

Wild edible plants from the Dima Hasao district of Assam, India

Pramod Medhi^{1,3}, Aniruddha Sarma¹ and Sashin Kumar Borthakur²

¹Department of Biotechnology, Pandu College, Pandu, Guwahati-781012, Assam, India

²Department of Botany, Gauhati University, Guwahati-781014, Assam, India

E-Mail: pramodmedhi@yahoo.com; aniruddhasarma@rediffmail.com; skbgu1@gmail.com

³*Corresponding author*

[Received 30.05.2014; Revised 14.06.2014; Accepted 15.06.2014; Published 30.06.2014]

Abstract

The Dima Hasao (formerly, North Cachar Hills) district is situated in the southern part of Assam, India. The main ethnic groups in the district are *Dimasas*, *Zeme Nagas*, *Hmars*, *Hrangkhols*, *Biates*, *Jansens* and *Thadous* (*New-Kukis*), *Sakacheps* (*Khelmas*), *Vaipheis* and *Jaintia* (*Pnars*). The present paper provides a comprehensive account of 168 wild edible plants and fungi along with their botanical name, family, exsiccate, vernacular name(s), parts used, mode of use and also their market value in local makeshift markets.

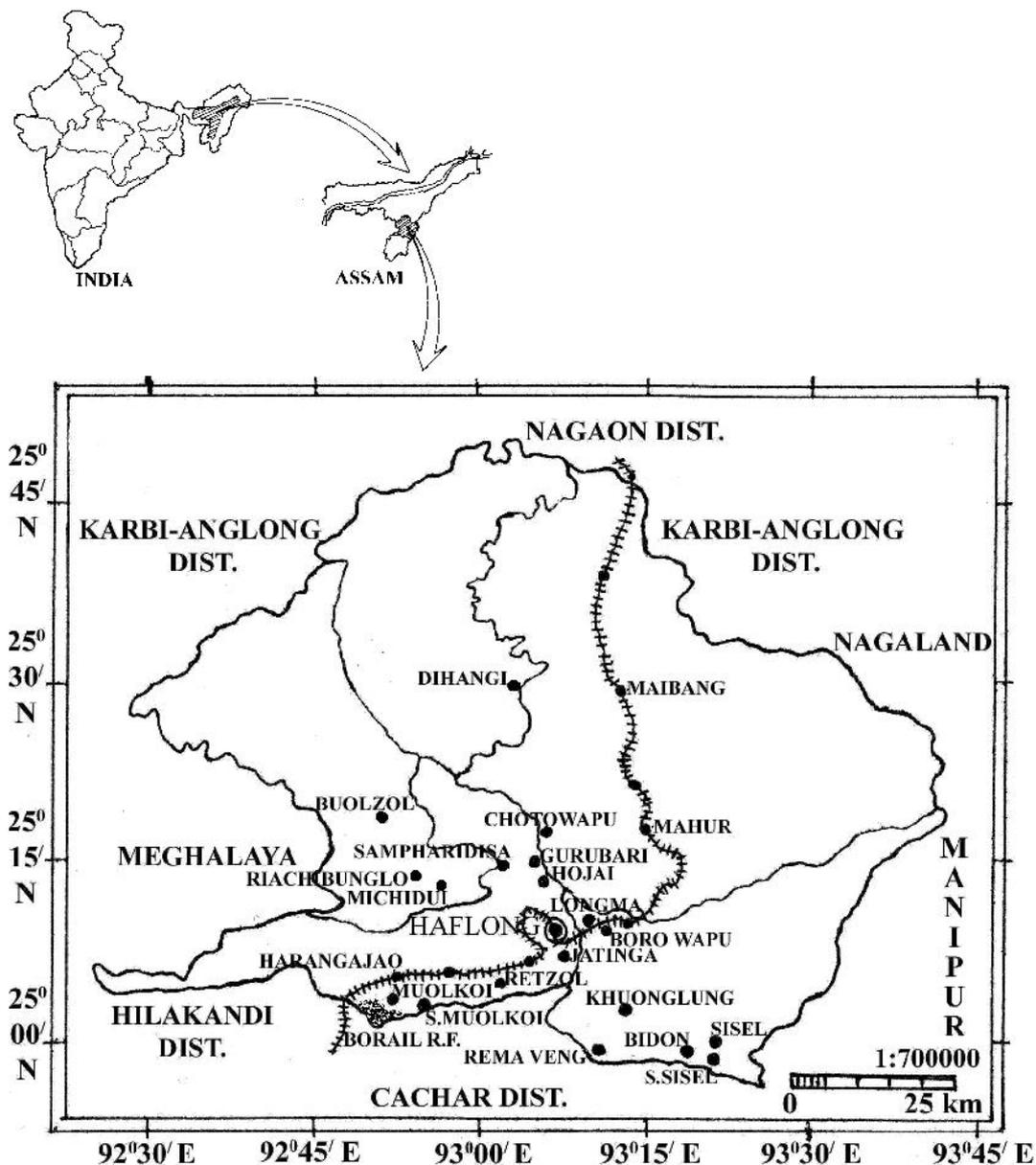
Out of the total recorded 168 species of plants and fungi, 55 species were used as leafy vegetables, fruits and seeds of 61 species were used either fresh or cooked, tubers of 19 species were eaten boiled, 18 species were used as spices and condiments, 10 species were of wild edible mushrooms and 5 species were used as masticators and fumigators. The 168 species belongs to 122 genera and 74 families and can be grouped into Fungi (10 species), Pteridophytes (04 species), Gymnosperm (01 species), Monocotyledons (38 species) and Dicotyledons (115 species). Significantly, the study also provided a comprehensive account of 66 species of wild plants recorded to be semi-domesticated and protected by the ethnic groups since long in the study area.

Key words: Wild edible plants, Fungi, Semi-domesticated and Protected plants, Dima Hasao

INTRODUCTION

Wild plants have been formed an integral part of the regular diet, culture and tradition of many indigenous communities of the world. In many developing countries most of the rural communities still depend on wild plants to meet-up their dietary requirements, especially during scarcity and that plays an important role in their food security (FAO 2004; Balemie & Kebebew 2006). Inclusion of wild edible plants as regular dietary supplement by the ethnic groups is mainly for sustenance in their dwelling environment and also intrinsically linked to their traditional and cultural life. They also sell some wild edible plants in the local makeshift markets for additional income (Angami *et al* 2006).

Exploitation of wild plants generally leads to domestication of selected plants that continues through cultivation and selection over years. It is now important to study these wild food plants in relation to their domestication, conservation and development for sustainable use. Scrutiny of literature revealed that there is very scanty and sporadic works carried out on wild edible and semi-domesticated plants of Dima Hasao (formerly 'North Cachar Hills')



Map 1: Location map of Dima Hasao District of Assam, India

district of Assam, India. With this backdrop the present study was carried out during the year 2010 with an objective to document the wild edible and semi-domesticated plant resources from the study area.

The publications on the wild edible plants includes the works of Osche (1977); Bhujel *et al* (1984); Haridarsan *et al* (1990); Arora (1990); Schultes (1992); Arora & Pandey (1996); Borthakur (1996); Mahanta & Gogoi (1998); Kar (2004); Sinha & Lakra (2005); Kala (2007); Kayang (2007); Barua *et al* (2007); Narayanan & Kumar (2007); Majumdar

& Dutta (2009); Salam *et al* (2010); Medhi & Borthakur (2011); Medhi & Borthakur (2012a); Sharma (2012); Sarkar & Das (2012); and Medhi & Borthakur (2013).

Regarding the plant domestication and protection by different ethnic groups in India as well as in other parts of the world, the works of Mitre (1985); Heiser (1986); Alejandro *et al* (1996); Borthakur *et al* (1998); Diamond (2002); Pandey & Arora (2004); Chhetri (2006); Scarcelli *et al* (2006); Pandey *et al* (2008); and Medhi & Borthakur (2012b), etc. have addressed different aspects.

Study area

The Dima Hasao district (formerly, North Cachar Hills) is located in the southern part of Assam, India in between 24°58'2" N and 25°47'2" N latitudes and 92°27'2" E and 93°43'2" E longitudes and has elevations ranging from 140 to 1866 m *amsl*. A number of small and large ethnic groups viz., *Dimasas, Jeme Nagas, Hmars, Karbis, Kukis, Biates, Hrangkhals, Vaipeis, Khasis, Thadous, Jaintias (Pnar/ Syntengs), Mizo/Lushais* and *Khelmas* etc. with their unique culture and tradition inhabit in the hilly terrains of the district. Forest cover of the district is 88.71 % out of its total geographical area of 4,888 sq km. The *Jhum* cultivation is the major agricultural practice and settled agricultural land is only 63 sq km i.e. 1.29 % of the total geographical area of the district.

MATERIALS AND METHODS

Informant selection and interview

The local informants were mostly recommended by the village Headmen (*Gaon Burhas*) and the age of the informants were ranging from 21 to 76 years. Majority of the informants were women, who were considered to be the primary players in wild edible plant collections from the forest areas and selling out those in the local makeshift markets for additional income. From all of them Prior Informants Consent (PIC) was taken before recording the information.

