eaten.	Throughout the year.	N
20	Pandhara fendra, Madanghanta	*Ceriscoides turgida* (Roxb.) Tirveng. Rubiaceae	Tree	Fruit	Raw fruits are chopped into pieces and cooked as a vegetable.	Rains.	Y
21	Besemati, Halduli	*Cheilocostus speciosus* (J.Koenig) C.D.Specht Costaceae	Herb	Corm	Corms are excavated and then cleaned and boiled and eaten during famine. Corms are excavated and then cleaned – crushed and cooked as a vegetable by adding some spices also curry is prepared from are scaled and chopped rhizome.	Rains.	N
22	Batwa	*Chenopodium album* L. Chenopodiaceae	Herb	Leaf	Leaves are cooked as a vegetable.	Winter.	N
23	Lodanga bhaji	*Chlorophytum sp.* Liliaceae	Herb	Leaf, Root	Leaves are used to make Dalbhaji. Root tubers are eaten raw.	Rains.	N
24	Fotakani	*Corchorus capsularis* L. Tiliaceae	Herb	Leaf	Young and Tender Leaves are cooked as a vegetable.	Rains.	N
25	Fotakani	*Corchorus olitorius* L. Tiliaceae	Herb	Leaf	Young and Tender Leaves are cooked as a vegetable.	Rains.	N
26	Shembadi, Shelvati	*Cordia dichotoma* Forst. Boraginaceae	Tree	Fruit	Raw fruits are used to cook vegetable and pickle. Ripened fruits are eaten.	Summer.	N

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27	Bamboo Vaaste, Heedi, Veddur, Maanval Ranji	*Dendrocalamus strictus* (Roxb.) Nees Poaceae	Culms	Shoot	Young shoots of about 2 feet long are cut and outer covering is removed and then finely chopped and boiled, then by adding some spices vegetable is cooked. Finely chopped and boiled shoots are mixed with various flour to make delicious fries. Pickle also made from the same finely chopped shoots. Though it is prohibited to cut these shoots but still the tribal love to eat and cross the law and go for those in a rainy season. It is one of the prime tribal food since ancient time. Some tribal community used to wrap the shoots in Wild Turmeric Leaves and buried it in soil or covered earthen pot and sharp 24hr time is followed to take it out from same and then cooked as a vegetable and eaten as food.	Rains.	N
28	Michad mara, Ran Keli	*Dillenia pentagyna* Roxb. Dilleniaceae	Tree	Fruit	Ripened fruits are eaten.	Summer.	N
29	Padmati	*Dioscorea pentaphylla* L. Dioscoreaceae	Climber	Bulb	Root are boiled and scaled and eaten during scarcity.	Rains and Winter.	N
30	Tembhru, Tumri	*Diospyros melanoxylon* Roxb. Ebenaceae	Tree	Fruit	Ripened fruits are eaten.	Summer.	Y
31	Tirka	*Diospyros peregrina* (Gaertn.) Guerke Ebenaceae	Tree	Fruit	Ripened fruits are eaten.	Summer.	N
32		*Eryngium foetidum* L Apiaceae	Herb	Leaf	A few leaves are chopped finely and added as flavoring like Coriander to various curry preparation especially in Meat.	Throughout the year.	N

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33	Umber, Toya	*Ficus racemosa* Linn. Moraceae	Tree	Fruit	Ripened fruits are eaten.	Throughout the year.	N
34	Kakai, Hapa Vadama	*Flacourtia indica* (Burm. f.) Merr. Flacourtiaceae	Tree	Fruit	Ripened fruits are eaten.	Summer.	N
35	Kadubhaji, Kayata bhaji	*Glinus oppositifolius* (L.) A. DC. Molluginaceae	Herb	Leaf	Leaves are cooked as a vegetable.	Rains.	N
36	Darachi	*Grewia asiatica* L. Tiliaceae	Shrub	Fruit	Ripened fruits are eaten.	Winter.	N
37	Yensadad	*Holoptelea integrifolia* (Roxb.) Planch. Ulmaceae	Tree	Seed	Seeds are roasted and eaten as food.	Summer.	N
38	Kaamoni, Madhumaalti	*Lantana camara* L. Verbenaceae	Shrub	Fruit	Ripened fruits are eaten.	Throughout the year.	N
39	Lakholi	*Lathyrus sativus* L. Fabaceae	Herb	Leaf, Fruit	Tender leaves are cooked as a vegetable. Pods are roasted and eaten.	Winter.	N
40	Moha, Irpi	*Madhuca longifolia* (Koen.) Mac Bride Sapotaceae	Tree	Flower, Fruit	Fleshy flowers are eaten. Similarly, dried flowers are stored and eaten throughout the year. Fruits are also eaten.	Summer.	Y
41	Khirni	*Manilkara hexandra* (Roxb.) Dub. Sapotaceae	Tree	Fruit	Ripened fruits are eaten.	Winter.	Y
42	Bharkad	*Maytenus senegalensis* (Lam.) Excell. Celastraceae	Shrub	Flower	Young flowers and buds are boiled and then water is taken out and then cooked as a vegetable.	Winter.	N

