

An ethnobotanical note on wild edible plants of Upper Eastern Himalaya, India

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Abstract. The present article deals with the documentation of tribal knowledge on wild edible plants in Upper Eastern Himalayan Region of India. In total, 269 plant species belonging to 77 families were recorded in the study area of Upper Subansiri District of Arunachal Pradesh. Dioscoreaceae, Rutaceae, Cucurbitaceae and Arecaceae were the dominant families with 16, 13, 12 and 11 plant species, respectively, while Moraceae and Asteraceae followed with 10 species each. Four major life forms were trees, shrubs, herbs and climbers. Trees made the highest proportion of the edible species (81) followed by shrubs (74), herbs (71) and climbers (37). Availability of some of these species might be a serious constraint in near future due to various anthropogenic factors. Need for undertaking vigorous environmental awareness campaign among local tribes has been stressed upon in the article for conserving this valuable biological resource of Eastern Himalayan region of India.

Keywords: Wild edible plants; *Hill Miri* Tribe; *Nyishi* Tribe; *Tagin* Tribe; *Galo* Tribe; Arunachal Pradesh.

Received
March 22, 2016

Accepted
May 11, 2016

Released
June 30, 2016



Open Access
Full Text Article



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Introduction

Arunachal Pradesh is one of the biodiversity rich states of India in terms of flora and fauna. The state is the largest one among all north eastern states of India situated in the lap of eastern Himalayan region of the country. Varied climatic, topographical and soil conditions favour high species richness and support different types of forests. Broad forest types include tropical moist deciduous, tropical semi

evergreen, tropical evergreen, subtropical, temperate and alpine forests. Recorded number of flowering plant species (>5,000) are the highest among all North Eastern states (Hegde, 2000). The state is inhabited by 28 major tribes and 110 sub tribes (Khongsai et al., 2011) who depend immensely on forest flora and fauna for their day to day needs and requirements. It is estimated that, in India about 800 species are consumed as food plants whereas the corresponding figure for north east (NE)

India is around 300. Almost all the edible plants of NE region are represented in Arunachal Pradesh (Arora, 1981; Haridasan et al., 1990).

Many research studies have been conducted on the diversity and traditional uses of wild plants from Arunachal Pradesh state, particularly on medicinal plants (Pal, 1984, 1992; Rawat et al., 1996, 1998; Tag and Das, 2004; Shankar et al., 2008, 2011, 2016; Goswami et al., 2009; Khongsai et al., 2011). Although much has been reported on ethnomedicinal aspects of plants of the region, little has been reported about the wild edible plants of the state. Keeping this aspect in view, a study was conducted as an attempt to explore and identify the wild edible plant resources and indigenous traditional knowledge about

their utilization in the Upper Subansiri district of Arunachal Pradesh during 2010-2012 by the State Forest Research Institute, Itanagar, Arunachal Pradesh. The Upper Subansiri District of Arunachal Pradesh lies in the central part of the state in between 28.5° and 28.25° latitudes N and 93.15° and 94.20° longitudes E covering a geographical area on $7,032 \text{ km}^2$ (Figure 1). The high mountain region near northern boundary of the district is generally cold as remain covered with snow almost throughout the year. The plain areas in foothills are intersected by number of water bodies mainly streams and rivers in the lap of forests (Goswami et al., 2009). The district is inhabited by three major tribes namely *Tagin*, *Hill Miri* (now *Nyishi*) and *Galo*.

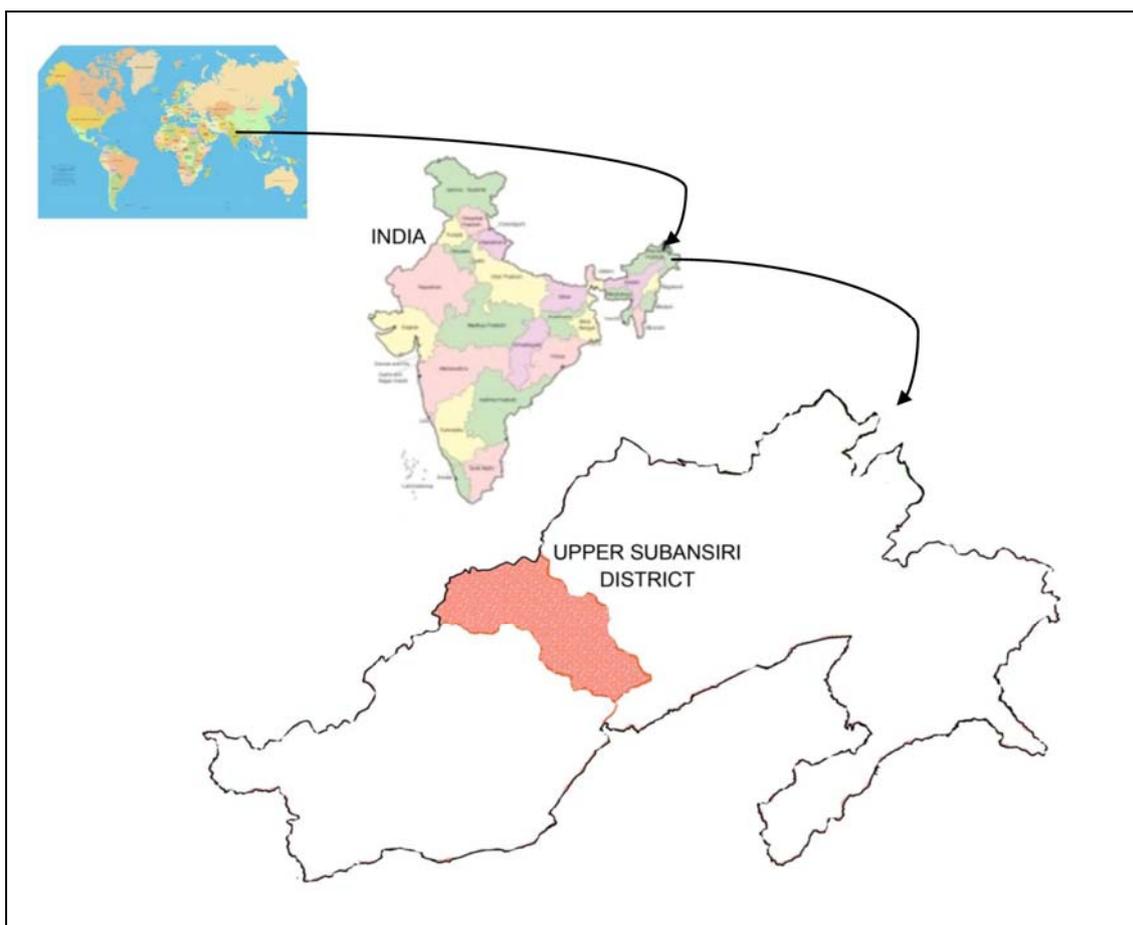


Figure 1. Location map of Upper Subansiri district, Arunachal Pradesh, India. Source: Government of Arunachal Pradesh, India. Available from: <<http://www.arunachalpradesh.gov.in>>.