Plant collection and identification

During the field work, along with the documentation, the voucher specimens were also collected. Collected plants were made into mounted herbarium specimens following standard techniques (Jain & Rao 1977) and later identified with the help of relevant literature (Hooker 1872-1897; Kanjilal *et al* 1934-1940; Balakrishnan 1981 & 1983; Deb 1981 & 1983; Joseph 1982 and Haridasan & Rao 1985 & 1987) and subsequently confirmed at ASSAM Herbarium. The nomenclature and the family delimitation for the recorded plants were updated using The Plant List (www.theplantlist.org). Again, the recorded mushrooms were preserved in 4% formaldehyde solution and also as dried specimen. Later, the specimens were identified at the Mycology and Pathology division of ICAR, Umium, Shillong. The voucher specimens on which this study is based were deposited in the Herbarium of Department of Botany, Gauhati University (GUBH) for future reference.

The vernacular name(s) of the plants, parts used, mode of use and local makeshift market rate of the plant resources sold were recorded and repeatedly verified taking assistance of local informants/ village headman and also from vegetable vendors.

RESULTS

The present study recorded comprehensive data for 168 species of plants and fungi (Tables 1 – 6), their botanical name, family, collection number, vernacular name(s), parts used, mode of use and also their local makeshift market value of the sold wild edible plants.

Table 1. Leafy vegetables (Angiosperms)

[Abbreviations used (applicable for Tables 1 - 6): DI – Dimasa; HM – Hmar; HR – Hrangkhoh; KU – Kuki; MI – Mizo; NE – Nepali; PN – Pnar (Jaintia); VA – Vaipei; ZE – Zeme Naga]

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Alternanthera sessilis</i> (Linnaeus) R. Brown <i>ex de</i> Candolle [Amaranthaceae]; <i>PM-947</i>	<i>Kuang kua</i> (MI)	Young shoots; also as pig fodder	Rs.5/bundle of ± 500 g
<i>Amaranthus spinosus</i> Linnaeus [Amaranthaceae]; <i>PM-948</i>	<i>Khutra</i> (DI), <i>Vai me hna</i> (HM)	Young shoots as vegetable	Rs.5/ bundle of ± 500 g
<i>Amaranthus viridis</i> Linnaeus [Amaranthaceae]; <i>PM-953</i>	<i>Mata</i> (DI), <i>Vaih me</i> (HM), <i>Inhmuntiek</i> (ZE)	Young shoots as vegetable	Rs.5/ bundle of ± 500 g
<i>Andrographis paniculata</i> (Burman <i>f.</i>) D. Nees [Acanthaceae]; <i>PM-1047</i>	<i>Chirota</i> (DI/PN)	Shoots mixed with other vegetables	Rs.5/ bundle of ± 250 g
<i>Aralia armata</i> (Wallich) B.C. Seemann <i>ex</i> W.S. Kurz [Araliaceae]; <i>PM-954</i>	<i>Lingdon</i> (KU), <i>Ture/Saifok</i> (ZE)	Young shoots as vegetable	Rs.5/ bundle of ± 500 g
<i>Asparagus racemosus</i> Willdnow [Liliaceae]; <i>PM-960</i>	<i>Satmul</i> (NE)	Young shoots mixed with other vegetable	-
<i>Begonia palmata</i> D. Don [Begoniaceae]; <i>PM-955</i>	<i>Theidon</i> (HM), <i>Mping</i> (ZE), <i>Sekhupdon</i> (HR)	Leaf and young shoots as vegetable	-
<i>Begonia picta</i> J.E. Smith [Begoniaceae]; <i>PM-949</i>	<i>Alumikri</i> (DI), <i>Mping- Kokralik</i> (ZE)	Leaf and young shoots	-
<i>Begonia roxburghii</i> de Candolle [Begoniaceae]; <i>PM-950</i>	<i>Sekhupdon</i> (HR), <i>Alumikri</i> (DI), <i>Mping</i> (ZE), <i>Sekhupdon</i> (HR)	Leaf and young shoots	-
<i>Blumea lacera</i> (Burman <i>f.</i>) de Candolle [Asteraceae]; <i>PM-1008</i>	<i>Mugongreng/ Gangrima</i> (DI), <i>Anra mang</i> (HM), <i>Peau</i> (ZE)	Leaf and tender shoots and mostly preferred with brinjal	Rs.5/ bundle of ± 400 g
<i>Bryophyllum pinnatum</i> (Lamarck) L. Oken [Crassulaceae]; <i>PM-1009</i>	<i>Maikhri lai</i> (DI), <i>Miru heu</i> (ZE)	Fleshy leaf mixed with other vegetables	-
<i>Calamus rotang</i> Linnaeus [Arecaceae]; <i>PM-1011</i>	<i>Raigong</i> (DI), <i>Tingdon</i> (HM), <i>Heart</i> (ZE)	Soft pith as vegetable and as chutney with chillies	Rs.20/stick of 1 meter (approx.)
<i>Centella asiatica</i> (Linnaeus) I. Urban [Apiaceae]; <i>PM-1010</i>	<i>Mikharing</i> (DI), <i>Lambak</i> (HM), <i>Kopanig kua</i> (HR), <i>Naulai</i> (KU), <i>Krimbua</i> (ZE)	Whole plant as vegetable and also as chutney	Rs.5/ bundle of ± 400 g
<i>Chenopodium album</i> Linnaeus [Chenopodiaceae]; <i>PM-951</i>	<i>Dauthulai</i> (DI), <i>Jhilmil sak</i> (NE)	Soft young plants as vegetable	Rs.5/ bundle of ± 400 g
<i>Chonemorpha macrophylla</i> G. Don [Apocynaceae]; <i>PM-1048</i>	<i>Ankhapui</i> (Large) & <i>Ankhate</i> (Small) (HM), <i>Ankhapi</i> (KU), <i>Johr- khithong</i> (PN)	Leaves as vegetable	Rs.5/ bundle of ± 500 g
<i>Clerodendrum colebrookianum</i> W. G. Walpers [Lamiaceae]; <i>PM-956</i>	<i>Mismau lai</i> (DI), <i>Anphui</i> (HM)	Leaves as vegetable	Rs.5/ bundle of ± 400 g
<i>Crassocephalum crepidioides</i> (Bentham) S.M. Moore [Asteraceae]; <i>PM-952</i>	<i>Impingi</i> (ZE)	Young shoots as vegetable	Rs.5/ bundle of ± 500 g
<i>Crassocephalum</i> sp. [Asteraceae]; <i>PM-1050</i>	<i>Impingi</i> (ZE)	Leaf and young shoot as vegetable	Rs.5/ bundle of ± 500 g
<i>Drymaria cordata</i> (Linnaeus) Von Willdenow <i>ex</i> J.A. Schultes [Caryophyllaceae]; <i>PM-1051</i>	<i>Samsang-karing</i> (DI), <i>Dalokshal</i> (HR)	As vegetable	-
<i>Girardinia diversifolia</i> (F. Link) Ib Friis [Urticaceae]; <i>PM-1012</i>	<i>Germa</i> (DI)	Inflorescences as vegetable	-
<i>Eurya acuminata</i> de Candolle [Pentaphylaceae]; <i>PM-1052</i>	<i>Chizou</i> (HM/KU), <i>Misimbua</i> (ZE)	Leaves made into paste and cooked with pork	Rs.10/ bundle of ± 1 kg

