

RESEARCH ARTICLE

Diversity and seasonal availability of wild vegetables from Bhandara region of Maharashtra State, India

■ Suprabha Chute and Vimal Dakhane

SUMMARY

This study records plant species used by local people in their diet (curries, vegetables), as medicine, as crops that generate income and as plants of special cultural and religious significance. The study area is restricted to local people, forest guard and vaidu that are connected with forest. They are mainly depend on plants and plant products for their food requirement. This study reveals traditional knowledge of wild edible plants and their utilization. As different plants are available in different seasons, the name of the plant changes according to the area. This study report is based on survey, field work and interview studies on wild vegetables used by rural people and the Gond tribe of 7 Talukas in Bhandara district, Maharashtra State, India. During August 2020 to October 2022. Total of 84 plant species belonging to 42 families have been recorded as wild vegetables in the study areas, of which herb is ranked first with 45% species, followed by shrub -19%, climber- 19%, and tree -16%. Among the 84 species 40% contribute as vegetables by their leaves, 16% by fruit, 6% by flower, 7% by shoot, 6% by root and tuber, 11% by both leaves-Flower, 5% by seed, 7% by the whole plant. The greatest plant diversity and availability is found between July to September and August to October, while some specific vegetables are year-round. It is evident from the survey that most of the wild plant species are used as vegetable/chutney.

Key Words : Forest guard, Rural people, Traditional knowledge, Wild vegetables

How to cite this article : Chute, Suprabha and Dakhane, Vimal (2022). Diversity and seasonal availability of wild vegetables from Bhandara region of Maharashtra State, India. *Internat. J. Plant Sci.*, 17 (OCAEBGD): 16-22, DOI: 10.15740/HAS/IJPS/17-OCAEBGD/16-22, Copyright@ 2022:Hind Agri-Horticultural Society.

Article chronicle : Received : 11.11.2022; Accepted : 15.11.2022

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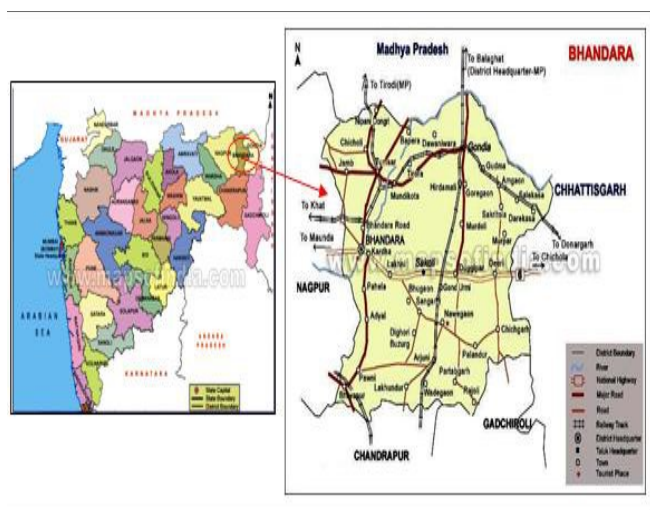
The current climate change is having adverse effects at all levels. It is affecting people lives. The difference in health is felt due to the chemicals that enter the body through the daily diet and the antibiotic resistance due to the high medicine used for it, yet the prices of vegetables and medicines are out of reach.. Therefore, to live a good life minimal use of

chemicals is necessary, like wild vegetables that contain phytochemicals that act as medicines and do not enter the harmful chemicals into the body, thus, maintaining good health. These plant-derived compounds can be used in the modification of existing drugs or the design of completely new ones [9,8]. Wild edible plants constitute those plants that grow spontaneously in self-maintaining populations in natural or semi-natural ecosystems and can exist independently of direct human action [15]. They include all vegetables that (not cultivated), whether they are harvested in agricultural areas, uncultivated areas, or forestland [15,3]. Each area has a variety of plants depending on the season, there are certain plants that can be used in daily meals. There is a need for time to reach the information of such wild vegetables from local to global.

MATERIAL AND METHODS

Survey of study sites :

The study was carried out in Bhandara district comprising 7 tehsil. The present study has been restricted to forest villages in all 7 tehsil of Bhandara District. From each Tehsil 10 villages were selected by random sampling. These villages were chosen on the basis of forest area, Their location in and around the forest. Bhandara District forest area mixed forest type contains 10 forest blocks. These blocks are also known as round, each round made from range and range made from beat. *i.e.* Bhandara District is an administrative District in the state of Maharashtra in India has a mixed economy with agriculture, industries and forest resources. Bhandara District was under the privilege of Raja Gond. ‘Gond ‘ is the main tribe of this area [4].