Methodology

The ethnobotanical information was collected by field works/survey among aboriginal community, by study with herbaria and museum, by study of rituals, myths and folklores and through folk market survey. Tribal markets or weekly *haats* (local market) were also visited to

study the plants sold there. Maps prepared by the Directorate of Economics and Statistics, Government of Arunachal Pradesh were also consulted for identification of approaching routes and location of the select villages. The villages inhabited by the tribesmen were selected randomly for each tribe for the purpose of survey (Table 1).

Table 1. Villages covered during study in Upper Subansiri District.

S. No.	Name of the Tribe	Name of the village	Name of the circle
1	Nyshi	i) Godak	Raga
		ii) Muri Mugli	Puchi-Geko
		iii) Babla	Puchi-Geko
		iv) Don	Daporijo
		v) Dakpe	Daporijo
		vi) Ligu	Daporijo
		vii) Niji	Daporijo
		viii) Mite	Daporijo
		ix) Jigi	Daporijo
2	Tagin	i) Sippi	Giba
		ii) Manga	Giba
		iii) Taliha	Taliha
		iv) Siyum	Siyum
		v) Nacho	Nacho
		vi) Limiking	Limiking
		vii) Orak	Limiking
		viii) Reddi	Limiking
		ix) Taksing	Taksing
3	Galo	i) Dumporijo	Dumporijo
		ii) Pakka	Dumporijo
		iii) Haji	Baririjo
		iv) Maro	Baririjo
		v) Dula	Baririjo
		vi) Tapi	Baririjo
		vii) Tashi Doni	Baririjo

Results and discussion

The present investigation comprising of 269 species of plants belonging to 77 families and details like

botanical name, local name, family, parts used have been enumerated in Table 2. These species are used by the tribes as wild fruits, vegetables, beverages or in other preparations.

Table 2. Wild edible plants used by tribes of Upper Subansiri District.

S. No.	Botanical name	Local name	Family	Habit	Uses
1	<i>Griffithia fusca</i> Maingrey ex King.	Tok Schein	Annonaceae	Tree	Fruits are edible
2	<i>Cissampelos pareira</i> L. Var. <i>Linsuta</i> (Buch.Hami ex DC)	Tabo	Menispermaceae	Shrub	Fruits are edible
3	<i>Limacia oblonga</i> Miers.	Titmilie	Menispermaceae	Shrub	Fruits are edible
4	<i>Berberis asiatica</i> Roxb. ex DC	Tge	Berberidaceae	Shrub	Fruits are edible
5	<i>Berberis wallichiana</i> DC	Tipetere	Berberidaceae	Shrub	Fruits are edible
6	<i>Mohonia acanthifolia</i> G. Don.	Taming As	Berberidaceae	Shrub	Fruits are edible
7	<i>Brassica campestris</i> Linn.	Horyo	Brassicaceae	Herb	Leaves are used as vegetable
8	<i>Brassica juncea</i> L. var. <i>cuneifolia</i> (Roxb.) Kitampura	Goyu	Brassicaceae	Herb	Leaves are cooked as vegetable
9	<i>Cardamine hirsuta</i> Linn.	Goj Ao	Brassicaceae	Herb	Leaves are used as vegetable
10	<i>Stixis suaveolens</i> (Roxb.) Pierre Syn. <i>Roydosia suaveolens</i> Roxb.	Tasser tere	Cappaaridaceae	Climber	Fruits are edible
11	<i>Gypsophila cerastioides</i> D.Don.	Geeda Ao	Caryophyllaceae	Herb	Whole plant is used as vegetable
12	<i>Portulaca oleracea</i> Linn.	Tadar Ao	Portulacaceae	Herb	Whole plant is used as vegetable
13	<i>Garcinia pedunculata</i> Roxb.	Mibia	Clusiaceae	Tree	Fruits are edible
14	<i>Camellia sinensis</i> (L.) O. Ktze. Syn. <i>Thea sinensis</i> L.	Saa Schein	Theaceae	Shrub	Leaf extract is used as beverage
15	<i>Saurauia armata</i> Kurz. Syn. <i>Saurauia cerea</i> Griff.	Hero	Saurauiaceae	Tree	Fruits are edible
16	<i>Hibiscus esculentus</i> Linn.	Bhindi	Malvaceae	Shrub	Fruits are edible
17	<i>Bombax ceiba</i> Linn.	Semmul Schein	Bombacaceae	Tree	Flower buds are used as vegetable
18	<i>Sterculia guttata</i> Roxb.	Tattem Belom, Takom Belom	Sterculiaceae	Tree	Immature seeds eaten by removing pericarp
19	<i>Grewia serrulata</i> DC.	Litik	Tiliaceae	Tree	Fruits are edible
20	<i>Eleocarpus floribundus</i> Blume.	Jolphai Schein	Eleocarpaceae	Tree	Fruits are edible both raw, cooked
21	<i>Eleocarpus sphaerius</i> (Gaertn.) K.Schum.	Bhagwan tasse	Eleocarpaceae	Tree	Young immature fruits are edible
22	<i>Oxalis acetosella</i> Ls. Syn. <i>O. griffithi</i> Edgew.	Pak Huku	Oxalidaceae	Herb	Whole plant is eaten raw as well as eaten cooked

