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Wild edible flowering plants of the Illam Hills (Eastern Nepal) and their mode of use by the local community.

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ABSTRACT: The Illam district, situated in the extreme North Eastern part (Latitude 26.58N and 87.58E Longitude) of Nepal, is a hot spot for floral diversity. The study of wild edible plants of this region was an attempt to highlight the types of wild flowering plants found there and mode of use by the people of the Illam hills. In this respect, a survey of natural resources of some of the representative regions of the district was undertaken and more than 74 major varieties of plant species were found to be used frequently by the people of the hills. The rich diversity occurring in Dioscoriaceae, Moraceae, Rosaceae, Myrtaceae, Poaceae, Urticaceae and Arecaceae provided the wild angiospermic species commonly used by the people of the hills.

Keywords: Natural resources, wild edible, flowering plants, Illam hills

Nepal is endowed with a wide range of agro-ecological zones, large variations in climatic and physiographic conditions, which have resulted in a rich flora (Olsen, 1998). Forest is the most important asset that provides the basic necessities and the second major source of Nepal's income after agriculture. The country is considered rich in genetic resources of plant species. Recently, Bhuju et al. (2007) have reported about 6,666 species of flowering plants in Nepal. According to Chaudhary (1998), Nepal shares more than 2% of world's flowering plants, while its land area comprises no more than 0.1%. In case of fruit crops, 45 species belonging to 37 genera are reported as wild edible fruits by Kaini (1994).

Illam district is situated on the extreme North Eastern part (Latitude 26.58N and 87.58E Longitude) of Nepal. It is surrounded by Sikkim boarder (India) on the North, West Bengal boarder (India) on the East and on the West and South there are Panchther and Jhapa districts of Nepal respectively. The district has a total area of about 1703 sq. km. The climate of Illam generally is of moderate type but during winter it is quite cold in the Northern side. The maximum summer temperature ranges between 22–25°C and winter temperature falls below 10°C and some times even drop down to 0°C. Rainfall occurs mostly in summer between the months of May and September. Due to this wide array of climatic zones, the district is a hot spot for diversified vegetation.

This district is equipped with a wide range of agro-ecological zones and conditions, and most of the people of Illam inhabit in rural areas and are farmers. Moreover, these rural people of Illam hills are blessed with a deep knowledge concerning the use of wild plants which are consumed at times of drought and other hardship. Elders and other knowledgeable community members are the key sources of plant lore. As such, wild-food consumption is very common in rural areas of the hill. Wild edible plant products consists of a variety of plants of which leafy and tender parts of stalks, fruits, berries, seeds, roots, tubers and corns are mainly used for consumption. These plant products have been used since pre-historic times by the aboriginal people, as a food, as well as traditional medicines (Singh, 1968). Therefore, forest resources play an important role in the life of the rural people for their food, medicine, fodder, fuel, etc.

The reason to initiate a study on wild-edible plants was to document indigenous knowledge on wild-foods to identify and understand better the importance of wild-food plants in the livelihood of the rural people of the district. This paper supplements the minor details of some of those economically important wild edible angiospermic plants of the Illam hills of Nepal.

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Method

Regular field trips in different areas of Illam hills during the year 2002–2003 were conducted to investigate the wild edible plants used by the rural people. The people of different age groups were interviewed and investigated. The identification, vernacular names and information regarding their mode of use was recorded with the help of village elders. Likewise, local market survey also helped to draw data uses, food values, demands and preferences. The investigated plants were identified with the help of the references of Bajracharya (1980), Hooker (1878), Hara (1966), Kitumura (1955), Kaini (1999), Mall et al. (1982), Manandhar (2002), Shrestha (1984), and Singh (1968).

Results and Discussion

The study in the district revealed that about 74 varieties of plant species of which leafy and tender parts of stalks, pseudo-stems, fruits, berries, seeds, roots and tubers are mainly used for consumption. Table 1 shows the detail of commonly available wild

Table 1. List of wild edible flowering plants found in the Illam Hills of Nepal and mode of use.

