



Wild edible plant species in patch vegetations of Jorhat district, Assam, India

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Abstract

Wild edible plant species and their traditional uses were studied in 32 numbers of patch vegetation of Jorhat district, Assam. A total of 119 wild edible plant species were recorded under 57 families, which includes tree, shrubs, climbers and herbs. Among them 18 and 95 plant species comes under monocots and dicots respectively. Four (4) species were recorded under Pteridophytes, whereas Gymnosperm was represented by *Gnetum genemon* only. Of the total 119 edibles plants species recorded for human consumption, 44 were trees, 19 shrubs, 12 climbers and 43 herbs. Moreover, 41 plants species were identified as birds food plant and 38 plant species for animals food and fodder. The villagers of the district use to collect the wild edible plant species from their nearest patch vegetations traditionally, among them 73 species were eaten as vegetables, 41 species as fruits, 2 species as edible seeds and nuts. Barks of 2 species were used as substitute of beetle nuts. Among these wild edibles 56 plant species were recorded for traditional medicine against different ailment.

Keywords: Patch vegetation, Wild edible plants, Medicinal plants, Birds food and fodder.

Introduction

Plant species of a particular landmass play significant role to shape the life, culture and wellbeing of human societies and prime representatives of the environment and biodiversity through ages. The different types of plants like herbs, shrubs and trees are used by human society as food, fiber, medicine, timber, construction materials, and fuel wood and also for many other socio-cultural uses. Apart from this, the plant species of the patch vegetation have a key role in maintaining biodiversity providing food, fodder and shelter to animals, bird etc. This vegetation may be considered as luxurious habitat for rare, endangered, threatened and endemic species. They also play essential role in carbon sequestration. Wild edibles are locally available plant species used by the societies based on their traditional ecological knowledge¹.

The vulnerable populations of wild edible plant species are more significantly and adversely affected by climate events². Several reports depicted that tribal communities often use wild edibles as food supplement or alternative food source during their food deficient periods of the year³⁻⁵. The wild edibles are also reported as rich sources of vitamins, enzymes, minerals and medicine for the stock of compounds in different parts of the plant^{6,7}. In a compilation published 350 species of Angiosperms and 12 species of Pteridophytes from different localities of Assam⁸. Many other researchers reported use of available resources of wild edible plants from different states of the country including the Northeast India⁹⁻¹¹.

In Assam, wide varieties of genetic resources from wild plants to cultivated crops covering most areas of the Brahmaputra

valley is a rich area of plant biodiversity. Most of the villages have some small fragmented forest area ranging from 0.3 to 0.5 hectare under personal land holdings locally called the *kathonibari* (woodland). *Kathonibari* are unique land use of the villagers and can be termed as 'patch vegetation'. These forest areas are part of original natural forests being fragmented and transformed by the villagers to homesteads.

These patch vegetations are still shelter many valuable trees, shrubs, climbers and epiphytes including a wide variety of food plants. A reasonable numbers of species are used by the people as wild food plants available in their surrounding patch vegetation. There are several reports that villagers of different communities are normally used these wild food plants, available in the forest areas, crop lands, patch vegetations, and wetlands as seasonal or traditional food^{12,13}. These wild edible plants available in the patch vegetations play a significant role in restoring health and nutritional requirements of rural community.

The villagers use the different parts of these locally available wild edible plants on basis of their indigenous knowledge and recorded 373 plant species of 109 families of 27 villages of Assam which were being domesticated from the natural forests and utilized for food, fodder, medicinal, spices, aromatic and essential oil, fibers, dyes, beverage, pesticides yielding species, timber, fuel wood, handicraft items, ornamental and aesthetic etc¹⁴.

Moreover, the nature and ecology of such patches with multi-species composition are not only unique to scenic beauty of villages but also considered as the repository of rich biodiversity

with variety of wild animals, birds, insects, soil microbial flora and fauna. Due to increase of population in rural area land use pattern found to be changed and in this context the patch vegetations are now under threat. Many of the valuable plant species of this vegetation type are disappearing with time. Therefore, it has become necessary to focus the contribution of wild edible plants of patch vegetations for health and nutrition of rural communities.

Conservation such vegetation as bioresources for the human as well as birds and other animals may also be an important area of study. Keeping in view of the role of the patch vegetation which may be an ideal habitat of wild edible plant species, this study was carried out to survey and documentation of edible plant species available in patch vegetations of Jorhat District, Assam.

Materials and methods

Study area: The study areas belong to Jorhat district, Assam and is situated between latitude 25°49' and 27°17'N and longitude 93°18' and 95°26' E in the bank of river Brahmaputra. Total area of the district is 2851 sq. km with a population of 354 persons/sq km. The dominant livelihood option of the district is agriculture with about 84.7 per cent of rural population.

The district is surrounded by Lakhimpur district towards north, Sivasagar district towards east, the state Nagaland towards south and Golaghat district towards west. The south-west monsoon is prevailing climate of the district with minimum annual temperature 9°C and maximum up to 40°C. The district is experienced with an average rainfall 2244 mm. The seasonal calendar is divided into four seasons - cold winter, pre-monsoon summer, rainy and post monsoon season. The summer temperature of the district ranges from 15°C to 28°C and the range of winter temperature is from 7°C to 18°C. The types of vegetation of the district are the tropical moist deciduous, tropical semi evergreen and a small area of tropical wet evergreen in the eastern side. The river Brahmaputra controls the watershed system of the district with some other tributaries flowing throughout its middle position and also created the River Island Majuli.