Data collection :

Study was carried out during the year of August 2020 to October 2022. This Information of wild vegetables species is outcome of field survey and interviews among old, ethnic men and women, tribal peoples, Vaidu. The field survey cover in different seasons, different places *i.e.*, Roadside, west land, agricultural field, forest Plant material were collected and identified with the help of floras [13,11]. Data were recorded in the form of local name of plant, useful plant parts and recipe. Showing some photographs of collected plant specimens. The identified plants are arranged alphabetically with name, and local names and parts used, habit, habitat (Table 1).

The wild vegetables :

The diversity of plants is used as wild vegetables in the Bhandara forest. Following Table 1. Showing total of 84 species of 42 families were identified.

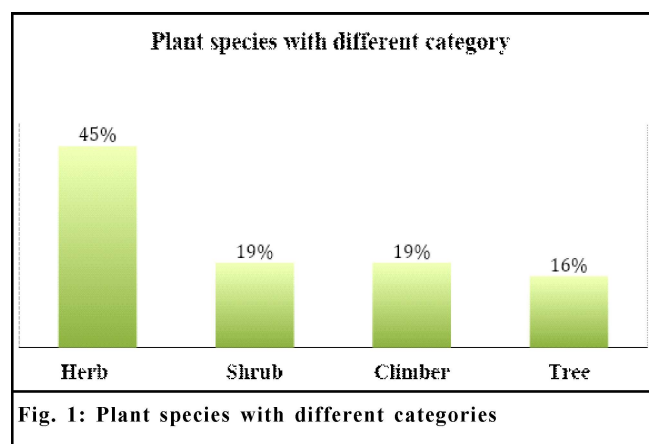


Fig. 1: Plant species with different categories

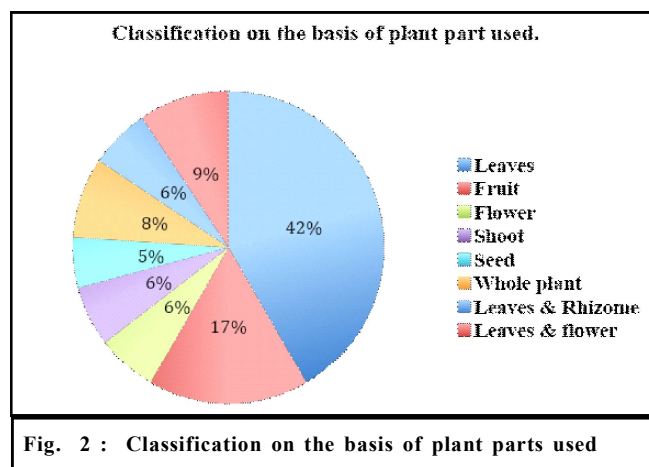


Fig. 2 : Classification on the basis of plant parts used

Table 1: Inventory of wild vegetables consumed in the Bhandara district

Sr.No.	Species	Family	Local name	Habit	Habitat	Season	Edible parts
1.	<i>Abelmoschus manihot</i>	Malvaceae	Ranbhendi	Herb	Waste Land ,Forest Boundaries	Sept – Feb	L
2.	<i>Acheranthus aspera</i>	Amaranthaceae	Aghada	Herb	Waste Land	Feb-Apr	L
3.	<i>Aegle marmelos</i>	Rutaceae	Bel	Tree	Densly Forest Area	Mar – June	Fr
4.	<i>Agave vera-cruz</i>	Agavaceae	Ghaypat	Shrub	Forest Area	TOY	Sh
5.	<i>Alocasia macrorrhiza</i>	Araceae	Dhopa	Herb	Water Bodies ,Roadside, Village	TOY	L, Rh
6.	<i>Alternanthera sessilis</i>	Amaranthaceae	Patur	Herb	Hepatitis,Anemia	July-oct	Ll
7.	<i>Amaranthus cruentus</i>	Amaranthaceae	Tandulka	Herb	Kitchen Garden	Jun-Oct	Wp
8.	<i>Amaranthus paniculatus</i>	Amaranthaceae	Rajgira	Herb	Kitchen Garden, Forest Area	TOY	Wp
9.	<i>Amaranthus tricolor</i>	Amaranthaceae	Lalmath	Herb	Kitchen Garden	Jun-Feb	Wp
10.	<i>Amarantusspinosus</i>	Amaranthaceae	Kalemath	Herb	Forest Area, Waste Land	TOY	L
11.	<i>Amarantusviridis</i>	Amaranthaceae	Tandulya	Herb	Kitchen Garden, Forest Area	TOY	L
12.	<i>Amorphophallus aphyllus</i>	Araceae	Var	Shrub	Kitchen Garden, Forest Area	July -Sep	Sh
13.	<i>Amarphophalluspaeonifollius</i>	Araceae	GavathiSuran	Shrub	Kitchen Garden, Forest Area	June – Oct	T
14.	<i>Argyrea nervosa</i>	Convolvulaceae	Samudrasok	Climber	Kitchen Garden	TOY	L