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
23	<i>Oxalis corniculata</i> Linn.	-do-	Oxalidaceae	Herb	Whole plant is edible
24	<i>Oxalis debilis</i> H.B.K. Var. <i>Corymbosa</i> (DC.) Lourt.	-do-	Oxalidaceae	Herb	Whole plant is eaten for sour taste
25	<i>Impatiens racemosa</i> DC.	Yamchu	Balsaminaceae	Herb	Leaves are used as vegetable
26	<i>Aegle marmelos</i> (L.) Correa.	Bhel	Rutaceae	Tree	Fruits are edible
27	<i>Citrus decumana</i> Linn.	Sepen Nane	Rutaceae	Tree	Fruits are edible
28	<i>Citrus excavate</i> Burm.	Sepen Nane Anye	Rutaceae	Tree	Fruits are eaten
29	<i>Citrus limeon</i> (Linn.) Bl.	Nimbu	Rutaceae	Small tree	Fruits are edible
30	<i>Citrus limetta</i> Risso.	Sepen	Rutaceae	Shrub	Fruits are edible
31	<i>Citrus medica</i> Linn.	Nanya Sepen	Rutaceae	Shrub	Fruits are edible
32	<i>Murraya koenigii</i> (L.) Spreng.	Nangken Nyibumturum	Rutaceae	Shrub	Leaves used as flavouring agent
33	<i>Murraya paniculata</i> (L.) Jack.	Nyibumturum	Rutaceae	Tree	Ripened fruits and leaves edible
34	<i>Toddalia aculeate</i> Pers. Syn. <i>T. asiatica</i> (L.) Lamk.	Tiktak Shein	Rutaceae	Shrub	Fruits are edible
35	<i>Zanthoxylum acanthopodium</i> Edgew.	Honyor	Rutaceae	Shrub	Young leaves eaten as vegetable, raw fruits also eaten
36	<i>Zanthoxylum aramatum</i> DC Syn. <i>Z. alatum</i> Roxb.	Honyar	Rutaceae	Small tree	Young leaves and fruits are eaten
37	<i>Zanthoxylum oxyphyllum</i> Edgew.	Honyor	Rutaceae	Climber shrub	Leaves used as vegetable
38	<i>Zanthoxylum rhesta</i> (Roxb.) DC.	Honyor	Rutaceae	Shrub	Leaves used as vegetable
39	<i>Canarium strictum</i> Roxb.	Schellum	Burseraceae	Tree	Fruits are edible
40	<i>Berchemia floribunda</i> (Wall.) Brongn.	Year Ao	Rhamnaceae	Shrub	Leaves are used as vegetable
41	<i>Rhamnus nepalensis</i> (Wallich) Lawson	Biringa schein	Rhamnaceae	Small tree	Fruits are edible
42	<i>Ziziphus mauritiana</i> Lam. Syn. <i>Z. jujube</i> Lam.	Bogori	Rhamnaceae	Small tree	Fruits are edible
43	<i>Ziziphus rugosa</i> Lamk.	Bogori	Rhamnaceae	Shrub	Fruits are edible
44	<i>Cissus repens</i> Lamk.	-	Vitaceae	Climber	Fruits are edible
45	<i>Leea indica</i> (Burm.f.) Merr.	Demborang Sagne	Leeaceae	Small tree	Fruits are edible
46	<i>Litchi chinensis</i> Sonnar. Syn. <i>Nephelium litchi</i> (Lour.)	Lisu, Litchi	Sapindaceae	Tree	Fruits are edible
47	<i>Turpinia pomifera</i> (Roxb.) DC.	Takre-Schein	Staphyleaceae	Tree	Fruits are edible
48	<i>Mangifera indica</i> Roxb.	Toggu	Anacardiaceae	Tree	Fruits are edible

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
49	<i>Mangifera sylvatica</i> Roxb.	Motum Toggu	Anacardiaceae	Tree	Fruits are edible
50	<i>Pegia nitida</i> Colebr. Syn. <i>Tapiniria hirusta</i>	Redin	Anacardiaceae	Shrub	Fruits are edible
51	<i>Spondias axillaries</i> Roxb.	Belam Schein	Anacardiaceae	Tree	Fruits are edible
52	<i>Spondias pinnata</i> (Linn.f.) Kurz. Syn. <i>S. mangifera</i> Willd.	Tanya Schein	Anacardiaceae	Tree	Young leaves are used as vegetable. Ripened fruits are also edible
53	<i>Moringa oleifera</i> Lamk. Syn. <i>M. pterygos perma</i> Gaertn,	Saajna	Moringaceae	Tree	Tender capsules and young leaves are used as vegetable
54	<i>Cajanus cajan</i> (L.) Syn. <i>C. indicus</i> Spring	Daal	Fabaceae	Shrub	Seeds are eaten in cooked form
55	<i>Canavalia insiformis</i> (L.) DC. Syn. <i>C. gladiata</i> (Jacq.) DC.	Hepetepei	Fabaceae	Climber	Fruits are eaten
56	<i>Codariocalyx motorius</i> (Houtt.) Syn. <i>Desmodium gyrans</i> (L.f.) DC.	Sha Dach	Fabaceae	Shrub	Leaves are boiled in water and dried, thereafter used as tea leaves
57	<i>Erythrina stricta</i> Roxb.	Tagek Schein	Fabaceae	Tree	Young tender leaves are used as vegetable
58	<i>Glycine max</i> Linn. Merr. Syn. <i>G. Soza</i> Auct. Non Sieb and Zucc.	Peayak	Fabaceae	Herb	Seeds are fermented and eaten
59	<i>Lathyrus sativus</i> Linn.	Emtor	Fabaceae	Herb	Seeds and young leaves eaten as vegetable
60	<i>Phaseolus vulgaris</i> (Beans)	Paren	Fabaceae	Climber	Pods are used as vegetable
61	<i>Bauhania purpurea</i> Linn.	Pacham	Caesalpinaceae	Tree	Young leaves and flowers are used as vegetable
62	<i>Bauhania variegata</i> Linn.	Pachem	Caesalpinaceae	Tree	Young leaves and flowers are used as vegetable
63	<i>Bauhania wallichii</i> Macbr. Syn. <i>B. macrostachya</i> non Beng.	Pachem	Caesalpinaceae	Climber	Tender leaves are used as vegetable
64	<i>Tamarindus indica</i> Linn.	Khosuk naan	Caesalpinaceae	Tree	Fruit pulp is eaten raw, used in curries
65	<i>Mitracarpus verticillatus</i> Schum. & Thom.	Talu	Mimosaceae	Herb	Young leaves and shoots are used as vegetable

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
66	<i>Parkia roxburghii</i> G.Don.	Tupum Ash Schein	Mimosaceae	Tree	Young fruits used as vegetable
67	<i>Agrimonia pilosa</i> var <i>nepalensis</i> (D.Don) Syn. <i>Agrimonia nepalensis</i> D.Don.	Tanion	Rosaceae	Herb	Leaves are used as vegetable
68	<i>Duchenea indica</i> (Andr.) Focke. Syn. <i>Fragaria indica</i>	Nenye pepror	Rosaceae	Herb	Fruits are edible
69	<i>Prunus persica</i> Linn.	Chekom	Rosaceae	Tree	Fruits are edible
70	<i>Prunus domestica</i> Linn.	Naaspai Schein	Rosaceae	Tree	Fruits are edible
71	<i>Pyrus pashia</i> D.Don.	Kean Schein	Rosaceae	Tree	Fruits are edible
72	<i>Rubus ellipticus</i> Smith.	Ta Hinch, Pop taro	Rosaceae	Shrub	Fruits are edible
73	<i>Rubus hexagnus</i> Roxb.	Ta Hinch	Rosaceae	Shrub	Leaves used as masticators
74	<i>Rubus insignis</i> Hk.f.	Pop taro	Rosaceae	Shrub	Fruits are edible
75	<i>Rubus moluccanus</i> Linn.	Taa Hich	Rosaceae	Shrub	Fruits are edible
76	<i>Hydrangea robusta</i> Hook.f.	Ao Hagmi	Hydrangeaceae	Shrub	Leaves are used as vegetable
77	<i>Terminalia chebula</i> Retz.	Bunura	Combretaceae	Tree	Fruits are edible
78	<i>Terminalia citrina</i> (Gaerther) Flim.	Hilika	Combretaceae	Tree	Fruits are edible
79	<i>Psidium guajava</i> Linn.	Modhori	Myrtaceae	Tree	Fruits are edible
80	<i>Syzygium cumini</i> (L.) Skeels.	Jamun Schein	Myrtaceae	Tree	Fruits are edible
81	<i>Syzygium fruticosum</i> DC.Syn. <i>Eugenia fruticosa</i> Roxb.	Kurak Schein	Myrtaceae	Tree	Fruits are edible
82	<i>Melastoma malabathrium</i> Linn.	Doy Oppu Yuppa Bo	Melastomataceae	Shrub	Fruits are edible
83	<i>Melastoma normale</i> D.don.	Sie-Dhasha	Melastomataceae	Shrub	Flowers and ripened fruits are edible
84	<i>Oxyspora cenua</i> (Roxb.) Hook.F.& Thomson <i>ex triana</i>	-	Melastomataceae	Shrub	Bark is removed from stem and eaten raw
85	<i>Oreocnide integrifolia</i> (Gaud.)Miq.syn. <i>Oxyspora paniculata</i> DC.	Pokeerjali	Melastomataceae	Shrub	Stem is eaten raw
86	<i>Osbeckia nepalensis</i> Hooker.	Pudrasa	Melastomataceae	Shrub	Fruits occasionally eaten by children
87	<i>Osbeckia nutans</i> Wallich ex Clarke.	Rasa	Melastomataceae	Shrub	Fruits are liked by children
88	<i>Sonerila emaculata</i> Roxb.	Jakmalo	Melastomataceae	Herb	Leaves are used as vegetable
89	<i>Sonerila masculata</i> Roxb.	Takmolo	Melastomataceae	Herb	Leaves are used as vegetable