The district can be divided into three regions - the northern flood prone area widespread throughout the river bank of the Brahmaputra, the southern highland area along the foothills of Naga-patkai range and in middle the central zone. The numbers wetlands with area between 50 to 200 ha are 10 and below 50 ha are 100. The district has about 25000 ha of land under tea cultivation. Field visits were carried out to different areas of Jorhat district during April, 2014 to February 2015. Edible plant species from 32 patch vegetations in village area of the district namely Shyamdeuri, Gayangaon, Garurajbari, Karatipar, Nikinikhwa, Mekhali, Upper deuri, Nam deuri, Namgorumora, Kakolimukh, Tamulichiga, Rajabari, Jhangimukh, Sotai, Meleng, Hatigarh, Kakojan, Hologapara, Borbamchungi, Jalukoni, Balijan, Rangajan, Thangalgaon, Lahing, Boloma,

Selenghat, Pokamura, Charaibahi, Dhalajan and Chalikhowa were studied. The communities near the study patch vegetations were Ahom, Adibashi, Brahman, Chutia, Deauri, Kalita, Keot, Koch, Kaibarta, Mishing, Muslim, Thangal Kachari and some other castes. Peoples such as with cultivators and house wives and other elderly persons of each villages of the study sites were interviewed through standard questionnaire and information on the availability and conventional uses of wild edible plant resources were collected. The vernacular names of the food plants, the parts used and methods of preparation of food items were also recorded. The edible plant species were collected for preparation of herbarium and consulted the local floras for their identification^{15,16}. The collected herbaria were deposited at herbarium collection of Rain Forest Research Institute, Sotai, Jorhat, Assam.

Results and discussion

The wild edible plants recorded from patch vegetations of the district come under the broad groups Angiosperms, Gymnosperms and Pteridophytes. The data collected from different area of the district showed that all together 119 plants under 57 families were used by the villagers of different communities as wild edibles (Table-1).

The different parts of the food plants like the tender shoots, leaves, flowers, fruits, tubers and barks are widely used for edible purpose. Out of the total 119 wild edible species recorded 73 were eaten as vegetables mainly as curry or in fried form, fruits of 41 species eaten as raw or ripe, seeds of 2 species were eaten as nuts and barks of 2 species used as substitute of beetle nuts. Euphorbiaceae family showed highest edible species (7) followed by Moraceae with 6 species among the angiosperms. The families Ameranthaceae, Cluciceae and Rubiaceae have 5 edible species. Likewise, the families Arecaceae, Asteraceae, Rosaceae, Verbenaceae had 4 species and Araceae, Myrtaceae, Polygonaceae, Piperaceae, Solanaceae had 3 species. Four (4) species of pteridophytes under 3 families Blechnaceae, Marseliaceae and Woodsiaceae were recorded as edible (Table-1). The Monocotyledons and Dicotyledons were represented by 18 and 95 species respectively. The only edible gymnosperm recorded was *Gnetum gnemon*.

The vernacular names for the species, its edible parts and the other information were recorded and mentioned in the Table-1. Of the total edibles plants recorded, 44 were trees, 19 shrubs, 12 climbers and 43 herbs were found. Among the herbs, 7 species were aquatic in nature and distributed in the marshy areas of patch vegetation. In another study reported 244 species of wild edibles from different areas of Assam¹⁷. In an extensive study of published literatures it was reported that of the total plant species of the state nearly 7.34 percent are wild edibles⁴. Similar study was conducted and recorded for 101 species of edible plants of different area of Assam that have been used in *Rangali Bihu* festival¹⁸.

Table-1: Wild edible plants recorded from patch vegetations of Jorhat district, Assam.