No.	Taxon	Family	Nepali name and habit	Edible parts and mode of use
1	*Aconogonum molle*	Polygonaceae	Thotney (Tree)	Young shoots used for curry and pickle
2	*Anthocephalus cadamba*	Rubiaceae	Kadam (Tree)	Seed are roasted and the oil is consumed
3	*Antidesma acidum*	Euphorbiaceae	Archal (Tree)	Ripen fruits are consumed
4	*Arisaema erubescens*	Araceae	Gurbe (Herb)	Shoots used as curry after pilling and Corn is eaten after repeated boiling
5	*Arundinaria maling*	Poaceae	Malingo (Herb)	Young shoots used as curry and pickle
6	*Atrocarpus lakoocha*	Moraceae	Barar (Tree)	Used as a fruit and vegetable (raw fruits)
7	*Bassia butyracea*	Sapotaceae	Chiwree (Tree)	Fruits pulp is used as juice and seed is used as culinary purpose
8	*Bauhinia vahlii*	Fabaceae	Bhorla (Herb)	Seeds are roasted and consumed
9	*Bauhinia purpurea*	Caesalpiniaceae	Tanki (Tree)	Only shoots are used as vegetable curry
10	*Begnonia inflata*	Bignoiaceae	Magarkachey (Herb)	Shoot and leaves are used to make pickle and jam
11	*Betula cylindrostachys*	Betulaceae	Saur (Tree)	Bark is chewed as a substitute of betel nut
12	*Castanopsis hystrix*	Fagaceae	Katoos (Tree)	Fruits (nut) are roasted and consumed
13	*Castanopsis indica*	Fagaceae	Dhalnae Katoos (Tree)	Fruits (nut) are roasted and consumed
14	*Caryota urens*	Arecaceae	Rangbhang (Tree)	Inner core pith and terminal bud cooked as vegetable
15	*Chenopodium album*	Chenopodiaceae	Bethusaag (Herb)	Young twigs are used as vegetable
16	*Choerospondias axillaris*	Anacardiaceae	Lapsee (Tree)	Semi-ripen fruits are used for pickle and jam
17	*Cinnamomum tamala*	Lauraceae	Tejpat (Tree)	Leaves are used as condiment
18	*Cinnamomum obtusifolium*	Lauraceae	Sinkauli (Tree)	Whole plant use as condiments
20	*Citrus decumina*	Rutaceae	Sankatra (Shurb)	Fruits are used to make jam and pickles
21	*Dendrocalamus hamiltonii*	Poaceae	Tama (Herb)	Young shoot used as curry and pickle called “Meso”
22	*Dioscorea oppostitifolia*	Dioscoriaceae	Gidha (Herb)	Tuber is boiled, pilled and consumed
22	*Dioscorea hamiltoni*	Dioscoriaceae	Bantarul (Herb)	Tuber and root is boiled and eaten after peeling
23	*Docynia indica*	Rosaceae	Mail (Tree)	Fruits are consumed, made jam and pickle
24	*Elaeocarpus sikkimensis*	Eleocarpaceae	Bhadrasey (Tree)	Fruits pulp and seeds are eaten
25	*Emblica officinalis*	Euphorbiaceae	Amala (Tree)	Fruits are used as pickles and also use as a medicine
26	*Eugenia kurzii*	Myrtaceae	Ambakay (Tree)	Fruits pulps are consumed
27	*Ficus semicordata*	Moraceae	Khanyu (Tree)	Underground fruits are eaten
28	*Ficus hookeriana*	Moraceae	Nebharo (Tree)	Fruits thalamus, receptacles are commonly consumed
29	*Ficus benghalensis*	Moraceae	Bar (Tree)	Young shoots and ripen fruits are eaten
30	*Ficus lacor*	Moraceae	Kabra (Tree)	Fresh unopened leaf buds are boiled in water and used as pickle
31	*Fragaria nubicola*	Rosaceae	Bhui aiselu (Shurb)	Fruits (berry) are consumed after ripening
32	*Myrica esculenta*	Myricaceae	Kafal (Tree)	Ripen fruits are consumed
33	*Girardinia diversifolia*	Urticaceae	Bhangray Sisnu (Herb)	Inflorescence and young leaves are used as vegetable, soup and medicine in high blood pressure
34	*Gynocordia odorata*	Flacourtiaceae	Gante (Tree)	Ripen seeds are roasted and oil is extracted for consumption
35	*Heracleum wallichii*	Umbelliferae	Chimphing (Herb)	Inflorescence used as pickle and seeds are used as medicine during influenza
36	*Horsefieldia kingii*	Myrsticaceae	Ramgua (Tree)	Fruit are used to make jam and pickle
37	*Ilex hookeri*	Liliaceae	Lise (Tree)	Ripe fruits are consumed
38	*Juglans regia*	Juglandaceae	Okhar (Tree)	Fruits (kernel) are consumed
39	*Magnifera sylvatica*	Anacardiaceae	Chuchche Aanp (Tree)	Ripe fruits are used for sour pickle
40	*Mechilus edulis*	Lauraceae	Lapchephal (Tree)	Fruits are eaten raw