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Houttuynia cordata</i> C.P. Thunberg [Saururaceae]; <i>PM-957</i>	<i>Mojoukhmo</i> (DI), <i>Ai thang</i> (HM), <i>Jarmendo</i> (PN)	Leaves as vegetable; stems add flavour to curry and <i>chutney</i>	Rs.5/ bundle of ± 250 g
<i>Ipomoea aquatica</i> P. Forsskål [Convolvulaceae]; <i>PM-1013</i>	<i>Dine thamunglai</i> (DI), <i>Kolom sak</i> (NE)	Young shoots as vegetable	Rs.5/ bundle of ± 500 g
<i>Leucas aspera</i> (Willdenow) F. Link [Lamiaceae]; <i>PM-1053</i>	<i>Doron</i> (NE), <i>Phaih lo</i> (HM)	Young shoots as vegetable	Rs.5/ bundle of ± 500 g
<i>Lindernia japonica</i> C.P. Thunberg [Linderniaceae]; <i>PM-1054</i>	<i>Khangkrai-regu</i> (DI), <i>Annikheak</i> (HR)	Plants mixed with other vegetables for early recovery after child birth	-
<i>Melocanna buccifera</i> (Roxburgh) W.S. Kurz [Poaceae]; <i>PM-1055</i>	<i>Wa mia</i> (DI), <i>Kaucheu</i> (ZE)	Shoots as vegetable and fermented <i>chutney</i>	Rs.10-15 for ± 1 kg
<i>Melocalamus compactiflorus</i> (W.S. Kurz) Bentham [Poaceae]; <i>PM-1056</i>	<i>Washim mia</i> (DI)	Shoots as vegetable and fermented <i>chutney</i>	Rs.10-15 for ± 1 kg
<i>Melocalamus indicus</i> R.B. Mazumder [Poaceae]; <i>PM-1057</i>	<i>Washim</i> (DI)	Shoots mostly preferred as vegetable/ pickle	-
<i>Dysoxylum gobara</i> (Buchanan-Hamilton) E.D. Merrill [Meliaceae]; <i>PM-1014</i>	<i>Thinkpui</i> (HM), <i>M'bukbua</i> (ZE)	Young shoots with inflorescences as vegetable	Rs.10/ bundle of ± 750 g
<i>Monochoria hastata</i> (Linnaeus) F. zu Solms-Laubach [Pontederiaceae]; <i>PM-958</i>	<i>Menthoka lai</i> (DI)	Young inflor as vegetable escences	-
<i>Olax acuminata</i> Wallich <i>ex</i> Bentham [Olapaceae]; <i>PM-1007</i>	<i>Yaolai</i> (DI)	Leaves and young shoots as vegetable	-
<i>Oroxylum indicum</i> (Linnaeus) Bentham <i>ex</i> Kurz [Bignoniaceae]; <i>PM-1058</i>	<i>Kalong</i> (DI), <i>Bakolong</i> (HR) <i>Phual-changkok</i> (HM)	Fleshy corollas cooked with fresh/ dry-fish	Rs.5/ five corollas
<i>Oxalis corniculata</i> Linnaeus [Oxalidaceae]; <i>PM-1059</i>	<i>Khungbai-an</i> (HM)	Leaves eaten raw/ cooked for curing minor stomach ailments	-
<i>Oxytenanthera parvifolia</i> D. Brandis <i>ex</i> J.S. Gamble [Poaceae]; <i>PM-961</i>	<i>Wathai-washi</i> (DI)	Shoots as vegetable; seeds used to prepare local rice beer <i>Judima</i> by <i>Dimasas</i>	Rs. 15/kg of seed grains.
<i>Paederia foetida</i> Linnaeus [Rubiaceae]; <i>PM-1060</i>	<i>Saonkiphu</i> (DI), <i>Voi hnam zai</i> (HM), <i>Hebeheu-ria</i> (ZE)	Leaves as vegetable	Rs.5Rs.5/ bundle of ± 500 g
<i>Phlogacanthus curviflorus</i> D. Nees [Acanthaceae]; <i>PM-1061</i>	<i>Aluso</i> (DI)	Dried/ fresh inflorescence as vegetable	Rs.5/ bundle of ± 250 g
<i>Phlogacanthus tubiflorus</i> D. Nees [Acanthaceae]; <i>PM-1015</i>	<i>Aluso</i> (DI)	Dried/ fresh inflorescences as vegetable	Rs.5/ bundle of ± 250 g
<i>Persicaria chinensis</i> (Linnaeus) H. Gross [Polygonaceae]; <i>PM-1016</i>	<i>Maikhri thai</i> (DI), <i>Heganturia</i> (ZE)	Tender shoots as vegetable; ripe fruits eaten by children	-
<i>Persicaria perforata</i> (F. Meissner) H. Gross [Polygonaceae]; <i>PM-1062</i>	<i>Mikhri lai</i> (DI), <i>Heganturia</i> (ZE)	Sour tested leaf as vegetable	-
<i>Portulaca oleracea</i> Linnaeus [Portulacaceae]; <i>PM-1063</i>	<i>Barthoslai</i> (DI), <i>Inrainuthei</i> (HM)	Shoots as vegetable	Rs.5/ bundle of ± 400 g
<i>Rhynchosyche ellipticum</i> (Wallich <i>ex</i> D. Dietrich) A. de Candolle [Gesneriaceae]; <i>PM-1064</i>	<i>Mimalai</i> (DI), <i>Telhlep</i> (HM/KU), <i>Endroigi</i> (ZE)	Young leaves and shoots as vegetable	Rs.5/ bundle of ± 500 g
<i>Rotheca serrata</i> (Linnaeus) Steane & Mabberley [Lamiaceae]; <i>PM-1049</i>	<i>Mismau khasiba</i> (DI)	Leaf and tender shoots as vegetable (bitter taste)	-
<i>Sarcochlamys pulcherrima</i> C. Gaudichaud-Beaupré [Urticaceae]; <i>PM-1017</i>	<i>Mishaigi</i> (DI), <i>Lengo</i> (HM), <i>Endaugi</i> (ZE)	Young leaf as vegetable and preferred with banana flowers to prepare local delicacy	Rs. 5/ bundle of ± 400 g

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Schima wallichii</i> J.D. Choisy [Theaceae]; <i>PM-1065</i>	<i>Khainsuri</i> (DI), <i>Khuzli gachi</i> (HR), <i>Nkiai</i> (ZE)	Tender shoots mixed with other vegetables Bark also used as ichthyotoxins	-
<i>Solanum nigrum</i> Linnaeus [Solanaceae]; <i>PM-1018</i>	<i>Hagrani kimkhalai</i> (DI)	Young shoots as vegetable	Rs.5/ bundle of ± 400 g
<i>Solanum spirale</i> Roxburgh [Solanaceae]; <i>PM-962</i>	<i>Kanarengma</i> (DI), <i>Nkabua</i> (ZE)	Young shoots and fruits as vegetable and also as chutney	Rs.5/ bundle of ± 500 g
<i>Spilanthes acmella</i> var. <i>oleracea</i> (Linnaeus) C.B. Clarke [Asteraceae]; <i>PM-963</i>	<i>Samberma</i> (DI), <i>Ansa Tlang</i> (HM), <i>Klungbua</i> (ZE)	Leaves and shoots as vegetable	Rs.5/ bundle of ± 500 g
<i>Spilanthes acmella</i> var. <i>paniculata</i> (Wallich ex de Candolle) C.B. Clarke [Asteraceae]; <i>PM-1006</i>	<i>Samberma</i> (DI), <i>Ansa Tlang</i> (HM), <i>Klungbua</i> (ZE)	Shoots as vegetable	-
<i>Tetragium pedunculare</i> (Wallich ex G. Lawson) Planchon [Vitaceae]; <i>PM-959</i>	<i>Dushrem maikhri</i> (DI)	Sour tasted leaves as vegetable	-
<i>Trevesia palmata</i> (Roxburgh ex J. Lindley) R. de Visiani [Araliaceae]; <i>PM-1019</i>	<i>Kemtaudi</i> (DI), <i>Kotebel</i> (HM)	Only inflorescence as vegetable or as <i>chutney</i> with chillies	Rs.5/ bundle of ± 350 g

Table 2. Leafy vegetables (Gymnosperm and ferns)

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Angiopteris evecta</i> (G. Forster) G. F. Hoffmann [Marattiaceae]; <i>PM-964</i>	<i>Daomalai gidiba</i> (DI)	Swollen leaf base mixed with other vegetables	-
<i>Diplazium esculentum</i> (A.J. Retzius) O.P. Swartz [Athyriaceae]; <i>PM-1020</i>	<i>Daomalai</i> (DI), <i>Nchubua</i> (ZE)	Tender leaves as vegetable	Rs.5/ bundle of ± 500 g
<i>Drynaria quercifolia</i> (Linnaeus) J. Smith [Polypodiaceae]; <i>PM-965</i>	<i>Kupana thinga kop</i> (HM), <i>Nchew</i> (ZE)	Fleshy rhizome is collected during dry season, cleaned, pounded and mixed with rice flour to bake cakes	-
<i>Gnetum gnemon</i> Linnaeus [Gnetaceae]; <i>PM-1021</i>	<i>Thiazing</i> (DI), <i>Ann el</i> (HM), <i>Kingi/Keigi</i> (ZE)	Tender leaves as vegetable	Rs.5/ bundle of ± 500 g
<i>Stenochlaena palustris</i> (Burman f.) R.H. Beddome [Blechnaceae]; <i>PM-966</i>	<i>Daomalai lot</i> (DI)	Tender reddish young shoots as vegetable	-

Table 2. Fruits and seeds

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Abroma augusta</i> (Linnaeus) Linnaeus f. [Malvaceae]; <i>PM-967</i>	<i>Bon naga</i> (DI), <i>Dieng-tyrkhum</i> (PN)	Seeds eaten raw by children	-
<i>Acacia farnesiana</i> (Linnaeus) Von Willdenow [Leguminosae]; <i>PM-1066</i>	<i>Bairithai</i> (DI), <i>Zongta te</i> (HM), <i>Nkamp-chibe</i> (ZE)	Tender pods as vegetable or chutney with dry-fish	Rs.5/bundle of 10 fruits.
<i>Acacia pinnata</i> F. Link [Leguminosae; Mimosoidae]; <i>PM-1067</i>	<i>Suji</i> (DI), <i>Khang muk</i> (HM), <i>Tingchi-heu</i> (ZE)	Tender shoots as vegetable or chutney with dry-fish	Rs.5/bundle of about 400 g
<i>Artocarpus chplasha</i> Roxburgh [Moraceae]; <i>PM-968</i>	<i>Jram</i> (DI)	Ripened fruits eaten raw	-
<i>Artocarpus lakoocha</i> Roxburgh [Moraceae]; <i>PM-1068</i>	<i>Jram thai gidiba</i> (DI), <i>Sungkup</i> (ZE)	Ripened fruits eaten raw	-