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
90	<i>Punica granatum</i> Linn.	Anar	Punicaceae	Shrub	Fruits are edible
91	<i>Carica papaya</i> Linn.	Omita Schein	Caricaceae	Tree	Unripe fruits and flowers are used as vegetable
92	<i>Cucubita maxima</i> Duchesne in Lamk.	Tap Payo	Cucurbitaceae	Shrub	Fruits are used as vegetable
93	<i>Cucumis melo</i> Linn.	Meble	Cucurbitaceae	Shrub	Fruits are edible
94	<i>Cucurbita moschata</i> Duchesne	Tap	Cucurbitaceae	Climber	Fruits, young leaf tendrils, flowers used as vegetable
96	<i>Cucumis sativis</i> Linn.	Mukku	Cucurbitaceae	Shrub	Fruits are edible
97	<i>Cucurbita pepo</i> DC.	Loah	Cucurbitaceae	Shrub	Fruits and leaves used as vegetable
98	<i>Lagenaria vulgaris</i> Ser.	Opu,	Cucurbitaceae	Climber	Tender leaves are used as vegetable
99	<i>Luffa acutangula</i> Linn. Syn. <i>L. acutangula</i> var. <i>amara</i> Roxb.	Jhika	Cucurbitaceae	Climber	Fruits and young leaves are used as vegetable
100	<i>Luffa aegyptiaca</i> Mill.	Bhol	Cucurbitaceae	Climber	Fruits are used as vegetable
101	<i>Momordica cochinchinensis</i> (Lour.) Spreng.	Bhat Kerela	Cucurbitaceae	Climber	Fruits are used as vegetable
102	<i>Momordica charantia</i> Linn.	Khechak Kerela	Cucurbitaceae	Climber	Fruits are bitter in taste, used as vegetable
103	<i>Trichosanthes anbuina</i> Linn.	Dhunduli	Cucurbitaceae	Climber	Fruits are used as vegetable
104	<i>Trichosanthes dioca</i> Roxb.	Duli Ao	Cucurbitaceae	Climber	Fruits and leaves are used as vegetable
105	<i>Opuntia dillenii</i> How.	Tha	Cactaceae	Shrub	Fruits are edible
106	<i>Begonia palmata</i> D.Don. syn. <i>B. laciniata</i> Roxb.	Bikku yulu	Begoniaceae	Herb	Raw stem of plant is used as vegetable
107	<i>Begonia roxburghii</i> (Miq.) DC. Prodr.	Bikku yulu	Begoniaceae	Herb	Raw stem used as vegetable
108	<i>Centella asiatica</i> (L.) Urb. Syn. <i>Hodocotyle asiatica</i> L.	Nguri	Apiaceae	Herb	Leaves are used as vegetable
109	<i>Coriandrum sativum</i> Linn.	Dhania	Apiaceae	Herb	Fruits and leaves are used as spice
110	<i>Eryngium foetidum</i> Linn.	Dhaniya pat	Apiaceae	Herb	Leaves are used for flavor curry
111	<i>Oenanthe javanica</i> (Blume) DC. Syn. <i>O. benghalensis</i> (DC.) Benth. & Hook.f.	Aguhama Ao	Apiaceae	Herb	Whole plant is used as vegetable

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
112	<i>Aralia arnata</i> (G. Don) Seen	Thang Ao	Araliaceae	Tree	Leaves are used as vegetable
113	<i>Brassiopsis glomerulata</i> (Bl.) Regel. Gaertn. Syn. <i>B. speciosa</i> Deene and Planch	Tago	Araliaceae	Tree	Fruits are edible
114	<i>Mussaenda roxburghii</i> Hook. f.	Pattaa Tochar	Rubiaceae	Shrub	Young leaves and flowers eaten by Tagin tribe
115	<i>Mycetia longifolia</i> (Wall.) O. Klze. Syn. <i>Adenosacme longifolia</i> Wallich.	Tagmge	Rubiaceae	Shrub	Leaves cooked as vegetable
116	<i>Paedaria foetida</i> Linn.	Upter Nemi	Rubiaceae	Climber	Whole plant used as vegetable
117	<i>Spiradiclis bifida</i> Wallich ex Kurz.	Sokko	Rubiaceae	Herb	Boiled leaves used as vegetable
118	<i>Bidens biternata</i> (Lour) Merr. & Scherff ex Scherff. FT	Tagaem Nyenyam	Asteraceae	Herb	Young tender leaves are eaten
119	<i>Blumea fistulosa</i> (Roxb.) Kurz.	Rumdum	Asteraceae	Herb	Whole plant used as vegetable
120	<i>Blumea lanceolaria</i> (Roxb.) Druce. Syn. <i>B. myriocephala</i> DC.	-	Asteraceae	Shrub	Leaves are used as vegetable
121	<i>Crassocephalum crepidiodes</i> (Benth) Syn. <i>Gynura crepidiodes</i> Benth.	Yamen, Pakcho	Asteraceae	Herb	Leaves are used as vegetable
122	<i>Dichrocephala latifolia</i> DC.	Pechikai	Asteraceae	Herb	Tender leaves are used as vegetable
123	<i>Emilia sonchifolia</i> DC.	Genta Ao	Asteraceae	Herb	Leaves are used as vegetable
124	<i>Galinsoga parviflora</i> Cav.	Tedar Ao	Asteraceae	Herb	Whole plant is used as vegetable
125	<i>Sonchus arvensis</i> Linn.	Tok Ruru Ao	Asteraceae	Herb	Whole plant is used as vegetable
126	<i>Spilanthes oleoracea</i>	Motum Mersh	Asteraceae	Shrub	Leaves and inflorescence are used as vegetable
127	<i>Spilanthes paniculata</i> DC.	Mersha Ao	Asteraceae	Herb	Young leaves are used as vegetable
128	<i>Ardisia thyrsoiflora</i> D. Don. Syn. <i>Ardisia nerifolia</i> DC.	Tujum Aep	Myrsinaceae	Tree	Fruits are edible
129	<i>Argtreia nervosa</i> (Burm. f.) Bojer. Syn. <i>A. speciosa</i>	-	Convolvulaceae	Climber	Young shoots are used as vegetable