Table 1. Continued.

No.	Taxon	Family	Nepali name and habit	Edible parts and mode of use
41	*Moringa oleifera*	Moringaceae	Sajana (Tree)	Flowers and fruits are used to make curry
42	*Morus indica*	Moraceae	Kimbu (Tree)	Berries are used to make jam, jellies and drinks
43	*Musa bulbisiana*	Musaceae	Bankera (Herb)	Green fruits used as vegetable after boiling and Spathe for pickle
44	*Musa sapientum*	Musaceae	Bankera (Herb)	Green fruits used as vegetable after boiling and spathe for pickle
45	*Nasturtium officinale*	Cruciferae	Shimrayo (Herb)	Whole plant parts are used for vegetable and medicine for body ache
46	*Oroxylum indicum*	Bignoniaceae	Totala (Tree)	The flowers and pods are used as vegetable and medicine (anti-helminthes)
47	*Oxalis corniculata*	Oxalidaceae	Chariamilo (Herb)	Leaves are cooked and used as curry
48	*Pandanus nepalensis*	Pandanaceae	Tarika (Tree)	Fruits are used to make pickle
49	*Persicaria runcinata*	Polygonaceae	Ratnaulo (Herb)	Whole plant parts are used to make vegetable
50	*Pentapanax leschenaultii*	Araliaceae	Chinde (Tree)	Tender leaves after boiling are used as curry
51	*Phoenix syhestrix*	Arecaceae	Thakal (Tree)	Soft piths are eaten raw
52	*Phoenix acaulis*	Arecaceae	Betgera (Tree)	Raw fruits are used to make vegetable curry
53	*Phyllostachys edulis*	Poaceae	Kattabans (Herb)	Young shoots are used to make curry and pickles
54	*Prinsepia utilis*	Rosaceae	Phekray (Tree)	Seed oil is consumed
55	*Prunus cerasoides*	Rosaceae	Paiyon (Tree)	Ripened fruits are consumed
56	*Rhododendron arboreum*	Ericaceae	Gurash (Tree)	Flowers are eaten raw, or make local wine (Raksi), jam and cold drink
57	*Rhus semialata*	Anacardiaceae	Bhakimlo (Tree)	Fruits are boiled in hot water to isolate sour vinegar like liquid and used in pickles
58	*Rubus foliolosus*	Rosaceae	Kalo Aiselu (Herb)	Fruits are consumed and prepare jam
59	*Rubus ellipticus*	Rosaceae	Pahelo Aiselu (Herb)	Fruits are consumed and prepare jam
60	*Rubus acuminatus*	Rosaceae	Rato Aiselu (Herb)	Fruits are consumed and prepare jam
61	*Rumex nepalensis*	Polygonaceae	Halhaley (Herb)	Young shoots and leaves are cooked as curry
62	*Sapindus detergens*	Sapindaceae	Rittha (Tree)	Fruits are used for oil extraction and consumed
63	*Smilax zeylanica*	Smilacaceae	Kukurdainy (Herb)	Leaves and shoots are used as curry after boiling
64	*Solanum indicum*	Solanaceae	Bihi (Herb)	Raw and ripe fruits are eaten as vegetabl
65	*Spondias Magnifera*	Anacardaceae	Anara (Tree)	Flowers are made curry and used for flavoring
66	*Syzygium operculatum*	Myrtaceae	Khyamuna (Tree)	Fruits are consumed after ripening
67	*Syzygium jambolanum*	Myrtaceae	Jamuna (Tree)	Fruits are used to make jam, jellies and vinegar
68	*Syzygium aromaticum*	Myrtaceae	Kusum (Tree)	Fruits pulp parts and aerial succulent parts are consumed
69	*Trichosanthes palmata*	Cucurbitaceae	Indreyni (Herb)	Tender shoots are used for vegetable
70	*Urtica dioica*	Urticaceae	Sishnu (Herb)	Inflorescence and young leaves are used for vegetable, soup and medicine
71	*Urtica parviflora*	Urticaceae	Sishnu (Herb)	Inflorescence and young leaves are used for vegetable, soup and medicine
72	*Viburnum erubescens*	Caprifoliaceae	Asarey (Tree)	Ripe fruits are eaten raw
73	*Wallichia disticha*	Palmae	Thakal (Tree)	Fruits and Pith are consumed raw
74	*Woodfordia fruiticosa*	Lythraceae	Dhangera (Herb)	Honey like secretion of flowers is consumed