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Baccaurea ramiflora</i> J. de Loureiro [Phyllanthaceae]; <i>PM-1069</i>	<i>Kosmai thai</i> (DI), <i>Kauchi</i> (ZE), <i>Theipangkai</i> (KU), <i>Pangkai thei</i> (HM)	Fruits eaten raw	Rs.10/bundle of about 500 g
<i>Bauhinia acuminata</i> Linnaeus [Leguminosae; Caesalpinioideae]; <i>PM-1005</i>	<i>Vaibe</i> (HM)	Tender pods and shoots as vegetable	-
<i>Bridelia retusa</i> (Linnaeus) A. de Jussieu [Phyllanthaceae]; <i>PM-1022</i>	<i>Thaيداoblib</i> (DI), <i>Phaktel lien</i> (HM)	Salty-sour tested fruits eaten raw	-
<i>Calamus erectus</i> Roxburgh [Arecaceae]; <i>PM-974</i>	<i>Raigongang</i> (DI)	Fresh fruits/nuts eaten raw	Rs.5/ bundle of about 500 g
<i>Canarium strictum</i> Roxburgh [Bursaceae]; <i>PM-1070</i>	<i>Chakronthi</i> (ZE)	Ripened fruits eaten raw	Rs.20/kg
<i>Canavalia ensiformis</i> (Linnaeus) de Candolle [Leguminosae; Faboideae]; <i>PM-1023</i>	<i>Sobai dao yuong</i> (DI), <i>Fangra anzam chi</i> (HM), <i>Samkhra</i> (HR), <i>Kangianeteupi</i> (ZE)	Tender pods / seeds as vegetable	Rs.10/ 5 pieces of fruits
<i>Canavalia gladiata</i> (N.J. Jacquin) de Candolle [Leguminosae; Faboideae]; <i>PM-1071</i>	<i>Naga sem</i> (DI), <i>Fangra anzam noch</i> (HM), <i>Tua</i> (PN), <i>Namtaipee</i> (ZE)	Tender pods/ matured seeds as vegetable	Rs.10/ 5 pieces of fruits
<i>Castanopsis indica</i> (Roxburgh ex J. Lindley) A.de Candolle [Fagaceae]; <i>PM-1024</i>	<i>Isera</i> (HR), <i>Thingsa chi</i> (ZE)	Fruit/ nuts eaten raw or roasted	Rs.5/ about 250 g seeds
<i>Citrus x jumbhiri</i> A.W. Lushington [Rutaceae]; <i>PM-1073</i>	<i>Thaisa maikhri</i> (DI), <i>Ramser</i> (HM)	Pulp eaten raw	Rs. 5/ 3 pieces of fruits
<i>Citrus sinensis</i> (Linnaeus) P. Osbeck [Rutaceae]; <i>PM-969</i>	<i>Gareu chi</i> (ZE)	Both fleshy bark and pulp consumed raw	Rs. 5/ 3 pieces of fruits
<i>Cyphomandra betacea</i> (A.J. Cavanilles) O. Sendtner [Solanaceae]; <i>PM-1025</i>	<i>Panthao gidibao</i> (DI), <i>Thei manta</i> (HR), <i>Pebang tigi chi</i> (ZE)	Fruits either as vegetable or as <i>salad</i> with hot chillies	Rs.10/ 7 pieces of fruits
<i>Dillenia indica</i> Linnaeus [Dilleniaceae]; <i>PM- 1074</i>	<i>Thaidi</i> (D), <i>Ithlang</i> (HM), <i>Mandi</i> (ZE)	Fleshy calyx eaten either raw or cooked with fresh fish	Rs.5/ 2 pieces of fruits
<i>Diospyros kaki</i> Thunberg [Ebenaceae]; <i>PM-1075</i>	<i>Thei manta</i> (HR), <i>Bonnaga</i> (DI)	Ripened fruits eaten raw	-
<i>Diospyros lanceifolia</i> Roxburgh [Ebenaceae]; <i>PM-1004</i>	<i>Chauchi</i> (ZE), <i>Phaktel</i> (HM)	Salty-sour fruits eaten raw	Rs.10 / bundle of ± 500 g
<i>Elaeagnus latifolia</i> Linnaeus [Elaeagnaceae]; <i>PM-1026</i>	<i>Matau</i> (HM)	Fruits eaten raw and also Jelly prepared from ripened fruits	Rs.15/ kg
<i>Phyllanthus emblica</i> Linnaeus [Phyllanthaceae]; <i>PM-970</i>	<i>Hamraithai</i> (DI), <i>Gam so-lu</i> (MI), <i>Jauka chi</i> (ZE)	Fruits eaten raw	Rs.10/ kg
<i>Ficus hispida</i> Linnaeus f. [Moraceae]; <i>PM-1077</i>	<i>Khandao</i> (DI), <i>Irthot</i> (HR)	Ripened fruits eaten raw	-
<i>Ficus racemosa</i> Linnaeus [Moraceae]; <i>PM-1076</i>	<i>Dermi</i> (DI), <i>Thei thot</i> (HM)	Ripened fruits eaten raw	Rs.5/ ± 500 g
<i>Flacourita jangomas</i> (J. Loureiro) Raenschel [Flacourtiaceae]; <i>PM-1078</i>	<i>Panial</i> (AS), <i>Thaislagunju</i> / <i>Thaislagondi</i> (DI)	Ripened fruits eaten raw	Rs.5/ ± 250 g
<i>Garcinia pedunculata</i> Roxburgh ex Buchanan-Hamilton [Clusiaceae]; <i>PM-1027</i>	<i>Thaikhra gede</i> (DI), <i>Vomva</i> (HM)	Dried sliced fruit cooked with fish	Rs.5/ 2 pieces of fruits
<i>Garcinia lanceifolia</i> Roxburgh [Clusiaceae]; <i>PM-1079</i>	<i>Sushru</i> (DI), <i>Pelte</i> (HM)	Fruits eaten raw/ as fish curry Jelly prepared from ripened fruits	Rs.5/ 7 pieces of fruits
<i>Gymnopetalum chinense</i> (J. Loureiro) E.D. Merrill [Cucurbitaceae]; <i>PM-1080</i>	<i>Dukhathai</i> (DI), <i>Ram berul</i> (HM)	Young fruits cooked with dried fish to prepare local delicacy <i>khari</i> (<i>Dimasa</i>)	Rs. 5/ 12 pieces of fruits