| Scientific name | Family | Vernacular name | Habit | Parts used as edibles | Other uses | Used by |
|---|---------------|-----------------|---------|--|--|--------------|
| <i>Alternanthera sessilis</i> (L.) R Br. | Amaranthaceae | Matikaduri | Herb | Whole plant as vegetables. | As medicine for stomach trouble | C |
| <i>Alternanthera philoxeroides</i> (Mart)Griseb. | Amaranthaceae | Panikaduri | Herb | Whole plant as vegetables | As fodder for cattle. | C |
| <i>Alpinia nigra</i> (Gaertn.) Burtt. | Zingiberaceae | Tora | Shrub | Tender leaves as vegetables. | Fruits, rhizome as medicine, leaf sheath for making ropes for cattle. | 2, 5, 10, 12 |
| <i>Amaranthus spinosus</i> L. | Amaranthaceae | Hati khutora | Herb | Tender shoots as vegetables | As antidote to snake bite, as fodder to milk giving cows. | C |
| <i>Amaranthus viridis</i> L. | Amaranthaceae | Khutora | Herb | Tender shoots as vegetables. | As antidote to snake bite. | C |
| <i>Amorphophallus paeoniifolius</i> (Dennst) Nicolson | Araceae | Ol kachu | Herb | Corm, peduncle and inflorescence as vegetables. | The corm as medicine against piles. | C |
| <i>Antidesma acidum</i> Retz. | Euphorbiaceae | Abutenga | Tree | Ripe fruits as raw, tender leaves, shoot as vegetables | Leaves as medicine against snake bite. | C |
| <i>Antidesma bunias</i> (Linn.) Spreng. | Euphorbiaceae | Pani helos | Tree | Ripe fruits as raw. | Leaves as medicine against snake bite. | C |
| <i>Antidesma ghaesembilla</i> Gaertn. | Euphorbiaceae | Helos | Tree | Ripe fruits as raw. | - | C |
| <i>Ardisia thyrsoiflora</i> D. Don. | Myrsinaceae | Tolotha poka | Shrub | Ripe fruits as raw. | Bark as antidote to snake bite. | C |
| <i>Artocarpus chama</i> Buch.-Ham. | Moraceae | Sam kothal | Tree | Ripe fruits as raw. | Wood as timber for house , furniture, agricultural implements | C |
| <i>Artocarpus heterophyllus</i> Lamk. | Moraceae | Kothal | Tree | Ripe fruit as raw, young fruits as vegetables. | Wood as timber for furniture, house, musical instruments; leaves as fodder | C |
| <i>Artocarpus lacucha</i> Buch.-Ham. | Moraceae | Bohot | Tree | Bark is chewed with betel nut. | Wood as timber for house and furniture making | C |
| <i>Baccaurea ramiflora</i> Lour. | Euphorbiaceae | Letekoo | Tree | Ripe fruit as raw | Wood as timber for making traditional rice husking device | C |
| <i>Bambusa balcooa</i> Roxb. | Poaceae | Bholuka bah | Tree | Tender shoots as vegetables, pickle | Stem in house making, furniture, fencing, fire wood | C |
| <i>Bischofia javanica</i> Bl. | Euphorbiaceae | Uriam | Tree | Tender shoots as vegetables | Wood as timber for house making, fuel wood, bark as dye | 5,10 |
| <i>Bombex ceiba</i> L . | Bombaceae | Simalu | Tree | Flowers and unripe fruits as vegetables | Cotton from mature fruits for making mattress and pillow, wood as timber, bark as medicine, flowers as fodder, wood as minor timber. | 5, 9, 10 |
| <i>Calamus tenuis</i> Roxb. | Arecaceae | Jati bet | Climber | Tender shoots as vegetables | Stem for making furniture, household articles. Tender | C |

| Scientific name | Family | Vernacular name | Habit | Parts used as edibles | Other uses | Used by |
|--|-----------------|-----------------|---------|---|--|---------|
| | | | | | shoots as medicine for worms. | |
| <i>Callicarpa arborea</i> Roxb. | Verbenaceae | Bonmola | Tree | Bark as substitute of betel nut | Leaves, barks as medicine against mouth diseases. | 2,12 |
| <i>Carallia lucida</i> Roxb. | Rhizophoraceae | Mahithekara | Tree | Ripe fruits as raw | Wood as timber for making traditional rice husking implement, house making, fire-wood. | C |
| <i>Caryata urens</i> L. | Arecaceae | Sewa | Tree | Seeds as raw | Stem as water channels in traditional houses. Seed pericarp is use for asthma | C |
| <i>Cassia fistula</i> L. | Caesalpiniaceae | Sonaru | Tree | Pulp of fruit as raw | Wood as timber in house construction; pulp from fruit medicine for liver trouble, piles. | C |
| <i>Centella asiatica</i> (L.) Urban. | Apiaceae | Manimuni | Herb | Leaves, young shoots as vegetables | Whole plant as medicine for stomach trouble. | C |
| <i>Chrysophyllum lanceolatum</i> (Bl.) DC. | Sapotaceae | Bonpitha | Tree | Ripe fruits as raw | Wood as timber for house construction, furniture making. | C |
| <i>Citrus medica</i> L. | Rutaceae | Joratenga | Shrub | Mesocarp, juice of fruit as raw | - | C |
| <i>Clerodendrum glandulosum</i> Coleb.ex Wall. | Verbenaceae | Nefafoo | Shrub | Tender leaves, shoots as vegetables. | Leaves as medicine against blood pressure. | C |
| <i>Coccinia grandis</i> (L.) Voigt. | Cucurbitaceae | Belipoka | Climber | Fruits as raw or ripe | - | C |
| <i>Colocasia esculanta</i> (L.) Schoot. | Araceae | Panikachu | Herb | Tender leaves, petiole as vegetables | Whole plant as fodder. | C |
| <i>Commelina benghalensis</i> L. | Commelinaceae | Konasimolu | Herb | Tender shoots as vegetables | Latex from stem applied in eye disease. | C |
| <i>Costus speciosus</i> (Koen ex Retz.) Sm. | Costaceae | Jomlakhuti | Herb | Young shoots as vegetables, stem as raw | Rhizome as medicine against jaundice. | 2 |
| <i>Crassocephalum crepidioides</i> (Benth.) S. Moore | Astereceae | Bon kopahi | Herb | Leaves, tender shoot as vegetables | - | C |
| <i>Deeringia amaranthiodes</i> (Lamk) Meer. | Amaranthaceae | Methokthoka | Climber | Tender leaves, twigs as vegetables | - | C |
| <i>Dendrocalamus hamiltonii</i> Nee and Arn. | Poaceae | Kakobah | Tree | Young shoots as vegetables | Stem in house making, furniture, fencing and fire wood. | C |
| <i>Dillenia indica</i> L. | Dilleniaceae | Outenga | Tree | Fleshy sepals as vegetables, pickles | Fire wood, pulp of fruits in hair wash. | C |
| <i>Dioscorea bulbifera</i> L. | Dioscoriaceae | Gothia alu | Climber | Tubers as vegetables | Tuber as medicine for piles, dysentery. | C |
| <i>Dioscorea pentaphylla</i> L. | Dioscoriaceae | Pasoptia alu | Climber | Tuber as vegetables | Tuber as medicine for piles, dysentery. | C |