15.	<i>Bacopa monnieri.</i>	Scrophulariaceae	Brahmi	Tree	Forest Area	Aug –Sep	L
16.	<i>Baselll alba</i>	Basellaceae	Mayalu	Climber	Kitchen Garden	TOY	L
17.	<i>Bauhinia perpura</i>	Caesalpiniaceae	Kolarbhaji	Tree	Forest Area	Jan-March	L, Fl
18.	<i>Bauhinia racemosa</i>	Caesalpiniaceae	Apta	Tree	Forest Area, Forest Boundaries	March-July	L
19.	<i>Boerhaviadiffusa</i>	Nyctaginaceae	Khaparkhuti	Herb	Roadside, Forest Area	Aug-Dec	L
20.	<i>Bombax ceiba</i>	Bombacaceae	Sawari	Tree	Forest Area, Village	Feb-Apr	Fl
21.	<i>Bueteamonosperma</i>	Caesalpiniaceae	Palas	Tree	Forest Area, Road Side	Feb-Apr	Fl
22.	<i>Cannavalia gladiate</i>	Fabaceae	Sarkari Wal	Climber	Kitchen Garden, Forest Area	Apr-Oct	Fr
23.	<i>Capparis zeylanica</i>	Capparaceae	Waghadi	Climber	Forest Area	March –May	Fr
24.	<i>Cassia fistula</i>	Caesalpiniaceae	Bahava	Tree	Forest Area	May-Jun	Fl
25.	<i>Coccinia grandis</i>	Cucurbitaceae	Tondari	Climber	Village	Dec-Apr	Fr
26.	<i>Carica papaya</i>	Caricaceae	Papaya	Shrub	Village , Kitchen Garden	TOY	Fr
27.	<i>Cassia occidentalis</i>	Caesalpiniaceae	Rantarota	Shrub	Foreat Area, Village	Aug-Dec	L
28.	<i>Cassia tora</i>	Caesalpiniaceae	Tarota	Shrub	Forest Area, Waste Land. Village	Aug-Dec	L, S
29.	<i>Celosia argentia</i>	Amaranthaceae	Kardu	Herb	Marshy Area	Feb- Jun	L
30.	<i>Chinopodium album</i>	Amaranthaceae	AwaliDhawali	Herb	Agricultural Field	Nov Jan	L
31.	<i>Chlorophytum tuberosum</i>	Liliaceae	Lengdabhaji	Herb	Forest Area, Agricultural Field	Jun-Sep	L
32.	<i>Colocasia esculentaL</i>	Araceae	Kochai	Herb	Kitchen Garden,Marshy Area,	Sep-Nov	L
33.	<i>CommelinabenghalensisL</i>	Commelinaceae	Kenna	Herb	Roadside ,Water Bodies	Jun-Oct	L
34.	<i>Corchorus capsularisL</i>	Tiliaceae	Chunch	Herb	Village	March May	L
35.	<i>Chorchorusaestuns</i>	Tiliaceae	JangaliLawang	Herb	Village	Aug-Oct	L
36.	<i>Costusspeciosus</i>	Zingiberaceae	Keyokand	Herb	Forest Area	Jully -Sep	L, Rh
37.	<i>Clerodendrumglandulosum</i>	Lamiaceae	Bhandira	Herb	Forest Area	July Aug	L
38.	<i>Cryptocoryneretrosipalis.roxb</i>	Araceae	Pakanbhed	Herb	River	Aug-Nov	L
39.	<i>Cucumis callosus</i>	Cucurbitaceae	Sharani	Climber	Roadside,	Aug -Sep	Fr
40.	<i>Czaaarotalariajuncea L</i>	Fabaceae	Sonboru	Shrub	Forest Area , Agricultural Field	July-Sep	L,
41.	<i>Dendrocalamusstrictus. Roxb</i>	Poaceae	Vaste	Grass	Forest Area	Jun-Oct	Sh

Table 1 : Contd.....