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Hodgsonia macrocarpa</i> (C.L. Blume) A. Cogniaux [Cucurbitaceae]; <i>PM-1028</i>	<i>Khaukhluthaibai</i> (DI), <i>Kha um</i> (HM), <i>Nsui chi</i> (ZE)	Embryos eaten cooked or roasted as snacks; mainly preferred by children	Rs.5/ 5 pieces of seeds
<i>Juglans regia</i> Linnaeus [Juglandaceae]; <i>PM-1081</i>	<i>Juart chi</i> (ZE)	Fruits eaten raw	-
<i>Meyna spinosa</i> Roxburgh ex F. Link [Rubiaceae]; <i>PM-971</i>	<i>Mon phang</i> (DI)	Ripened fruits eaten raw	-
<i>Mangifera sylvatica</i> Roxburgh [Anacardiaceae]; <i>PM-1003</i>	<i>Thaiju mairong</i> (DI), <i>Gam Thaihai</i> (MI), <i>Hnamba chi</i> (ZE)	Ripened fruits eaten raw	Rs.10/ kg
<i>Melastoma malabathricum</i> Linnaeus [Melastomataceae]; <i>PM-972</i>	<i>Khusim</i> (DI), <i>Tekai-chi</i> (Z)	Ripened fruits eaten raw	-
<i>Solena amplexicaulis</i> (Lamarck) K. N. Gandhi [Cucurbitaceae]; <i>PM-1082</i>	<i>Kunduli</i> (NE), <i>Hagrani thaisum-muri</i> (DI)	Young fruits and shoots as vegetable	Rs.10/ ± 500 g fruits
<i>Momordica charantia</i> var. <i>muricata</i> (Willdenow) H.L. Chakravarty [Cucurbitaceae]; <i>PM-1029</i>	<i>Hagrani gala/Gala-khasiba</i> (DI), <i>Tlang Chankha</i> (HM), <i>Jankha</i> (MI), <i>Chankha hna</i> (HR), <i>Kagai chi</i> (ZE)	Young fruits mixed with other vegetable to prepare local delicacy	Rs. 5/ ± 250 g
<i>Momordica cochinchinensis</i> Sprengel [Cucurbitaceae]; <i>PM-1030</i>	<i>Sla pouthuowa</i> (PN)	Young fruits and shoots as vegetable	-
<i>Morus alba</i> Linnaeus [Moraceae]; <i>PM-1083</i>	<i>Sumu-maikhri</i> (DI), <i>Thing thaime/Thaimou</i> (HM/MI), <i>Mbun chi</i> (ZE)	Sour tested fruits eaten raw	Rs.5/ ± 250 g
<i>Mucuna monosperma</i> Wight [Leguminosae; Faboidae]; <i>PM-973</i>	<i>Mei sia ryntim</i> (PN), <i>Mapinewne</i> (ZE)	Tender pods as vegetable	-
<i>Musa balbisiana</i> L.A. Colla [Musaceae]; <i>PM-1084</i>	<i>Thailikatsia/Thailik gibi</i> (DI), <i>Nachang</i> (MI/HM)	Ripened fruit eaten raw and the soft pith/ peduncle inside the pseudo stem as vegetable	Rs.10/ for ± 12 pieces of fruits
<i>Musa sp.</i> [Musaceae]; <i>PM-1031</i>	<i>Laidi-laigonthai</i> (DI), <i>Gam Nachang vui</i> (HM/MI), <i>Gumjui</i> (ZE)	Inflorescence as vegetable with dried fish/ mushrooms/ <i>Sarchochlamys pulcherrima</i> shoots	Rs. 10/ 2 pieces of inflorescences
<i>Musa velutina</i> H. Wendland & O. Drude [Musaceae]; <i>PM-1085</i>	<i>Laishrimdi</i> (DI), <i>Gam Nachang vui</i> (HM, MI), <i>Gumjui</i> (ZE)	Inflorescence as vegetable with dried fish/ <i>Sarchochlamys pulcherrima</i> shoots	Rs. 10/ 3 pieces of inflorescences
<i>Myrica nagi</i> C.P. Thunberg [Myricaceae]; <i>PM-1086</i>	<i>Kaphol</i> (NE), <i>Sophi</i> (PN)	Sour fruits eaten raw	Rs.5/ 5 pieces of fruits
<i>Padus napaulensis</i> (N.C. Seringe) C.K. Schneid. [Rosaceae]; <i>PM-1087</i>	<i>Delaoji</i> (DI), <i>Ngau chi</i> (ZE)	Ripe fruits eaten raw	Rs.10/ ± 500 g fruits
<i>Parkia timoriana</i> (de Candolle) E. D. Merrill [Leguminosae; Mimosoidae]; <i>PM-1002</i>	<i>Bairithai</i> (DI), <i>Zongta</i> (HM/KU), <i>Nkampai</i> (ZE)	Tender pods/ matured seeds as vegetable; as <i>chutney</i> with dried fish	Rs. 10/ 4 pieces of fruits
<i>Passiflora edulis</i> f. <i>flavicarpa</i> O. Degener [Passifloraceae]; <i>PM-1032</i>	<i>Panthao milao</i> (DI), <i>Saptheilempa</i> (HM/KU), <i>Karora chi</i> (ZE)	Young shoots as vegetable and ripened fruits eaten raw	Rs.2/ Fruit. Rs.5/ ± 400 g shoots
<i>Rhamnus napalensis</i> (Wallich) M.A. Lawson [Rhamnaceae]; <i>PM-1088</i>	<i>Hagrani thaigangdi</i> (DI), <i>Thingthal</i> (KU)	Fruits eaten raw or dry	-
<i>Rhamnus macrophylla</i> Elie-Abel Carrière [Rhamnaceae]; <i>PM-1033</i>	<i>Hagrani thaigangdi</i> (DI)	Fruits eaten raw or dry	-
<i>Rubus rosifolius</i> J.E. Smith [Rosaceae]; <i>PM-1089</i>	<i>Sumugisim</i> (DI), <i>Mantum</i> (HM)	Ripened fruits/ berry eaten raw	Rs.5/ ± 250 g

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Rubus barberi</i> H.E. Weber [Rosaceae]; <i>PM-975</i>	<i>Mantum</i> (HM), <i>Thaimai</i> (MI)	Ripened fruits/ berry eaten raw	-
<i>Senna hirsuta</i> (Linnaeus) H.S. Irwin & R.C. Barneby [Leguminosae; Caesalpinioideae]; <i>PM-1072</i>	<i>Methep</i> (DI), <i>Angreng paupa</i> (HM)	Young shoots as vegetable. Seeds used as pig fodder	-
<i>Solanum indicum</i> Linnaeus [Solanaceae]; <i>PM-1090</i>	<i>Panthao khimkhatai</i> (DI), <i>Sam tok</i> (HM), <i>Leenguipi</i> (KU), <i>Karinchi</i> (ZE)	Young fruits mixed with other vegetables to prepare local delicacy	Rs.5/ ± 100 g fruits
<i>Solanum americanum</i> P. Miller [Solanaceae]; <i>PM-1001</i>	<i>Hagrani kimkhathai</i> (DI)	Young shoots and fruits as vegetable	Rs.5/ bundle of ± 500 g
<i>Solanum torvum</i> O.P. Swartz [Solanaceae]; <i>PM-1091</i>	<i>Panthao khimkhatai gidiba</i> (DI), <i>Sam tok</i> (HM), <i>Leenguipi</i> (KU), <i>Karinchi</i> (ZE)	Young fruits mixed with vegetables for its bitter taste	-
<i>Choerospondias axillaris</i> (Roxburgh) B.L. Burtt & A.W. Hill [Anacardiaceae]; <i>PM-976</i>	<i>Thaisudi-khasiba</i> (DI), <i>Pako chi/ Njing-chi</i> (ZE)	Ripen fruits eaten raw	Rs.5/ ± 250 g fruits
<i>Spondias pinnata</i> (Linnaeus f.) W.S. Kurz [Anacardiaceae]; <i>PM-1092</i>	<i>Thaisudi</i> (DI), <i>Jongmot</i> (HM), <i>Njing-chi</i> (ZE)	Ripened fruits eaten raw and tender fruits cooked with fish	Rs.5/ 12 pieces of fruits
<i>Streblus asper</i> J. Loureiro [Moraceae]; <i>PM-1093</i>	<i>Khande</i> (D)	Ripened fruits eaten raw by children and fruit juice as local refreshing drink	-
<i>Syzygium cumini</i> (Linnaeus) H. C. Skeels [Myrtaceae]; <i>PM-1034</i>	<i>Jambu thai</i> (DI), <i>Thei subor/ Sepuinusu</i> (HM), <i>Thei-vom</i> (KU), <i>Mui-chi</i> (ZE), <i>Hmuizolong</i> (HR)	Ripened fruits eaten raw	Rs.5/ ± 500 g
<i>Syzygium acuminatum</i> (Roxburgh) F.A.W. Miquel [Myrtaceae]; <i>PM-1094</i>	<i>Tola jambu thai</i> (DI)	Fresh ripened fruits eaten raw	-
<i>Tamarindus indica</i> Linnaeus [Leguminosae; Caesalpinioideae]; <i>PM-1095</i>	<i>Tintri</i> (DI), <i>Theipai</i> (HM & KU)	Tender/ ripened fruits eaten raw or seasoned as jelly	Rs.15/ kg
<i>Tephrosia candida</i> (Roxburgh) de Candolle [Leguminosae; Faboideae]; <i>PM-1035</i>	<i>Methep gidiba</i> (DI)	Flowers cooked with rice flour to prepare local delicacy <i>Hon (Dimasas)</i>	-
<i>Terminalia chebula</i> A.J. Retzius [Combretaceae]; <i>PM-1000</i>	<i>Shilikha thai</i> (DI), <i>Ortoki</i> (HR)	Fresh/dried fruits eaten raw	Rs.10/ kg
<i>Willughbeia edulis</i> Roxburgh [Apocynaceae]; <i>PM-977</i>	<i>Hrenchi</i> (ZE)	Ripened fruits eaten raw	Rs.5/ five fruits

Table 3A. Tuber crops: Yams

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Dioscorea aculeata</i> Linnaeus [Dioscoreaceae]; <i>PM-1096</i>	<i>Thagdi</i> (DI), <i>Barhtlum</i> (HM)	Sweet tuber eaten boiled and also as vegetable	Rs.15/ kg.
<i>Dioscorea alata</i> Linnaeus [Dioscoreaceae]; <i>PM-1036</i>	<i>Thaphu sathai</i> (DI), <i>Bahra</i> (HM), <i>Banra</i> (HR), <i>Baha</i> (KU/VA), <i>Basa</i> (MI), <i>Hereu</i> (ZE)	Small white tuber as vegetable; also cooked mixing with rice	Rs.10/ kg
<i>Dioscorea hamiltonii</i> Hooker f. [Dioscoreaceae]; <i>PM-1097</i>	<i>Thayungsa</i> (DI)	Slender tuber as vegetable	-
<i>Dioscorea bulbifera</i> Linnaeus [Dioscoreaceae]; <i>PM-978</i>	<i>Thaphu miyung-wablai</i> (DI)	Small red tuber as vegetable; also cooked mixing with rice	Rs.10/ kg
<i>Dioscorea deltoidea</i> Wallich ex A.H.R. Grisebach [Dioscoreaceae]; <i>PM-1098</i>	<i>Thaphu miyung</i> (DI)	Tubers as vegetable	-