| Scientific name | Family | Vernacular name | Habit | Parts used as edibles | Other uses | Used by |
|---|-----------------|-----------------|------------|---|--|---------|
| <i>Diplazium asperum</i> Bl. | Woodsiaceae | Dhekiasak | Herb | Tender leaves as vegetables | - | C |
| <i>Diplazium esculentum</i> (Retz.) Sw. | Woodsiaceae | Dhekiasak | Herb | Tender leaves as vegetables | - | C |
| <i>Duchesnea indica</i> (Andr.) Focke. | Rosaceae | Goru khis | Herb | Ripe fruits are eaten as raw | Fodder for cattle. | C |
| <i>Drymaria diandra</i> Bl. | Caryophyllaceae | Laijabori | Herb | Tender leaves, shoots as vegetables | The whole plant as medicine for stomach, nasal problems. | C |
| <i>Eclipta alba</i> L. | Asteraceae | Kehraj | Herb | Tender leaves as vegetables | The inflorescence as medicine for wounds inside mouth, liver. | C |
| <i>Elaeocarpus floribundus</i> Bl. | Elaeocarpaceae | Jalpai | Tree | Ripe fruits as jams, pickles | Fire wood. | C |
| <i>Ficus auriculata</i> Lour. | Moraceae | Mou dimoru | Tree | Ripe fruits as raw | Fire wood. | 5, 10 |
| <i>Ficus hispida</i> Vahl | Moraceae | Katjia dimoru | Tree | Tender leaves and shoots as vegetable | Fire wood, Leaves as fodder for cattle. | 5,10 |
| <i>Ficus racemosa</i> L. | Moraceae | Mou dimoru | Tree | Ripe fruits as raw | Fire wood. | C |
| <i>Flacourtia jangomas</i> (Lour.) Raeusch. | Flacourtiaceae | Ponial | Tree | Ripe fruits as jams and pickles | Wood for making handles for household and agricultural implements. | C |
| <i>Garcinia pedunculata</i> Roxb. | Cluciaceae | Borthekara | Large tree | Flashy fruits as raw, acidifying agent for curry, pickles | As timber for house making, traditional rice husking implements, fire wood. | C |
| <i>Garcinia cowa</i> Roxb. | Cluciaceae | Kuji thekara | Tree | Ripe fruits as raw and dry | Wood as timber for making traditional houses, sliced dry fruits as medicine for stomach trouble. | C |
| <i>Garcinia kydia</i> Roxb. | Cluciaceae | Kuji thekara | Tree | Ripe fruits as raw and dry | Wood as timber for making traditional houses, sliced dry fruits as medicine for stomach trouble. | C |
| <i>Garcinia sopsopia</i> (Buch.-Ham.) Mabblerley. | Cluciaceae | Sosopatenga | Tree | Ripe fruits as raw or unripe fruits as pickles | Wood as timber for making traditional houses | C |
| <i>Garcinia xanthochymus</i> Hk.f. | Cluciaceae | Teportenga | Tree | Ripe fruits as raw or cooked with other vegetables. | Wood as timber for making traditional rice husking implement, latex from bark for preparation of dye | C |
| <i>Glycosmis arborea</i> (Roxb.) Corr. | Rutaceae | Sauldhua | Shrub | Ripe fruits as raw. | Bark as medicine in pneumonia | C |
| <i>Gnetum gnemon</i> L. | Gnetaceae | Majarguti | Shrub | Tender leaves shoots as vegetables, ripe fruits as raw | - | 12 |
| <i>Grewia sapida</i> Roxb. | Tiliaceae | Soura | Shrub | Ripe fruit as raw. | Extract from fruits for hair wash, leaves as fodder | 2 |