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42	<i>Dentella repens</i>	Rubiaceae	Kadubhaji	Herb	Marshy Area	Feb- Jun	L
43	<i>Desmodiumtriflorum</i>	Fabaceae	Ran Methi	Herb	Marshy Area	Jully -Aug	L , Fr
44	<i>Dioscoreabulbifera</i>	Diascoraceae	Dukkarkand	Climber	Forest Area, Kitchen Garden	Sep-Oct	T, L
45	<i>Dioscoria pentaphylla</i>	Diascoraceae	Shendwel	Climber	Forest Area, Kitchen Garden	July-Sep	T, L
46	<i>Diplocyclospalmatus</i>	Cucurbitaceae	Ghugarubhaj Or Gayganguri	Climber	Forest Area, Village	Aug- Feb	Sh
47	<i>Emilia sonchifolia</i>	Asteraceae	Makka	Herb	Agricultural Field,Waste Land,	TOY	L, Sh
48	<i>Ficus racemosa</i>	Moraceae	Umbar	Tree	Waste Land, Village, Roadside	Feb – July	Fr
49	<i>Ficus religiosa</i>	Moraceae	Pimpal	Tree	Waste Land, Road Side	TOY	L
50	<i>Goniocaulon indicum</i>	Asteraceae	Gattu	Herb	Field, Forest	July- Sep	L
51	<i>Lycopersicon sp.</i>	Solanaceae	Ran Bhedru	Herb	Road Side , West Land	TOY	Fr
52	<i>Hibiscus cannabinus</i>	Malvaceae	Ambadi	Shrub	Kitchen Garden	Apr-Jun	L, Fl
53	<i>Holarrhenapubescens</i>	Apocynaceae	Pandharakuda	Shrub	Forest Area	Apr-Jun	Fl, Fr
54	<i>Ipomoea aquatca</i>	Convolvulaceae	Gopan	Climber	Waste Land	July-Feb	L
55	<i>Ipomea raniformis</i>	Convolvulaceae	Bopali	Climber	Waste Land	Aug -Oct	L
56	<i>Lasia spinosa</i>	Araceae	GongalKand	Herb	Forest Area	July Aug	Rh
57	<i>Launea procumbens</i>	Astaraceae	Pathur	Herb	Waste Land	July- Sep	L
58	<i>Leea asiatica</i>	Leeaceae	Deenda	Shrub	Forest Area	March-Nov	L
59	<i>Leea macrophylla</i>	Leeaceae	Dholsamudrica	Shrub	Forest Area	Oct-Dec	L
60	<i>Limoniaacidissima</i>	Rutaceae	Kawt	Tree	Densly Forest	Aug- Dec	Fr
61	<i>Luffa aegyptiaca</i>	Cucurbitaceae	Galgale	Climbe	Roadside	Aug -Nov	Fr
62	<i>Mentha viridis</i>	Lamiaceae	Thandai	Herb	Village, Kitchen Garden	TOY	Wp
63	<i>Momordica dioica</i>	Cucurbitaceae	Katwal	Climber	Agricultural Field, Kitchen Garden	Jun-Nov	Fr
64	<i>Moringa oleifera</i>	Moringaceae	Shewga	Tree	Kitchen Garden, Roadside	TOY	L, Fr, Fl
65	<i>Mucuna pruriens</i>	Fabaceae	Kawaskusari	Climber	Forest Area, Roadside	July-Oct	Fr
66	<i>Nelumbo nucifera</i>	Nelumbonaceae	Kamal	Shrub	Pond	Aug –Oct	S ,Fr
67	<i>Olox imbricata</i>	Olaceae	Aratfari	Shrub	Forest Area	TOY	L
68	<i>Oxalis corniculata</i>	Oxalidaceae	Ambushi	Herb	Waste Land	TOY	L , Fl
69	<i>Phyllanthus niruri</i>	Phyllanthaceae	Bhuiaawala	Herb	Waste Land	Jun-Feb	L ,Fr
70	<i>Portulaca oleracea</i>	Portulacaceae	Gholbhaji	Herb	Kitchen Garden Waste Land	TOY	Wp
71	<i>Physalis minima</i>	Solanaceae	Fofundari	Herb	Roadside, Forest Boundaries	TOY	Fr
72	<i>Physalis Pubescens</i>	Solanaceae	Kapalphodi	Herb	Waste Land	Apr –May	L, Fr
73	<i>Piper pedicellatum</i>	Piperaceae	Lendipipari	Climber	Kitchen Garden	TOY	L
74	<i>Portutacaquadrifida</i>	Portulacaceae	Cheur	Herb	Kitchen Garden, Waste Land	TOY	Wp
75	<i>Semecarpus anacardium</i>	Anacardiaceae	Biba	Tree	Forest Area	Apr-May	Fl
76	<i>Sida acuta</i>	Malvaceae	Chikana	Shrub	Roadside ,	Aug-Dec.	L
77	<i>Sesbania grandiflora</i>	Fabaceae	Heti	Tree	Waste Land,	Aug -Oct	Fl
78	<i>Smilax zeylanica</i>	Smilacaceae	Sherdire	Shrub	Forest Area	July Sep	Sh, Fr
79	<i>SpilanthesAcnella</i>	Asteraceae	Akkalkand	Herb	Forest Area	TOY	L
80	<i>Theriophonumindicum</i>	Araceae	Undirkani	Herb	Waste Land	Jun-Oct	L
81	<i>Tinosporacardifolia</i>	Menispemaceae	Gulwel	Climber	West Land, Rolad Side	Jun -Aug	L
82	<i>Zanthoxylum rhetsa</i>	Rutaceae	Jondurlli	Tree	Forest Area	Aug -Sep	,Fr
83	<i>Agaricusbisporus</i>	Agaricaceae	Bamboosate	Fungi	Forest Area	Aug-Oct	Wp
84	<i>Ziziphus jujuba</i>	Rhamnaceae	Bor	Herb	Roadside, Forest Area	Nov – Feb	Fr