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Dioscorea decipens</i> Hooker f. [Dioscoreaceae]; PM-1037	<i>Thaphu-rhemim</i> (DI)	Slender white tuber as vegetable	-
<i>Dioscorea hamiltonii</i> Hooker f. [Dioscoreaceae]; PM-1097	<i>Thayungsa</i> (DI)	Slender tuber as vegetable	-
<i>Dioscorea pentaphylla</i> Linnaeus [Dioscoreaceae]; PM-979	<i>Thaphin</i> (DI), <i>Ram bahra</i> (HM), <i>Baha</i> (MI)	Soft tuber as vegetable; also cooked mixing with rice	-
<i>Dioscorea trinervia</i> Roxburgh ex D. Prain & I.H. Burkill [Dioscoreaceae]; PM-980	<i>Thassap</i> (DI), <i>Jun se-pi</i> (HR), <i>Reucheu</i> (ZE)	Tuber as vegetable	-
<i>Dioscorea villosa</i> Linnaeus [Dioscoreaceae]; PM-999	<i>Thaphu-nairo</i> (DI)	Soft tuber sometimes as vegetable/ fodder	-
<i>Stemona tuberosa</i> J. Loureiro [Stemonaceae]; PM-1099	<i>Basel phauk</i> (HM)	Tuber eaten boiled/as vegetable	-
<i>Smilax china</i> Linnaeus [Smilacaceae]; PM-1038	<i>Thassap/ Susni</i> (DI), <i>Jun se-pi</i> (HR), <i>Reucheu</i> (ZE)	Tuber are boiled and the juice taken orally as revitalizing tonic	Rs.20/ kg

Table 3B. Tuber crops: Aroids

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Alocasia cucullata</i> (J. Loureiro) G. Don [Araceae]; PM-1100	<i>Tha-khashiba Hagrani</i> (DI)	Young leaves as vegetable	-
<i>Alocasia macrorrhizos</i> (Linnaeus) G. Don [Araceae]; PM-1039	<i>Thagong yung</i> (DI), <i>Kebei</i> (ZE)	Large erect stem as vegetable	Rs.10/ kg
<i>Alocasia</i> sp. [Araceae]; PM-981	<i>Midurangja</i> (DI)	Fresh leaf sheath as vegetable, preferably with dried fish	-
<i>Amorphophallus bulbifer</i> (Roxburgh) C.L. Blume [Araceae]; PM-1101	<i>Thabema</i> (DI), <i>Saldong</i> (HM), <i>Telcong</i> (KU), <i>Teldon</i> (MI)	Tubers preferred to cook with meat.	Rs.10/ kg
<i>Colocasia esculenta</i> (Linnaeus) H. W. Schott [Araceae]; PM-1040	<i>Bahlip</i> (HM, MI)	Fresh/ dried leaf sheath/ tubers harvested during dry season for vegetable	Rs.5/bundle of \pm 400 g dried leaf sheath.
<i>Colocasia</i> sp. [Araceae]; PM-998	<i>Tha gondai</i> (DI)	Fresh leaf sheath as vegetable	
<i>Homalomena aromatica</i> (C.P.J. Sprengel) H.W. Schott [Araceae]; PM-1102	<i>Tharem/Thagong-yungsa</i> (DI)	Fresh aromatic leaf sheath as vegetable/ <i>chumey</i> with chillies	Rs.5/bundle of \pm 500 g leaf sheath
<i>Lasia spinosa</i> (Linnaeus) G.H.K. Thwaites [Araceae]; PM-982	<i>Shidabu/Thathakhlao</i> (DI), <i>Changhrat</i> (HM)	Tender leaves as vegetable	Rs.5/bundle of \pm 500 g leaf sheath

Table 4. Spices and Condiments

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Allium chinense</i> G. Don [Amaryllidaceae]; PM-1103	<i>Mwjngphang</i> (DI), <i>Tlang purun</i> (HM), <i>Newgi Tingdra</i> (ZE)	Whole plant used as spice	Rs.5/bundle of \pm 250 g
<i>Allium hookeri</i> G.H.K. Thwaites [Amaryllidaceae]; PM-1104	<i>Tlang purun</i> (HM), <i>Tingdra</i> (ZE), <i>Purunui</i> (HR)	Whole plant used as spice	Rs.5/bundle of \pm 250 g
<i>Allium schoenoprasum</i> Linnaeus [Amaryllidaceae]; PM-1041	<i>Tlang purun</i> (HM), <i>Tingdra</i> (ZE), <i>Purunui</i> (HR)	Whole plant used as spice	Rs.5/bundle of \pm 250 g

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Alpinia nigra</i> (J. Gaertner.) B.D. Burt [Zingiberaceae]; <i>PM-1105</i>	<i>Deragong</i> (DI), <i>Aihre don</i> (HM)	Pith and inflorescences used as spice	Rs.5/ bundle of 500 g pith. Rs.5/ 10 pieces of inflorescences
<i>Amomum maximum</i> Roxburgh [Zingiberaceae]; <i>PM-983</i>	<i>Aihere tel</i> (HM)	Star shaped fruits arising from base used as chutney	Rs.5/ 5 pieces of fruits
<i>Carum involucratum</i> (Roxburgh) H.E. Baillon [Apiaceae]; <i>PM-1042</i>	<i>Bakho gamram</i> (DI), <i>Khum hoi</i> (HM)	Fresh leaves eaten raw with <i>chutney</i>	Rs.5/ bundle of \pm 200 g
<i>Cinnamomum verum</i> J.S. Presl [Lauraceae]; <i>PM-1106</i>	<i>Dalchini</i> (PN), <i>Thing hong thum</i> (HM)	Dried bark used for flavouring curry	Rs. 25 for \pm 100 g
<i>Curcuma amada</i> Roxburgh [Zingiberaceae]; <i>PM-997</i>	<i>Thaiju-hajing</i> (DI)	Fresh rhizome as <i>chutney</i>	-
<i>Eryngium foetidum</i> Linnaeus [Apiaceae]; <i>PM-1107</i>	<i>Patikhom</i> (HM), <i>Naga Dhania</i> (NE), <i>Bakhni</i> (ZE)	Leaves for flavouring curry and as <i>chutney</i>	Rs.5/ bundle of \pm 150 g
<i>Lippia alba</i> (P. Miller) N.E. Brown ex N.L. Britton & P. Wilson [Verbenaceae]; <i>PM-1043</i>	<i>Borma mosla lai</i> (DI)	Leaves often as spice for mutton curry by <i>Dimasas</i>	-
<i>Murraya koenigii</i> (Linnaeus) C.P. J. Sprengel [Rutaceae]; <i>PM-1108</i>	<i>Thamsi-youngihabia</i> (DI), <i>Narashingha</i> (NE)	Young leaves for flavouring curry	-
<i>Piper griffithii</i> C. de Candolle [Piperaceae]; <i>PM-1109</i>	<i>Michi ha singri</i> (DI), <i>Kobin-rang</i> (HR)	Dry seeds as spice	-
<i>Polygonum posumbu</i> Buchanan-Hamilton ex D. Don [Polygonaceae]; <i>PM-984</i>	<i>Singju</i> (DI)	Young shoots as vegetable, spice and also as <i>chutney</i>	Rs.5/ bundle of \pm 250 g
<i>Rhus chinensis</i> P. Miller [Anacardiaceae]; <i>PM- 985</i>	<i>Gambao/ Khongna</i> (DI), <i>Khokma</i> (HR), <i>Kemeu</i> (ZE)	Pounded seeds as <i>chutney</i>	Rs.5/ unit of \pm 100 g <i>chutney</i>
<i>Toddalia asiatica</i> (Linnaeus) Lamarck [Rutaceae]; <i>PM-1110</i>	<i>Keizi</i> (ZE)	Pounded young fruits as <i>chutney</i>	Rs.10/ bundle of \pm 500g
<i>Zanthoxylum armatum</i> de Candolle [Rutaceae]; <i>PM-1044</i>	<i>Mejen</i> (DI), <i>Singzor</i> (HM), <i>Nech chi</i> (ZE)	Young shoot as spice and vegetable	Rs.5/ bundle of \pm 300 g
<i>Zanthoxylum nitidum</i> (Roxburgh) de Candolle [Rutaceae]; <i>PM-1111</i>	<i>Singite</i> (HM), <i>Timur</i> (NE), <i>Leuer</i> (PN)	Young leaves/ seeds as <i>chutney</i>	-
<i>Zingiber montanum</i> (J.G. Koenig) F. Link ex A.G. Dietrich [Zingiberaceae]; <i>PM-986</i>	<i>Naga Hajing</i> (DI), <i>Kaphu/ Kebeb</i> (ZE)	Yellowish rhizome flesh used as spice	-

Table 5. Wild edible mushrooms

Name of fungus [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Agaricus sp.</i> [Agaricaceae]; <i>PM-996</i>	<i>Mukhum gidiba</i> (DI)	Fruit body as vegetable	Rs.10/unit of \pm 250 g
<i>Auricularia delicata</i> (E.M. Fries) P. Henn. [Auriculariaceae]; <i>PM-987</i>	<i>Mukhum</i> (DI), <i>Yaonupa</i> (ZE)	Fruit body as vegetable	Rs.10/ unit of \pm 250 g
<i>Auricularia polysticha</i> (J.P.F.C. Montagne) P.A. Saccardo [Auriculariaceae]; <i>PM-1112</i>	<i>Mukhum mlen</i> (DI), <i>Pachei</i> (ZE)	Fruit body as vegetable	Rs.10/ unit of \pm 250 g
<i>Cantharellus sp.</i> [Cantharellaceae]; <i>PM-1045</i>	<i>Mukhum wathi</i> (DI), <i>Pah fip</i> (HM), <i>Thaikompa</i> (ZE)	Fruit body makes local delicacy with dry fish	Rs.10/ unit of \pm 250 g