| Scientific name | Family | Vernacular name | Habit | Parts used as edibles | Other uses | Used by |
|---|----------------|-----------------|-------|--|---|---------|
| <i>Hedyotis diffusa</i> Willd. | Rubiaceae | Bonjaluk | Herb | Leaves, tender shoots, flowers as vegetables | The whole plant as medicine for stomach trouble | C |
| <i>Houttuynia cordata</i> Thunb. | Saururaceae | Moshundari | Herb | Young plant as vegetables. | The whole plant as medicine for stomach trouble, Dysentery | C |
| <i>Hydrocotyle sibthorpioides</i> Lamk. | Apiaceae | Soru manimuni | Herb | Young plant as vegetables. | The whole plant as medicine for stomach trouble | C |
| <i>Ipomoea aquatica</i> Forsk. | Convolvulaceae | Kalmou | Herb | Tender shoots as vegetables. | Juice made from the plant as medicine for jaundice, urinary trouble | C |
| <i>Kaempferia galanga</i> L. | Zingiberaceae | Gathion | Shrub | Leaves as raw vegetables. | Rhizome in marriage functions | 4 |
| <i>Lasia spinosa</i> (L.) Thw. | Araceae | Sengmora | Herb | Tender leaves with petiole as vegetables. | Leaves and roots as medicine for piles, menstrual problems | C |
| <i>Leucas plukenetii</i> (Roth.) Spreng. | Lamiaceae | Durun | Herb | Tender shoots and leaves as vegetables. | Leaves as appetizer, stomach trouble, flower with honey to cure cough | C |
| <i>Licuala peltata</i> Roxb. | Arecaceae | Jengu | Herb | Fruits as raw. | Leaves in making traditional umbrella (<i>japi</i>) | C |
| <i>Livistonia jenkinsiana</i> Griff | Arecaceae | Tokow | Tree | Seed as raw. | Leaves as material for roofing, making traditional umbrella (<i>Japi</i>), fans. Stem in house making | C |
| <i>Mangifera indica</i> L. | Anacardiaceae | Aam | Tree | Ripe fruits as raw, premature fruits as pickle | Wood for house making, furniture, other parts as fuel wood | C |
| <i>Marselia quadrifolia</i> L. | Marseliaceae | Pani tengeshi | Herb | Tender shoot, leaves as vegetable | - | 9,10 |
| <i>Melastoma malabathricum</i> L. | Melastomaceae | Phutkala | Shrub | Ripe fruits as raw | As fire wood | C |
| <i>Meyna spinosa</i> Roxb. | Rubiaceae | Kotkora | Tree | Ripe fruits as raw | Young shoots as medicine for amoebic dysentery | C |
| <i>Monochoria hastata</i> (L.) Solms. | Pontederiaceae | Sorumetaka | Herb | Inflorescence as vegetable | Roots as medicine for stomach trouble, toothache | C |
| <i>Murraya koenigii</i> (L.) Spreng. | Rutaceae | Norosingho | Shrub | Leaves as vegetable | Leaves as medicine for stomach trouble, vomiting | C |
| <i>Nelumbo nucifera</i> Gaertn. | Nelumbonaceae | Podum | Herb | Root stock as vegetable, young seed as raw | Leaves as medicine in fever, roots for stomach trouble | C |
| <i>Neolamerckia cadamba</i> (Roxb) Bosser | Rubiaceae | Kadam | Tree | Recepticular head as vegetable | Wood as timber | C |
| <i>Nymphaea nouchali</i> Burm. f. | Nympheaceae | Bhat | Herb | Root stock, pedicle as vegetable, seed as raw | Powdered roots as medicine for diarrhea, piles and skin diseases | C |

| Scientific name | Family | Vernacular name | Habit | Parts used as edibles | Other uses | Used by |
|--|---------------|-----------------|---------|---|--|---------|
| <i>Nymphaea pubescens</i> Willd. | Nymphaeaceae | Bhat | Herb | Root stock, pedicle as vegetable, seed as raw | Powdered roots as medicine for diarrhea, piles and skin diseases | C |
| <i>Hedyotis diffusa</i> Willd. | Rubiaceae | Bonjaluk | Herb | Leaves, tender shoots, flowers as vegetable | The whole plant as medicine for stomach trouble | C |
| <i>Oroxylum indicum</i> (L.) Vent. | Bignoniaceae | Bhatghila | Tree | Tender leaves, shoot, flowers as vegetable | Bark as medicine for stomach trouble, dysentery | C |
| <i>Oxalis corniculata</i> L. | Oxalidaceae | Sorutengacha | Herb | Whole plant as acidifying agent | Extract from the plant as medicine for dysentery, appetizer | C |
| <i>Paederia foetida</i> L. | Rubiaceae | Bhadai lota | Climber | Tender shoots, leaves as vegetable | Leaves as medicine for stomach trouble, kidney, appetizer | C |
| <i>Paederia scandens</i> (Lour.) Merr. | Rubiaceae | Bhadai lota | Climber | Tender shoots, leaves as vegetable | Leaves as medicine for stomach trouble, kidney, appetizer | C |
| <i>Phlogocanthus thyriformis</i> (Hardow.) Mabb. | Acanthaceae | Titaphul | Shrub | Flower as vegetable | Flowers and leaves as medicine for worm, cough, asthma. | C |
| <i>Phlogocanthus tubiflorus</i> Nees. | Acanthaceae | Titaphul | Shrub | Flower as vegetable | Flowers and leaves as medicine for worm, cough, asthma. | C |
| <i>Phyllanthus fraternus</i> Webster. | Euphorbiaceae | Bonamlakhi | Herb | Whole plant as vegetable | Juice of young shoots as medicine for dysentery, jaundice. | C |
| <i>Phyllanthus urinaria</i> L. | Euphorbiaceae | Matiamlakhi | Herb | Whole plant as vegetable | Juice of young shoots as medicine for dysentery, jaundice and urinary trouble. | C |
| <i>Polygonum chinense</i> L. | Polygonaceae | Modhu suleng | Herb | Leaves, tender stem as acidifying agent | - | C |
| <i>Polygonum microcephalum</i> D. Don | Polygonaceae | Modhu suleng | Herb | Leaves, tender stem as acidifying agent | - | C |
| <i>Polygonum perfoliatum</i> L. | Polygonaceae | Bagh achur | Herb | Leaves, tender stem as acidifying agent | - | C |
| <i>Portulaca oleracea</i> L. | Portulacaceae | Malbhug khutora | Herb | Shoots as vegetables | - | C |
| <i>Premna latifolia</i> Roxb. | Verbenaceae | Gohora | Tree | Tender shoots and leaves as vegetables with pork. | As fire-wood | 10 |
| <i>Prunus jenkinsii</i> Hk.f. and Th. | Rosaceae | Thereju | Tree | Ripe fruit as raw. | Wood for making handles for household implements. | C |
| <i>Piper sylvaticum</i> Roxb. | Piperaceae | Auni pan | herb | Leaves with betel nut | Mature influences as medicine for liver and urinary trouble. | 5,10 |