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
130	<i>Ipomea batatas</i> L. (Lamk.)	Eghein Phegre	Convolvulaceae	Climber	Young tendrils with leaves used as vegetable. Baked tuber also eaten
131	<i>Capsicum annum</i> Linn.	Yuluk, Yaluk	Solanaceae	Herb	Fruits are used as vegetable
132	<i>Lycopersium esculentum</i> Miller.	Tomator	Solanaceae	Herb	Fruits are used as vegetable
133	<i>Solanum melongena</i> Linn.	Bayom	Solanaceae	Herb	Fruits are used as vegetable
134	<i>Solanum nigrum</i> Linn.	Hor	Solanaceae	Herb	Fruits are eaten when ripened
135	<i>Solanum torvum</i> Swartz.	Shoat Beyak	Solanaceae	Shrub	Fruits are edible
136	<i>Solanum tuberosum</i> Linn.	Alu	Solanaceae	Herb	Tuber is used as vegetable
137	<i>Physalis peruviana</i> L.	Donam As	Solanaceae	Herb	Fruits are edible
138	<i>Boeica filiformis</i> C.B.Clarke	Jookey	Gesneriaceae	Shrub	Leaves are used as vegetable
139	<i>Boeica fulva</i> C.B.Clarke	Joke Ao	Gesneriaceae	Herb	Leaves are used as vegetable
140	<i>Rhynchosyche ellipticum</i> (Wallich ex Dietr.) A.DC.	Jooke	Gesneriaceae	Shrub	Leaves are used as vegetable
141	<i>Phlogacanthus thyrsoiflorus</i> Nees.	Pilamola	Acanthaceae	Shrub	Red flowers are used as vegetable
142	<i>Strobilanthes furcatus</i> Biswas	Barche Ao	Acanthaceae	Shrub	Leaves and young shoots are edible
143	<i>Callicarpa macrophylla</i> Vahl.	Upneu	Verbenaceae	Shrub	Fruits are edible
144	<i>Callicarpa vestita</i> Wall. ex Cl	Yalu	Verbenaceae	Shrub	Dried stem is used as substitute for tobacco
145	<i>Clerodendron colebrookianum</i> Walp.	Tippin	Verbenaceae	Shrub	Leaves are used as vegetable
146	<i>Clerodendron serratum</i> (Linn.) Moon.	Tipin potu	Verbenaceae	Shrub	Leaves are used as vegetable
147	<i>Clerodendron viscosum</i> Vent. Syn. <i>C. infortunatum</i> Gaertn.	Taapin	Verbenaceae	Shrub	Flowers are used as vegetable
148	<i>Gmelina arborea</i> Roxb.	Gomori Schein	Verbenaceae	Tree	Flowers are used as vegetable
149	<i>Premna milleflora</i> C.B.Clarke.	-	Verbenaceae	Tree	Fruits and leaves are edible
150	<i>Ajuga macrosperma</i> Wall.	Nomdemghor	Lamiaceae	Herb	Whole plant is used as vegetable
151	<i>Mentha piperata</i> Linn. Emend. Huds.	Pudina	Lamiaceae	Herb	Leaves are used in salad and making chutni

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
152	<i>Perilla frutescens</i> (L.) Britt.	Tanam	Lamiaceae	Shrub	Seeds are used as spice ingredient
153	<i>Plantago erosa</i> Wall. Syn. <i>P. major</i> Linn.	Talak Ao	Plantaginaceae	Herb	Leaves are used as vegetable
154	<i>Amaranthus gangeticus</i> Linn.	Data Ao	Amaranthaceae	Herb	Whole plant is used as vegetable
155	<i>Amaranthus spinosus</i> Linn.	Puchu Panya	Amaranthaceae	Herb	Leaves are used as vegetable
156	<i>Amaranthus viridis</i> Linn.	Detta Ao	Amaranthaceae	Herb	Leaves are used as vegetable
157	<i>Celosia argentea</i> Linn.	-	Amaranthaceae	Herb	Leaves are used as vegetable
158	<i>Chenopodium album</i> Linn.	Teya Ao	Chenopodaceae	Herb	Leaves are used as vegetable
159	<i>Chenopodium ambrosioides</i> Linn.	Teya	Chenopodaceae	Herb	Leaves are used as vegetable
160	<i>Fagopyrum dibotrys</i> (D. Don.) Trev. Syn. <i>F. cymosum</i>	Hukku	Polygonaceae	Herb	Leaves are used as vegetable
161	<i>Fagopyrum esculentum</i> Moench.	Hukku, Hukkung	Polygonaceae	Herb	Leaves are used as vegetable
162	<i>Polygonum auriculatum</i> Meissn. Syn. <i>P. chinense</i> var. <i>ovalifolium</i> Meissn.	Torckumbuk	Polygonaceae	Herb	Fruits are edible
163	<i>Polygonum posumbu</i> Ham.	Namne Ao	Polygonaceae	Climber	Leaves are used as vegetable
164	<i>Polygonum runcinatum</i> Ham.	Puri	Polygonaceae	Herb	Leaves are used as vegetable
165	<i>Rumex nepalensis</i> Spring	Yalak Ao	Polygonaceae	Herb	Leaves are used as vegetable
166	<i>Piper betle</i> Linn.	Pan	Piperaceae	Climber	Leaves are eaten with Areca nut
167	<i>Piper nigrum</i> Linn.	Jaluk	Piperaceae	Shrub	Fruits are used as spice
168	<i>Piper pedicellosum</i> Wall.	Rer	Piperaceae	Shrub	Leaves are used as vegetable
169	<i>Houttunzia cordata</i> Thumb.	Checha Peya	Saururaceae	Herb	Raw leaves are used as vegetable and chatni
170	<i>Chloranthus glaber</i> (Thumb.) Makino Syn. <i>C. brachystachya</i> Blume.	Tupu Tal	Chloranthaceae	Shrub	Fruits are edible
171	<i>Cinnamomum tamala</i> (Buch-Ham.) Nees & Ebern.	Tesh patta	Lauraceae	Tree	Leaves are used as spice
172	<i>Cinnamomum zeylanicum</i> Brea.	Dalchini	Lauraceae	Tree	Bark is used as spice
173	<i>Litsea cubeba</i> (Lour) Pers. Syn. <i>L. citrata</i> Bl.	Teer, Tayir Schein	Lauraceae	Tree	Fruits are edible