Name of fungus [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Pleurotus citrinopileatus</i> (C.H. Persoon) A.P. Morgan [Pleurotaceae]; <i>PM-995</i>	<i>Mukhum mouser</i> (DI), <i>Pasonhlung</i> (HM), <i>Nriepa</i> (ZE)	Fruit body makes local delicacy with dry fish/soybean	Rs.10/ unit of ± 250 g
<i>Pleurotus ostreatus</i> (N.J. Jacquin-E. Fries) Kummer [Pleurotaceae]; <i>PM-1113</i>	<i>Mukhum hafalam</i> (DI), <i>Patak</i> (ZE)	Fruit body makes local delicacy with dry fish/soybean	Rs.10/ unit of ± 250 g
<i>Pleurotus pulmonarius</i> E. Fries [Pleurotaceae]; <i>PM-988</i>	<i>Mukum-rathong</i> (DI), <i>Pachei</i> (ZE)	Fruit body as vegetable	Rs.10/ unit of ± 250 g
<i>Pleurotus squarrosulus</i> (J. P. F. C. Montagne) R. Singer [Pleurotaceae]; <i>PM-992</i>	<i>Mukum rathow</i> (DI), <i>Pachang</i> (HM), <i>Nguiepa/Patak</i> (ZE)	Fruit body makes local delicacy with dry fish	Rs.10/ unit of ± 250 g
<i>Schizophyllum commune</i> E. Fries [Schizophyllaceae]; <i>PM-1046</i>	<i>Mukhum jijai</i> (DI), <i>Passiso</i> (HM), <i>Tingchapa</i> (ZE)	Fruit body makes local delicacy with dry fish	Rs.10/ unit of ± 250 g
<i>Tricholoma imbricatum</i> (E.M. Fries & E. M. Fries) Kummer [Tricholomataceae]; <i>PM-991</i>	<i>Mukhum godho</i> (DI), <i>Papal</i> (HM), <i>Pane</i> (ZE)	Fruit body as vegetable	Rs.10/ unit of ± 250 g

Table 6. Masticators and Fumigators

Botanical name [Family]; <i>Exsiccate</i>	Vernacular names	Parts used/ Mode of use	Local market rate
<i>Careya arborea</i> Roxburgh [Lecythidaceae]; <i>PM-1114</i>	<i>Bonaphi</i> (DI), <i>Hnapui/Biripatta</i> (HR)	Dried leaves as local <i>Biri</i> with dried tobacco	-
<i>Caryota urens</i> Linnaeus [Arecaceae]; <i>PM-994</i>	<i>Chao-gowai</i> (DI)	Nuts eaten raw	-
<i>Solanum myriacanthum</i> M.F. Dunal [Solanaceae]; <i>PM-989</i>	<i>Se-ek-irhling</i> (HR), <i>Pantao surang</i> (DI)	Grinded seeds made into <i>Biri</i> and smokes to relief teeth ache by the local people	-
<i>Nicotiana rustica</i> Linnaeus [Solanaceae]; <i>PM-993</i>	<i>Damalai</i> (DI), <i>Dum-hna</i> (HM/KU), <i>Nkeu</i> (ZE)	Dried leaf is chewed as masticator with nuts and also as <i>Biri</i>	Rs.10/ 100 g dried leaves
<i>Piper wallichii</i> (F.A.W. Miquel) H.R.E. Handel-Mazzetti [Piperaceae]; <i>PM-990</i>	<i>Mithibon</i> (DI), <i>Kobirang</i> (HR), <i>Guchi</i> (ZE)	Fresh leaves chewed with betel-nut as masticator	-

Out of the total recorded 168 species there are 55 leafy vegetables, 61 fruits and seeds, 19 tuber crops, 18 spices and condiments, 10 wild edible mushrooms and 5 species were masticators and fumigators. Though not cultivated but some of these species are sometimes grown by these people and can be considered as semi-domesticated (Table 7).

Table 7. Use-based numerical classification of recorded wild and semi-domesticated plants and fungi

Plant category	Total recorded	Semi-domesticated
Leafy vegetables	55	17
Fruits and seeds	61	25
Tuber crops: Yams	08	03
Tuber crops: Aroids	11	06
Spices and Condiments	18	14
Wild edible mushrooms	10	00
Masticators and Fumigators	5	01

Again, all the recorded 168 species belongs to 122 genera and 74 families and can be grouped into Fungi (10 species), Pteridophyte (04 species), Gymnosperm (01 species), Monocotyledon (38 species) and Dicotyledon (115 species) (Table 8).

Table 8: Taxonomic representation of recorded plants and fungi at species, genus and family levels

Plant groups	Species	Genus	Families
Fungi	10	06	06
Pteridophyte	04	04	04
Gymnosperm	01	01	01
Monocotyledon	38	23	11
Dicotyledon	115	88	52
Total	168	122	74

Significantly, the study also provided a comprehensive account on 66 species of semi-domesticated plants / plants provided protection in and around the vicinity of the ethnic villages. These include those wild plants, which grows in wild habitats and also recorded to be cultivated in the *Jhum* field, homestead gardens and/ or grown and protected in and around the vicinity of villages for their use by the ethnic people of the district. Following are the recorded such plant species from the present study area- *Acacia farnesiana*, *A.pinnata*, *Allium chinense*, *A. hookeri*, *A. schoenoprasum*, *Alocasia macrorrhiza*, *Alpinia nigra*, *Amorphophallus bulbifera*, *Amomum maximum*, *Andrographis paniculata*, *Aralia armata*, *Baccaurea ramiflora*, *Blumea lacera*, *Bryophyllum pinnatum*, *Calamus rotang*, *Canavalia gladiata*, *Carum involucreatum*, *Cinnamomum verum*, *Citrus jumbhiri*, *Crassocephalum crepidioides*, *Cyphomandra betacea*, *Dillenia indica*, *Dioscorea aculeata*, *D. alata*, *D. bulbifera*, *D. pentaphylla*, *Elaeagnus latifolia*, *Phyllanthus embelica*, *Eryngium foetidum*, *Eurya acuminata*, *Flacourita jangomas*, *Homalomena aromatica*, *Houttyunia cordata*, *Garcinia pedunculata*, *Garcinia lanceifolia*, *Melocanna buccifera*, *Melocalamus compactiflorus*, *Meyna spinosa*, *Momordica charantia* var. *muricata*, *Morus alba*, *Murraya koenigii*, *Musa bulbisiana*, *Nicotiana rustica*, *Oroxylum indicum*, *Paederia foetida*, *Parkia timoriana*, *Passiflora edulis* f. *flavicarpa*, *Phlogacanthus curviflorus*, *Phlogacanthus tubiflorus*, *Calamus erectus*, *Polygonum posumbu*, *Rhus chinensis*, *Solanum indicum*, *Solanum spirale*, *Spilanthes acmella* var. *oleracea*, *Spondias pinnata*, *Stemona tuberosa*, *Syzygium cumini*, *Tamarindus indica*, *Tephrosia candida*, *Terminalia chebula*, *Trevesia palmata*, *Zanthoxylum armatum*, *Zanthoxylum nitidum* and *Zingiber montanum*.

DISCUSSION

Due to poor road connectivity and less urbanization most of the ethnic people inhabiting the remote areas of the hill district are secluded from market economy. As they live in close proximity with the forest, they also collect other forest products including medicine for their day-to-day life needs. The primary players in the collection and marketing of non wood forest products and cultivated plants are mainly women. So, any community-based strategy to use and manage wild edibles/forests must consider the gender issue in order to have a lasting impact.

It is also noteworthy that plants/plant parts of these plants also have a good demand among the urban dwellers of different ethnic groups of the hill area because of their traditional lifestyle and food habit. So, to support them for their additional income, in different localities of the district a number of community based wild edible plants' garden can be an effective measure for conservation and sustainable management of wild edibles throughout the year and that can also ensure their food security (Medhi & Borthakur 2012a).

Again, considering the dimension of the semi-domestication of the wild edible plants; the desired characteristics of plants/ plant parts have been manipulated to grow as crops in subsequent years. So, this process of wild plant domestication/cultivation can also provide valuable genetic information regarding co-evolution of crop plants along with the human civilization (Purugganan & Fuller 2009). Significantly, the present study also provides a comprehensive record of plants for domestication and protection by the ethnic groups of North Cachar Hills is known to be practised since long time. Such plants are selected primarily on the basis of their multifarious uses to fulfil their day to day needs of food and plant resources used otherwise. Thus, these plant species have not only traditional/socio-cultural dimension to the ethnic groups of the area but has also become the integral part of their sustenance practice.