| Scientific name | Family | Vernacular name | Habit | Parts used as edibles | Other uses | Used by |
|---|------------------|-----------------|---------|---|---|----------|
| <i>Piper longum</i> L. | Piperaceae | Pipoli | Herb | Inflorescence as spice | Inflorescence as medicine for cough. | 5,10 |
| <i>Rubus alceifolius</i> Poir. | Rosaceae | Jatulipoka | Herb | Ripe fruits as raw | - | C |
| <i>Rubus ellipticus</i> Sm. | Rosaceae | Bor Jatulipoka | Herb | Ripe fruits as raw | Roots as medicine in pneumonia. | C |
| <i>Sarcochlamys pulcherrima</i> Gaud. | Urticaceae | Mesaki | Shrub | Young shoots, leaves as vegetable | As fire wood. | 1, 2, 12 |
| <i>Saurauia roxburghii</i> Wall. | Saurauiaceae | Bon pochala | Tree | Ripe berry as raw | Leaves as fodder. | 1, 2,12 |
| <i>Scoparia dulcis</i> L. | Scrophulariaceae | Mithapat | Herb | Tender shoot as vegetable | Whole plant for making vodka, root and leaves as medicine for pneumonia, blood dysentery. | C |
| <i>Smilex zeylanica</i> L. | Smilacaceae | Tikonibaruah | Climber | Tender shoots as vegetable | Roots as medicine in rheumatic and other pains. | C |
| <i>Solanum nigrum</i> L. | Solanaceae | Pokmou | Herb | Young shoots as vegetable | Fruits as medicine for fever, eye disease, liver, piles, roots for asthma | C |
| <i>Solanum torvum</i> Sw. | Solanaceae | Hati bhekuri | Herb | Fruits as vegetable | Seeds as medicine for enlarged spleen. | C |
| <i>Solanum anguivi</i> Lamk. | Solanaceae | Bhakuri tita | Shrub | Fruits as raw or vegetable | Fruits as appetizer, roots for toothache, asthma, colic pain, cough, skin diseases | C |
| <i>Spondias pinnata</i> (L.f.) Kurz. | Anacardiaceae | Amora | Tree | Tender leaves, fruit as vegetable | Fruits, barks as medicine for stomach trouble, dysentery. | C |
| <i>Spilanthes paniculata</i> Wall. ex DC. | Asteraceae | Suhoni | Herb | Tender shoots, flowers as vegetables. | The whole plant as fish poison. Seeds chewed as medicine to relive pain inside mouth | C |
| <i>Stellaria media</i> (L.) Villars | Caryophyllaceae | Morolia | Herb | Tender shoots and leaves as vegetables. | Tender leaves and shoots are used as medicine for rheumatism | C |
| <i>Stenochlaena pelustris</i> (Burm.) Bedd. | Blechnaceae | Dhekia lota | Climber | Tender shoots and leaves as vegetables | Stem as fasten material in house constructions, agricultural implements, bamboo crafts etc | C |
| <i>Sterculia villosa</i> Roxb. | Sterculiaceae | Udal | Tree | Seeds as boiled or baked. | Wood as timber in house making, fire wood, Bark fiber as rope | 1,2,12 |
| <i>Stixis suaveolens</i> (Roxb) Pierrie | Capparidaceae | Madhoi maloti | Climber | Ripe fruits as raw. | Stem parts as rope for agricultural implements | C |
| <i>Syzygium cumini</i> (L.)Skeel. | Myrtaceae | Bor jamu | Tree | Ripe fruits as raw. | Wood as timber in house making, fruits and bark as medicine for dysentery, gastritis, powdered seeds for diabetes | C |
| <i>Syzygium jambos</i> (L.) Alston. | Myrtaceae | Bogi jamu | Tree | Ripe fruits as raw. | Wood as timber for making of traditional houses. Juice of the bark as medicine for gastritis. | C |