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43		*Merremia gangetica* (L.) Cufod. Convolvulaceae	Herb	Leaf	Leaves are cooked as a vegetable.	Rains and Winter.	N
44	Diwati	*Merremia hederacea* (Burm. f.) Hall. Convolvulaceae	Climber	Fruit	Seeds are eaten raw and roasted.	Rains.	N
45	Kamal, Bhishi chya biya, Kokomba	*Nilumbo nucifera* Gaertn Nelumbonaceae	Herb	Seed	Seeds are eaten raw and roasted.	Winter.	Y
46	Haratfari, Korpa jappi	*Olax psittacorum* (Willd.) Vahl Olacaceae	Climber	Leaf	Tender leaves and shoots are plucked and boiled and cooked as a vegetable. Some people add boiled Bengal Gram too.	Rains.	Y
47	Tattu	*Oroxylum indicum* (L.) Vent. Bignoniaceae	Tree	Fruit, Flower	Flowers are boiled and cooked as a vegetable. Fruits are chopped to small pieces and used to make pickle.	Rains.	Y
48	Chihoda Bhaji	*Oxalis corniculata* L. Oxalidaceae	Herb	Leaf	Leaves are cooked as a vegetable.	Throughout the year.	N
49	Utaran, Hacher	*Pergularia daemia* (Forssk.) Choiv. Asclepiadaceae	Climber	Fruit	Raw fruits are pilled off and chopped into small pieces and cooked as a vegetable.	Winter.	N
50	Bhui Shindi,Metta heendi	*Phoenix acaulis* Roxb. Arecaceae	Shrub	Undergro und Petiole	Underground petiole (Finger-length) is scaled and eaten raw.	Throughout the year.	N
51	Shindi, Gaavthi heendi	*Phoenix sylvestris* (L.) Roxb. Arecaceae	Tree	Fruit	Ripened fruits are eaten.	Summer.	N
52		*Rostellularia procumbens* (L.) Nees Acanthaceae	Herb	Leaf	Fist-full of leaves are added to Bamboo shoot vegetable to enhance flavor.	Rains.	N

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S.N.	Vernacular Name (Marathi, Gondi)	Scientific Name Family	Habit	Edible Plant Part	Method of Consumption	Season of availability	Commercially Sold
53	Kusum, Kojub	*Schleichera oleosa* (Lour.) Oken Sapindaceae	Tree	Fruit	Ripened fruits are eaten.	Summer.	N
54	Kachar Kaandaa, Kasoor Maati	*Scripus grossus* (L.f.) Palla Cyperaceae	Herb	Root	Rootstocks are boiled and external layer is scaled and eaten as food.	Winters.	Y
55	Biba, Kohka	*Semecarpus anacardium* L. f. Anacardiaceae	Tree	Thalamus	Ripened thalamus is eaten.	Winters.	N
56	Sherdire	*Smilax zeylanica* L. Smilacaceae	Climber	Tendril	Young tendril and shoots are boiled and cooked as vegetable.	Rains.	Y
57		*Solanum torvum* Swartz. Solanaceae	Shrub	Fruit	Fruits are chopped and cooked as a vegetable.	Throughout the year.	N
58	Kala Fendra, Katul Kaya	*Tamilnadia uliginosa* (Retz.) Tirveng. & Sastre Rubiaceae	Tree	Fruit	Raw fruits are chopped into pieces and cooked as a vegetable. Ripened fruits are eaten.	Rains and Winter.	N
59	Behada, Taahaka	*Terminalia bellirica* (Gaertn.) Roxb. Combretaceae	Tree	Seed	Testa is removed and cotyledons are eaten as food.	Summer.	Y
60	Kochai	*Theriophonum dalzellii* Schott Araceae	Herb	Leaf	Leaves are used to make Dalbhaji. Gram flour paste is applied to Leaf surface and cooked over the stem and chopped to small pieces and fried and eaten.	Rains.	N
61	Surya, Kadhai	*Xylia xylocarpa* (Roxb.) Taub. Mimosaceae	Tree	Seed	Seeds are roasted and eaten as food.	Summer.	N

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