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
174	<i>Litsea salicifolia</i> (Roxb. ex Nees) Hk.f.	Taor	Lauraceae	Tree	Fruits are edible
175	<i>Persea frutifera</i> Kost. Syn. <i>Machilus edulis</i> King ex Hk.f.	Techir Shein	Lauraceae	Tree	Fruits are edible
176	<i>Phoebe lanceolata</i> (Nees) Nees.	Sichir Schein	Lauraceae	Tree	Fruits are edible
177	<i>Elaeagnus latifolia</i> Linn.	Hari	Elaeagnaceae	Shrub	Fruits with sour taste are eaten
178	<i>Baccaurea sapida</i> (Roxb.) Muell.	Bheri Aash	Euphorbiaceae	Tree	Fruits are edible
179	<i>Baliosperum calycinum</i> Muell-Arg.	-	Euphorbiaceae	Tree	Leaves are cooked as vegetable
180	<i>Baliosperum montanum</i> (Willd.) Muell.Arg. Syn. <i>B. axillana</i>	Pririya	Euphorbiaceae	Shrub	Leaves are used as vegetable
181	<i>Euphorbia hirta</i> Linn.	Tamu Ao	Euphorbiaceae	Herb	Leaves are used as vegetable
182	<i>Mallus roxburghii</i> Muell.	Tuy Tya	Euphorbiaceae	Shrub	Fruits are edible
183	<i>Manihot esculenta</i> Crantz.	Sida Eighein	Euphorbiaceae	Shrub	Leaves and tubers are used as vegetable
184	<i>Phyllanthus emblica</i> L. Hk. f.	Amlaki Schein	Euphorbiaceae	Tree	Fruits are edible
185	<i>Elatostema platyphyllum</i> Wedd.	Hoj Ao	Urticaceae	Shrub	Leaves are used as vegetable
186	<i>Elatostema sessile</i> Frost.	Jooke	Urticaceae	Herb	Leaves are used as vegetable
187	<i>Laportea crenulata</i> Gaud.	Pud Raate	Urticaceae	Shrub	Young leaves used as vegetable
188	<i>Pilea bracteosa</i> Wedd.	Guge	Urticaceae	Herb	Leaves used as vegetable
189	<i>Pilea glaberrima</i> Bl. Syn. <i>P. smilacifolia</i> Wedd.	Guge Ao	Urticaceae	Herb	Leaves are used as vegetable
190	<i>Pouzolzia bennetiana</i> Wight.	Huyiek	Urticaceae	Climber	Leaves are used as vegetable
191	<i>Pouzolzia sanguine</i> (Bl.) Merr.	Tanu	Urticaceae	Shrub	Leaves are used as vegetable. Tubers used as pig feed
192	<i>Pouzolzia sanguine</i> (Bl.) Merr. var. <i>fulgens</i> (Wedd.) Syn. <i>P. viminea</i> Wedd. var. <i>fulgens</i> Wedd.	Tanu Nanya	Urticaceae	Tree	Leaves are used as vegetable. Tubers are used as pig feed
193	<i>Bischofia javanica</i> Blume.	Tag Schein	Bischofiaceae	Tree	Young leaves are used as vegetable

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
194	<i>Artocarpus chama</i> Buch. Syn. <i>A. chaplasha</i> Roxb.	Tak Sam Shein	Moraceae	Tree	Fruits are edible
195	<i>Artocarpus heterophyllus</i> Lam. Syn. <i>A. integrifolius</i> non L.	Tak Bela	Moraceae	Tree	Fruits are edible
196	<i>Artocarpus lakoocha</i> Roxb.	Bela Ninye Schein	Moraceae	Tree	Fruits are edible. Bark is chewed with pan (Betel)
197	<i>Conocephalus suaveolens</i> non Blume	Hogen Ao	Moraceae	Climber	Young tender leaves used as vegetable
198	<i>Ficus auriculata</i> Lour. Syn. <i>F. roxburghii</i> Wall.	Takuk	Moraceae	Tree	Fruits are edible
199	<i>Ficus elastica</i> Roxb.	Sherak, Sangri	Moraceae	Tree	Fruits are edible
200	<i>Ficus fistulosa</i> Reinw.	Mobopu	Moraceae	Shrub	Fruits are edible
201	<i>Ficus squamosa</i> Roxb. Syn. <i>F. saemocarpa</i> Miq.	Talagi	Moraceae	Tree	Fruits are edible
202	<i>Morus alba</i> Linn.	Latek Schein	Moraceae	Tree	Fruits are edible
203	<i>Morus indica</i> Linn.	Latek	Moraceae	Tree	Fruits are edible
204	<i>Juglans regia</i> Linn.	Akrod	Juglanadaceae	Tree	Fruits are edible
205	<i>Castanopsis indica</i> (Roxb.) A. DC.	Hinguri	Fagaceae	Tree	Fruits are edible
206	<i>Castanopsis lancifolia</i> (Roxb.) Hockel & A. Camus. Syn. <i>C. lancifolia</i>	Tain	Fagaceae	Tree	Fruits are edible
207	<i>Castanopsis tribuloides</i> (Smith) A. DC.	Tain Tha	Fagaceae	Tree	Fruits are edible
208	<i>Quercus griffithii</i> Hook f. & Thoms.	Kra	Fagaceae	Tree	Fruits are edible
209	<i>Quercus lamellose</i> Smith.	Khora Niddum	Fagaceae	Tree	Fruits are edible
210	<i>Alpinia nigra</i> (Gaertn.) Burt. Syn. <i>A. allughas</i> (Retz.) Rosc.	Doyak	Zingiberaceae	Herb	Fruits are edible
211	<i>Amomum aromaticum</i> Roxb.	Khobu Telli	Zingiberaceae	Herb	Seeds are used as spice
212	<i>Amomum subulatum</i> Roxb.	Mutum Khobu Telli	Zingiberaceae	Herb	Seeds are used as spice
213	<i>Curcuma longa</i> Linn.	Kaya Haldi	Zingiberaceae	Herb	Rhizomes are used as spice
214	<i>Hedychium coccineum</i> J.E. Smith.	Aemmi Pekchi	Zingiberaceae	Herb	Young tender stem is used as vegetable