| Scientific name | Family | Vernacular name | Habit | Parts used as edibles | Other uses | Used by |
|---|---------------|-----------------|---------|---|---|---------|
| <i>Syzygium fruticosum</i> DC. | Myrtaceae | Bon Jamu | Tree | Ripe fruits as raw. | Wood as timber for house making, firewood | C |
| <i>Tetrastigma thomsonianum</i> Planch. | Vitaceae | Noltenga | Climber | Tender branches and leaves as vegetables. | - | C |
| <i>Terminalia bellerica</i> Roxb. | Combretaceae | Bhumura | Tree | Fruits as raw or dried. | Wood as timber for house making, furniture. | C |
| <i>Terminalia citrina</i> Roxb. | Combretaceae | Silikha | Tree | Fruits as raw, dry or as curry. | Wood as timber for house making, furniture, <i>Dheki</i> the traditional rice husking | C |
| <i>Trichosanthes cucumerina</i> L. | Cucurbitaceae | Bon dhunduli | Climber | Young fruits as vegetables. | Juice of leaves as liver tonic, juice from fruit as appetizer. | C |
| <i>Typha elephantina</i> Roxb. | Typhaceae | Maduribon | Shrub | Tender shoots, rhizomes as vegetables. | Leaves in making of mats. | 9 |
| <i>Vernonia cinerea</i> (L) Less | Asteraceae | Sahadevi | Herb | Young shoot as vegetables. | Tender shoots as medicine in fever, root juice in indigestion. | C |
| <i>Vitex negundo</i> L. | Verbenaceae | Posotia | shrub | Tender leaves and shoots as vegetables. | Leaves as medicine against pain. | c |
| <i>Xanthium strumarium</i> L. | Asteraceae | Agora | Herb | Young shoots as vegetables. | The whole plant as medicine against malarial fever and urinary trouble. | c |
| <i>Zanthoxylum oxyphyllum</i> Edgw. | Rutaceae | Mejenga | Shrub | Tender shoots are used for preparation of curry with meat or fish | Barks and seeds as medicine in fever and dyspepsia and cholera. | c |
| <i>Zanthoxylum rhetsa</i> (Roxb.) DC. | Rutaceae | Bazarmoni | Tree | Tender shoots as vegetables by the Mishing people. | Fruits as medicine for rheumatism, diarrhea, and seeds are used for fish poisoning. | 9 |
| <i>Zizyphus mauritiana</i> Lamk. | Rhamnaceae | Bogori | Tree | Ripe fruits as raw, powder or as pickles. | Bark as medicine for diarrhea, pain, cut and wounds. | C |

The study also revealed that wild edibles were highly valued by the villagers as the special food supplement because of its nutrient as well medicinal values. Among the seasonally available medicinal herbs *Alternanthera sessilis*, *Centella asiatica*, *Drymaria diandra*, *Houttuynia cordata* and *Hydrocotyle sibthorpioides*, *Peperomia pellucida* and *Stellaria media* were commonly eaten by the villagers all communities as the curries. Among the edible fruit giving trees 22 species were recorded for timber used in house making, furniture, agricultural implements and other household articles. Seeds of *Licula*

peltata and *Livistonia jenkinsiana* were eaten but leaves were recorded for use as roofing material for construction of traditional houses and also in making the traditional umbrella (*Japi*). Tendered shoot/ rhizomes of *Bambusa balcooa* and *Dendrocalamus hamiltonii* were recorded edible and the mature culms were used in house and furniture making. It was also found that wild edibles are also source of income to some of the villagers. The tender shoot and leaves of *Alternanthera sessilis*, *A. philoxeroides*, *Calamus tenuis*, *Colocasia esculanta*, *Diplazium esculantum*, *Murraya koenigii*, *Paderia foetida*, *P.*

scandens, *Smilex glabra* *Tetrastigma thomsonianum* and fruits of *Dillenia indica*, *Garcinia pedunculata*, *G. cowa*, *G kydia* and *Spondias pinnata* were collected from wild from patch vegetations and sold in the local markets. It has found from our study that among the phyto-resources of the patch vegetations in rural areas plays an important role in supplying nutritive food to

the poor villagers. But changes in land uses in rural areas bring about the threat these patch vegetation causing loss to the rich biodiversity. Therefore, awareness on the importance and conservation of such patches as the repository of wild edibles urgently required.



Figure-1: Few Wild edible plants: 1. *Antidesma bunius*. 2. *Dillenia indica*. 3. *Garcinia cowa*. 4. *Fragaria indica*. 5. *Sarcochlamys pulcherima*. 6. *Smilex zeylanica*. 7. *Flacourtia jangomas* and *Artocarpus chama*

Edible but medicinal: The present study also revealed that out of 119 species of wild edible plant species, different fraction such as the leaves, barks, tuber or roots of 56 plant species were used by the villagers as traditional medicine against different ailments (Table-1). The extract prepared dried pericarps of *Garcinia pedunculata*, *G. cowa* and *G. kydia* and fermented juice prepared from *Syzygium cumini* is widely used as medicine against stomach disorder. The extract prepared from *Centella asiatica* and *Hydrocotyle sibthorpioides* is also used as tonic and medicine against stomach problems. Apart from these *Alternanthera sessilis*, *Hedyotis diffusa*, *Clerodendrum glandulosum*, *Vernonia cinerea*, *Paederia scandens*, *Paederia foetida*, *Oxalis corniculata*, *Hedyotis diffusa*, *Murraya koenigii* and *Leucas plukenetii* are recorded for herbal medicine for stomach troubles use by different communities of the district.