edible plants used for food among the rural people of the district. Researches have shown that *Nasturtium officinale* (Simrayo), *Urtica* spp. (Sisnu), *Dendrocalamus* spp. (Tama), *Ficus lacor* (Kabro), *Rhododendron spp.* (Guras), *Spondias magnifera* (Anara), *Chenopodium album* (Bethu) are used almost year around and are very popular for their leafy vegetable, shoots and flowers. Among the roots and tubers, *D. hamiltoni* (Bantarul) and *D. oppositifolia* (Githa) are also very popular in the rural community. Likewise, wild fruits gain its great influence especially to the children. The commonly used and popular fruits belonging to the family Rosaceae, Moraceae, Myrtaceae, Poaceae, Urticaceae, Arecaceae, Dioscoreaceae, Anacardiaceae and Musaceae are *Rubus* spp.(Aaiselu), *Emblica officinale* (Amala), *Ficus benghalensis* (Bar), *Atrocarpus lakoocha* (Barar), *Bassia butyraceae* (Chiwere), *Megnifera sylvatica* (Chucheaap), *Syzygium jambolanum* (Jamuna), *Castanopsis* spp. (Katoos), *Morus indica* (Kimbu), *Syzygium aromaticum* (Kusum), *Syzygium operculatium* (Kyamuna), *Choerospondias axillaris* (Lapse), *Docynia indica* (Mail), *Ficus hookeriana* (Nebaroo), and *Oroxylum indicum* (Thakal) which serves direct substitute of foods to the people during harsh condition. Besides this, some of the plant products such as tubers of *Dioscorea hemiltoni*, flower of *Oroxylum indicum* and *Juglans regia* are culturally linked with the people of the hills. Among the consumed plants species, most of them are found in the local market throughout the year in the season. However, some of the wild foods due to scare availability are consumed locally and doesn't reach the market.

Conclusion

It is evident form the study that the rural people of Illam hills consumed considerable amount of wild plants that makes a major contribution to dietary intake to the people during the times of food shortage. Hence, the consumption of wild plants is a necessary part of the strategies adopted by the people in order to survive in a harsh and unfavorable environment. However, the innocent rural people have very little knowledge about the nutritional value or about the possible toxic effects that can cause due to prolonged consumption of wild non domesticated plant. Therefore, further steps should be taken for the research on the nutritional values and their positive and negative effects on the health of the consumers.

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