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
215	<i>Hedychium spicatum</i> Lodd.	Telli	Zingiberaceae	Herb	Fruits are edible
216	<i>Zingiber officinale</i> Rose.	Take	Zingiberaceae	Herb	Rhizomes are used as spice
217	<i>Phrynium capitatum</i> Willd.	Khokam	Marantaceae	Shrub	Leaves used as packing material for preparation process of traditional drinks
218	<i>Phrynium imbricatum</i> Roxb.	Kokam Kumpu	Marantaceae	Shrub	As above
219	<i>Ensete glaucum</i> (Roxb.) Syn. <i>Musa glauca</i> Roxb.	Kudum	Musaceae	Small tree	Fruits are edible
220	<i>Musa acuminata</i> Colla. Syn. <i>M. sanguinea</i> Hook .f.	Kulu	Musaceae	Small tree	Fruits are edible
221	<i>Musa bulbisiana</i> Colla. Syn. <i>M. sapientum</i> auct non L.	Kopa	Musaceae	Small tree	Fruits and inner soft stem are edible
222	<i>Musa paradisiacal</i> Linn.	Nyepak Ao- Kopak	Musaceae	Small Tree	Unripe fruits used as vegetable
223	<i>Musa velutina</i> Wendl.	Anye Kodok Kolok	Musaceae	Small Tree	Roots and seeds are edible
224	<i>Molineria recurvata</i> Dryland. Syn. <i>Curculigo recurvata</i> Dryland.	Doyak	Hypoxidaceae	Herb	Fruits are edible
225	<i>Dioscorea alata</i> Linn.	Eghen Ngencha	Dioscoreaceae	Climber	Tubers are edible
226	<i>Dioscorea belophylla</i> (Prain) Voigt	Eghen Tabon	Dioscoreaceae	Climber	Tubers are edible
227	<i>Dioscorea bulbifera</i> Linn.	Helak	Dioscoreaceae	Climber	Tubers are edible
228	<i>Dioscorea deltoidea</i> Wall ex. Griseb	Eghen Ngenki	Dioscoreaceae	Climber	Tubers are edible
229	<i>Dioscorea glabra</i> Roxb.	Eghen Ngentak	Dioscoreaceae	Climber	Tubers are edible
230	<i>Dioscorea hamiltonii</i> Hook. f.	Eghen Raad	Dioscoreaceae	Climber	Tubers are edible
231	<i>Dioscorea laurifolia</i> Wall	Eghen Ngegek	Dioscoreaceae	Climber	Tubers are edible
232	<i>Dioscorea melanophylla</i>	Hash	Dioscoreaceae	Climber	Tubers are edible
233	<i>Dioscorea oppositifolia</i> Linn.	Eghen Take- Mare	Dioscoreaceae	Climber	Tubers are edible
234	<i>Dioscorea orbiculata</i> Hook	Eghen Yeb	Dioscoreaceae	Climber	Tubers are edible
235	<i>Dioscorea pentaphylla</i> Linn.	Hill	Dioscoreaceae	Climber	Tubers are edible

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
236	<i>Dioscorea purpurea</i> Roxb.	Eghen Ngenchu Puyur	Dioscoreaceae	Climber	Tubers are edible
237	<i>Dioscorea pyrifolia</i> Kunth	Eghen Ngenro	Dioscoreaceae	Climber	Tubers are edible
238	<i>Dioscorea spicata</i> Roth	Eghen Ngenchi	Dioscoreaceae	Climber	Tubers are edible
239	<i>Dioscorea wallichii</i> Hook. f.	Eghen Ngeyuk	Dioscoreaceae	Climber	Tubers are edible
240	<i>Dioscorea wightii</i> Hook. f.	Eghen Ngebuk	Dioscoreaceae	Climber	Tubers are edible
241	<i>Allium cepa</i> Linn.	Talap	Liliaceae	Herb	Whole plant is used as spice
242	<i>Allium hookeri</i> Thwaites.	Nyishi Talap	Liliaceae	Herb	Bulb is used as spice
243	<i>Allium sativum</i> Linn.	Lohsum-	Liliaceae	Herb	Bulb is used as spice
244	<i>Asparagus racemosus</i> Willd.	-	Liliaceae	Shrub	Tuber and whole plant has diuretic and cooling properties
245	<i>Pollia hasskarlii</i> Rao Syn. <i>P. acilisa</i> Hassk.	Nipobapak	Commelinaceae	Herb	Fruits are edible
246	<i>Areca catechu</i> Linn.	Tamol	Arecaceae	Tree	Fruits are used as masticator
247	<i>Calamus erectus</i> Roxb.	Tare	Arecaceae	Shrub	Young and soft stem is edible
248	<i>Calamus flagellum</i> Griff.	Tar Rame	Arecaceae	Cane	Fruits are edible
249	<i>Calamus latifolius</i> Roxb.	Takat	Arecaceae	Cane	Fruits are edible
250	<i>Calamus tenuis</i> Roxb.	Ter Remme	Arecaceae	Cane	Fruits are edible
251	<i>Daemonorops jeinkinsianus</i> Griff.	Raidang	Arecaceae	Cane	Fruits are edible
252	<i>Livistona jenkinsiana</i> Griff.	Taak	Arecaceae	Tree	Fruits and tender stem are edible
253	<i>Pinnanga gracilis</i> (Roxb.) Bl.	Taecher	Arecaceae	Tree	Fruits are edible
254	<i>Wallichia densiflora</i> Mart.	Tache	Arecaceae	Tree	Stem is used to extract a flour which is used as famine food
255	<i>Wallichia disticha</i> T. Anders	Tali	Arecaceae	Tree	Fruits are eaten
256	<i>Zalacca secunda</i> Griff	Ra	Arecaceae	Tree	Fruits are edible
257	<i>Colocasia antiquorum</i> Schott Melet	Takche Reba	Araceae	Herb	Tubers, stem and leaves are used as vegetable
258	<i>Colocasia affinis</i> Schott.	Nyepop	Araceae	Herb	As above
259	<i>Colocasia fallax</i> Schott	Nygek	Araceae	Herb	As above

Table 2. Continued.

S. No.	Botanical name	Local name	Family	Habit	Uses
260	<i>Colocasia esculenta</i>	Nyepu yulu	Araceae	Herb	As above
261	<i>Cyperus rotundus</i> Linn.	Ei	Cyperaceae	Herb	Roots are chewed by children due to sweet taste
262	<i>Dendrocalamus hamiltonii</i> Nees et Arn.	Ae	Poaceae	Bamboo	Young tender shoots are eaten
263	<i>Dendrocalamus giganteus</i> Munro	Ae Hatee	Poaceae	Bamboo	As above
264	<i>Panicum milaceum</i> Linn.	Tai	Poaceae	Herb	Seeds are eaten
265	<i>Saccharum spontaneum</i> Linn	Teppi	Poaceae	Shrub	Young tender stem is eaten
266	<i>Setaria italic</i> Beav.	Tayak	Poaceae	Herb	Leaves used for making local beverage
267	<i>Zea mays</i> Linn	Top	Poaceae	Tall herb	Maize corns used as staple food and in local beverage
268	<i>Selaginella bififormis</i> Br. ex Kuhn.	Husum Ao	Selaginellaceae	Herb	Stem and leaves are used as vegetable
269	<i>Dillenia indica</i> Linn	Jampa	Dilleniaceae	Tree	Fruits are edible

From the ethno botanical survey, it was noted that tribes were consuming the edible plants in raw or cooked form. The plant parts used were fruits, leaves, tubers, whole plant, stem/bark, seeds and flowers in descending order (Figure 2). The fruits of 121 species are eaten as raw and sometimes made in to salads or pickles. Leaves of 84 species are used as vegetables.