Edible Parts- Fr.-Fruits, L-Leaves, WP-Whole Plant, Fl.-Flower, T-Tuber, Sh.-Shoot, B Bulb, Rh- Rhizome, TOY- Throughout Year..



Fig. 3 : Ethnobotanical survey of wild vegetables used by tribal and rural people of Bhandara district, Maharashtra state, India

Critical evaluation of the literature reveals that adequate vegetable consumption can be protective for some chronic diseases such as cancer, obesity, diabetes, cardiovascular diseases, metabolic syndrome, as well as improve risk factors related with these diseases. [5] Wild Vegetables contain high quantities of vitamin C, Vit. A as well as a good amount of dietary fibres, antioxidants and phytochemicals. Several attempts have been made to list out the wild edibles of Vidarbha region of Maharashtra State [12,2,6]. Many rural parts of the world depend on wild edible plants for their food [10]. In the present study many wild vegetables are consumed for various medicinal purposes, *DioscoreaBulbifera*, *Argyreia nervosa*, *Ficus Racemosa*, *Olox imbricata*, *Momordicadioica* were commonly used to treat deadly disease diabetes. The tribal people and vaidu residing study area uses *Capparis zeylanica*, *Smilax zeylanica*, *Cassia tora*, *Moringa oleifera* for the treatment of various diseases (cancer, cardiovascular disease). The contents of the wild vegetables also protect our body against various malnutrition and nutrient disorders that is why they are called protective food [7].

RESULTS AND DISCUSSION

The results obtained from the present investigation In the present study there are around 84 species of angiosperms belonging to 40 families have been recorded (Table 1) among 42 families, the most widely utilized plant species belong to Caesalpiniaceae (6), Fabaceae (4), Araceae (7), Rutaceae ,(3)Amaranthaceae (8), Malvaceae 3, convolvulaceae (3), Cucurbitaceae(4), Solanaceae (3), followed by Moraceae, Apocynaceae, Dioscoreaceae, Nymphaeaceae, Rhamnaceae are with 2 species each, and the rest of the families with single species each. Among the 84 species 40 % plant species contribute as vegetables by leaf, 5% by seed, 6 % by root or tuber, 7 % by shoot, 6 % by flower and 7 % by whole plant (Fig. 2). While analyzing the life forms of the wild vegetable species, it was noticed that 45% species were herbs, 16% species were trees, 19% species were climbers and the remaining 19% were shrubs (Fig. 1). This study reveals that tribal and rural people living in particular areas partially depend on wild vegetables.

Conclusion :

Due to mixed forest in Bhandara Districts, there is a lot of variety in the plant. The greatest plant diversity and availability is found between July to September and

August to October, while some specific vegetables are year-round. There is a difference in the availability of the plants according to the Taluka, as Tumsar Taluka is more covered by forests, the Gond tribe lives there so they use the forest tree in their daily life, they use it as medicine and wild vegetables. His stock of knowledge should reach the urban areas. Only then will the wild vegetables and information be cultivated . So it is of the immense need to document the indigenous knowledge of wildvegetables for future generations and to encourage the peoples for cultivation of wild vegetables in their home gardens. Further research on cultivation and utilization of wild vegetables would help the tribal and rural people to have better nutrition [1].

Acknowledgement :

I am very thankful to the ruler people and forest guard from the study area for their cooperation that helped me to prepare this Research Article. Also, I am very glad for my guide Dakhane madam for her Support. Special thanks to Dr.Neha Tiple madam and Dr. OmkarGaonkar sir. I am very thankful to my sister Mlohini Chute.

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