Rhizome of *Costus speciosus*, bark of *Glycosmis arborea*, whole plant of *Phyllanthus urinaria*, *Phyllanthus fraternus* are recorded as medicine given for curing jaundice. The corm of *Amorphophallus paeoniifolius* was recorded for use as medicine against piles. Leaves of *Antidesma bunias*, *Antidesma acidum* and whole plant of *Amaranthus spinosus* and *Amaranthus viridis* and bark of *Ardisia thyrsoiflora* were recorded as antidote use against snake bite. Leaves, tendered shoot of *Eclipta alba* and barks of *Callicarpa arborea* were recorded as medicine against various mouth diseases. Seed pericarp of *Caryota urens* was recorded for treatment of asthma. Whole plant of *Houttuynia cordata*, *Hydrocotyle sibthorpioides*, *Phyllanthus fraternus*, *Phyllanthus urinaria*; bark of *Syzygium cumini* and *Oroxylum indicum* were recorded for use as medicine for dysentery etc. Bark of *Glycosmis arborea*, root of *Rubus ellipticus* and tendered shoots of *Scoparia dulcis* were recorded for utilized as medicine for treatment of pneumonia. Similar investigation was conducted and recorded 241 medicinal plant species used by Naga tribes for traditional medicine¹⁹.

Bird's food: About 41 plant species were recorded for their different parts mainly fruits and seeds are eaten by birds. They are - *Antidesma acidum*, *A. bunias*, *A. ghaesembilla*, *Ardisia thyrsoiflora*, *Artocarpus chama*, *A. heterophyllus*, *A. lacucha*, *Baccaurea ramiflora*, *Bischofia javanica*, *Callicarpa arborea*, *Carallia lucida*, *Cassia fistula*, *Chrysophyllum lanceolatum*, *Clerodendrum glandulosum*, *Coccoloba grandis*, *Deeringia amaranthioides*, *Duchesnea indica*, *Elaeocarpus floribundus*, *Ficus auriculata*, *Ficus hispida*, *Flacourtia jangomas*, *Fragaria* spp, *Glycosmis arborea*, *Grewia sapida*, *Livistonia jenkinsiana*, *Mangifera indica*, *Melastoma malabathricum*, *Murraya koenigii*, *Premna latifolia*, *Prunus jenkinsii*, *Rubus ellipticus*, *Rubus alceifolius*, *Smilax zeylanica*, *Stixis suaveolens*, *Syzygium jambos*, *Syzygium fruticosum*, *Zizyphus mauritiana*, *Zanthoxylum rhetsa* and *Zizyphus mauritiana*.

Animal food and fodder: Approximately 38 plant species were recorded for animal food and fodder. Out of them *Garcinia pedunculata*, *Garcinia cowa*, *G. Kydia*, *Garcinia sopsopia*, *G. xanthochymus*, were recorded for food of monkey and rodents.

Fruit of *Dillenia indica* is favorite food for elephant. Seeds and fruits of *Zizyphus mauritiana*, *Z. nummularia*, *Artocarpus chama*, *Artocarpus heterophyllus*, *Artocarpus lacucha*, *Calamus tenuis*, *Centella asiatica*, *Costus speciosus*, *Bambusa balcooa*, *Dendrocalamus hamiltonii*, *Duchesnea indica*, *Ficus auriculata*, *Ficus hispida*, *Hedyotis diffusa*, *Houttuynia cordata*, *Houttuynia cordata*, *Oroxylum indicum*, *Oxalis corniculata* and *Phyllanthus fraternus* were recorded animal food. *Alternanthera sessilis*, *Alternanthera philoxeroides*, *Alpinia nigra*, *Amaranthus spinosus*, *Commelina benghalensis*, *Ficus hispida*, *Marselia quadrifolia*, *Monochoria hastata*, *Polygonum microcephalum*, *Portulaca oleracea*, *Premna latifolia*, *Solanum nigrum*, *Spondias pinnata* and *Stellaria media* were recorded as fodder for animals.

Conclusion

It is evident from this survey and documentation work that among the phyto resources of patch vegetations the wild edible plant are also collected and used by the villagers as vegetables or different raw food items with time and as per indigenous knowledge. Though, the wild edible plants available in the patch vegetations plays a significant role in the society as the natural source of nutritive foods, change in land uses in the rural areas now a day's brings about threat for the patches as the habitat for wild edibles. Moreover, patch vegetations have unique importance as they are biodiversity reservoir of rare, endangered and endemic flora. Evidence also recorded for attempting maximum harvests from some biological population by indigenous society; however, risk of its extinction is minimum²⁰. However, due to increase of human population the patch vegetations are being shrinking and established new homesteads there. Therefore, research on the scientific evaluation of these wild edibles and their other important uses including biodiversity and environmental services is an urgent need not only for conservation of the patch vegetation as the repository of wild edible plants but also from bio-prospecting point of view.

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