Trees made the highest proportion of edible species followed by shrubs, herbs, climbers in descending order (Figure 3).The

time and frequency of collecting various plants varied from plant to plant depending upon their availability. Sometimes more than one part of the species is edible like both leaves and fruits are edible in *Spondias pinnata*, *Luffa acutangula*; seeds and young leaves are edible in *Lathyrus sativus*; young leaves, pods and flowers are edible in *Bauhinia purpurea*, *B. variegata*; fruits, young leaf tendrils and flowers are eaten in *Cucurbita moschata*; leaves and tubers are edible in *Manihot esculenta*; tubers, stem and leaves are edible in *Colocasia antiquorum*.

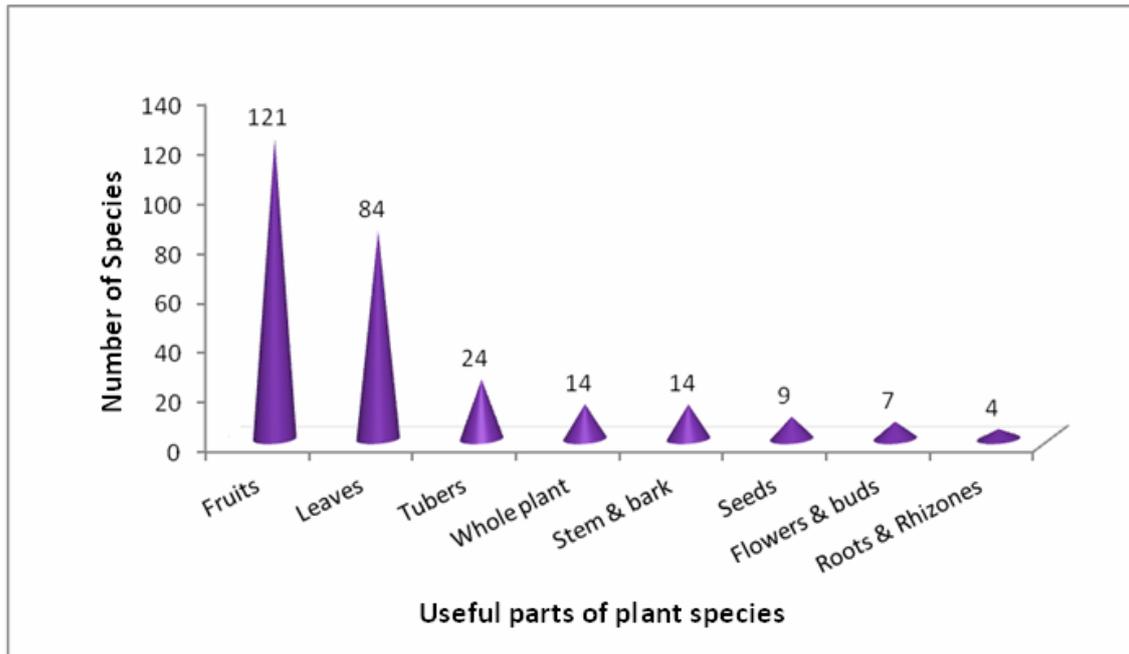


Figure 2. Useful part wise analysis.

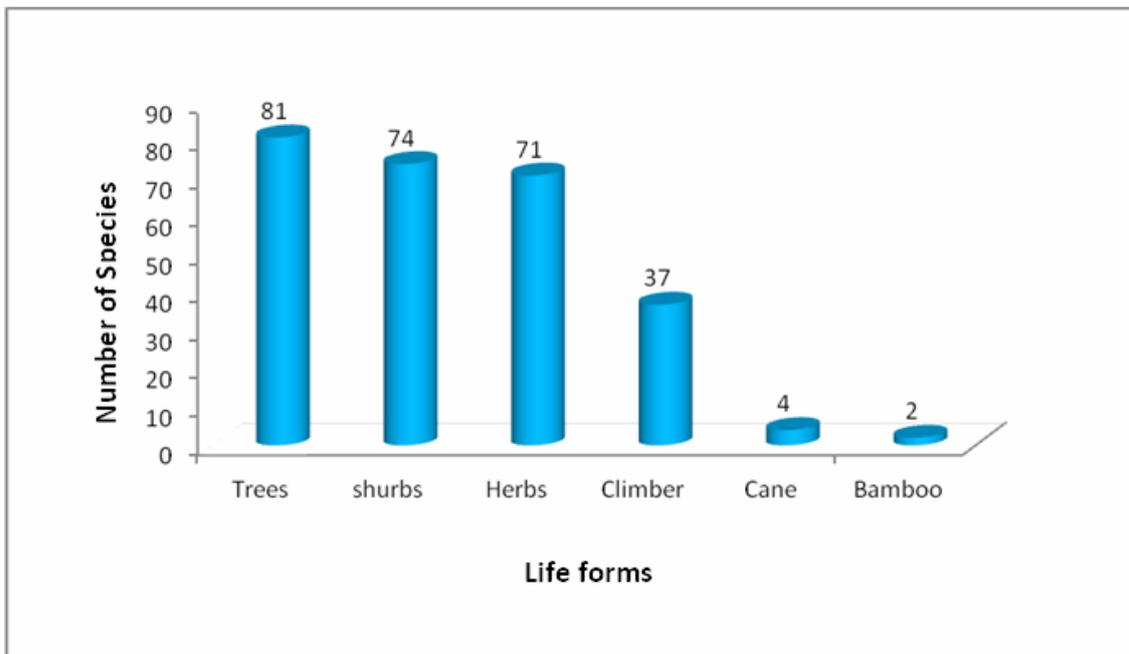


Figure 3. Life form-wise Ethno botanical analysis.

Conclusion

The discussions with local people revealed that the wild edibles were being used as common household foods and make

a substantial contribution to food security of the tribes of the region. Therefore necessary steps should be taken to assess the nutritional value of these plant species/parts to serve as a direct or indirect

source of food to the local people (Tiwari et al., 2010). There is ample scope for improving the growth forms of wild edible species by using latest agronomic research and experimental cytogenetical studies (Yesodharan and Sujana, 2007). It was commonly noticed during survey that many of the wild food may not be available in plenty as of now due to various reasons mainly over exploitation, habitat destruction, forest fires, encroachments and invasion of exotic plant species. Wherever possible, efforts should be made to bring some of them under cultivation in order to maintain regular supply. Therefore awareness must be created among the indigenous communities stressing the need of conserving rich biodiversity, especially plants of ethnobotanical importance. The Government agencies must support the conservation measures of biodiversity by the indigenous groups. The conservation policies should be based on the recognition of indigenous people's right to conservation. The effective system of community right and benefit sharing mechanism are needed at local level, which will provide incentives for indigenous people for managing, conserving and using biological resources in sustainable manner.

Conflict of interest statement

Authors declare that they have no conflict of interests.

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