The reason behind such plant domestication and extending protection may be to ensure the easy access to these plant recourses instead of going to the forest for their collection. Also, the selection of wild plants for domestication is based on importance and frequency of use of the plants in terms of food, medicine and in the day to day life of the ethnic groups (Medhi & Borthakur 2012a).

Lastly, it can also be mentioned that the commercialization of some of the ethnic food products can be a successful venture for economic uplifting and social justice for the ethnic groups of the area. However, further relevant studies in this regard have to be undertaken as a follow up action from which it may be expected to open up new developmental vistas in the hill district of Assam, India.

Acknowledgements

Authors are thankful to the ethnic brethren of N.C. Hills, local informants, Village headmen (*Gaon burhas*) and specially the women of the study area who are considered to be the primary players in the collection of wild edibles and their management in the hilly terrains.

LITERATURE CITED

- Alejandro, C.; María del, C.V.; Juan, L.V. & Javier, C. 1996. Plant management among the Nahua and the Mixtec in the Balsas River Basin, Mexico: An ethnobotanical approach to the study of plant domestication. *Human Ecol.* 24(4): 455 – 478.
- Angami, A.; Gajurel, P.R.; Rethy, P.; Singh, B. & Kalita, S.K. 2006. Status and potential of wild edible plants of Arunachal Pradesh. *Indian J. Trad. Knowl.* 5(4): 541 – 550.
- Arora, R.K. 1990. Native food plants of the tribals in Northeastern India. In S.K. Jain. (ed.) *Contribution to Indian Ethnobotany*. Scientific Publ., Jodhpur. Pp. 137-152.
- Arora, R.K. & Pandey, A. 1996. *Wild edible plants of India: Diversity, Conservation and Use*. Nat. Bur. Pl. Genet. Resour., New Delhi.
- Balakrishnan, N.P. 1981 & 1983. *Flora of Jowai*. Vol. I & II. Botanical Survey of India, Howrah.

- Balemie, K. & Kebebew, F. 2006. Ethnobotanical study of wild edible plants in Derashe and Kucha Districts, South Ethiopia. *J. Ethnobiol. Ethnomed.* 2 (53). doi: 10.1186/1746-4269-2-53.
- Borthakur, S.K. 1996. Wild edible plants in markets of Assam, India-An ethnobotanical investigation, In S.K. Jain. (ed.) *Ethnobiology in Human Welfare*. Deep Publ., New Delhi. Pp. 31 – 34.
- Borthakur, S.K.; Sharma, T.R.; Nath, K.K. & Deka, P. 1998. The House gardens of Assam: A traditional Indian experience of management and conservation of Biodiversity-II. *Ethnobotany* 11: 65 – 80.
- Barua, U.; Hore, D.K. & Sarma, R. 2007. Wild edible plants of Majuli island and Darrang districts of Assam. *Indian J. Trad. Knowl.* 6(1):191-194.
- Bhujel, R.B.; Tamang, K.K. & Yonzon, G. S. 1984. Edible wild plants of Darjeeling District. *J. Bengal Nat. Hist. Soc.* 3: 75 - 83(28).
- Chhetri, R.B. 2006. Trends in ethnodomestication of some wild plants in Meghalaya, Northeast India. *Indian J. Trad. Knowl.* 5(3): 342 – 347.
- Deb, D.B. 1981 & 1983. *The Flora of Tripura state*. Vol. I & II. Today and Tomorrow's Print and Publ., New Delhi.
- Diamond, J. 2002. Evolution, consequences and future of plant and animal domestication. *Nature* 418: 700 – 707.
- Food and Agriculture Organization of the United Nations (FAO). 2004. Annual Report: *The state of food insecurity in the world, monitoring the progress towards the world food summit and millennium development goals*. Rome.
- Haridasan, K. & Rao, R.R. 1985 & 1987. *Forest Flora of Meghalaya*. Vol. I & II. Bishen Singh Mahendra Pal Singh, Dehradun.
- Haridarsan, K.; Bhuyan, L.R. & Deori, M.L. 1990. Wild edible plants of Arunachal Pradesh. *Arunachal For. News.* 8 (1 & 2): 1 – 9.
- Heiser, C.B. 1986. Domestication of Cucurbitaceae: Cucurbita and Lagernaria. In D. Y. Harris, & G. Hillman (eds.) *Recent Advances in the Understanding of Plant Domestication and early Agriculture*. 11. World Archaeol. Cong., Southampton.
- Hooker, J.D. 1872-1897. *Flora of British India*, 7 vols. Secretary of State for India, London.
- Jain, S.K. & Rao, R.R. 1967. *A handbook of field and herbarium methods*. Today and Tomorrow, Printers and Publ., New Delhi. 33-58.
- Joseph, J. 1982. *Flora of Nongpoh and Vicinity East Khasi Hills District, Meghalaya*. Govt. of Meghalaya, Shillong.
- Kala, C.P. 2007. Prioritization of cultivated and wild edibles by local people in the Uttaranchal hills of Indian Himalaya. *Indian J Trad. Knowl.* 6(1): 239-243.
- Kanjilal, U.C.; Das, A.; Kanjilal, P.C. & De, R.N. 1934-1940. *Flora of Assam*, Vols. 1-5. Govt. of Assam, Shillong (Vol. 5 by Bor, N. L.). (Reprinted 1982).
- Kar, A. 2004. Common wild vegetables of Aka tribe of Arunachal Pradesh. *Indian J Trad. Knowl.* 3(3): 305-313.
- Kayang, H. 2007. Tribal knowledge on wild edible plants of Meghalaya, Northeast India. *Indian J. Trad. Knowl.* 6(1): 177 – 181.
- Mahanta, P.K. & Gogoi, P. 1998. Ethnobotanical studies in Assam, Survey of unusual vegetables. *Adv. Pl. Sci.* 1(2): 329 – 334.

- Mittre, V. 1985. *The use of wild plants and the processes of domestication in the Indian subcontinent*. In V.N. Mishra & P. Sellwood. (eds.) *Rec. Adv. Indo-Pacific Hist.* Oxford & IBH, New Delhi. Pp. 281 – 291.
- Majumdar, K. & Dutta, B.K. 2009. Traditional wild edible fruits for the forest dwellers of Tripura, India. *Pleione*. 3(2): 167 – 178.
- Medhi, P. & Borthakur, S.K. 2011. Genetic Resources of Root and Tuber Crops from North Cachar Hills of Assam. *J. Root Crops*. 37 (2): 131 – 143.
- Medhi, P. & Borthakur, S.K. 2012a. Phytoresources from North Cachar Hills of Assam-III: Edible plants sold at Haflong market. *Indian. J. Nat. Prod. Resour.* 3(1): 84 – 109.
- Medhi, P. & Borthakur, S.K. 2012b. Phytoresources from North Cachar Hills of Assam, India-VII: Semi-domesticated and protected plants. *Pleione*. 6(1): 66 – 79.
- Medhi, P. & Borthakur, S.K. (2013). Wild edible plants sold by the Zeme Nagas at the makeshift market of Mahur, Dima Hasao district of Assam. *Pleione*. 7(1): 73 – 82.
- Narayanan, M.K.R. & Kumar, N.A. 2007. Gendered knowledge and changing trends in utilization of wild edible greens in Western Ghats, India. *Indian J. Trad. Knowl.* 6(1): 204 – 216.
- Osche, J.J. 1977. *Vegetables of the Dutch East Indies (Edible tubers, bulbs, rhizomes and spices)*, A. Asher & Co. B.V. Amsterdam.
- Pandey, A. & Arora, R.K. 2004. Potential for domestication of wild species in the Indian gene centre. In B.S. Dhillon, R.K. Tyagi, L. Arjun, S. Saxena. (eds.) *Plant genetic resource management*. Narosa Publ. House, Delhi. Pp. 56 – 78.
- Pandey, A.; Tomer, A.K.; Bhandari, D.C. & Pareek, S.K. 2008. Towards collection of wild relatives of crop plants in India. *Genet. Resour. Crop Evol.* 55: 187 – 202.
- Salam, S., Kumar, P. & Jamir, N.S. 2010. Wild edible plants used by the Tankhul Naga of Ukhrul district in Manipur. *Pleione*. 4(2): 284 – 287.
- Sarkar, A. & Das, A.P. 2012. Contribution of forest flora in rural livelihood: a study of Jayanti, Buxa Tiger Reserve, West Bengal, India. *Pleione*. 6(1): 132 – 140.
- Scarcelli, N.; Tostain, S.; Mariac, C.; Agbangla, C.; Da, O.; Berthaud, J. & Pham, J. L. 2006. Genetic nature of Yams (*Dioscorea* sp.) domesticated by farmers in Benin (West Africa). *Gene. Resour. Crop Evol.* 53(1): 121 – 130.
- Schultes, R.E. 1992. *Ethnobotany and Technology in the northwest Amazon: a partnership*. In M. Plotkin, L. Famolare (eds.) *Sustainable Harvest and Marketing of Rain Forest Products*. 7-13. Island Press, Washington.
- Sharma, B.C. 2012. Wild vascular plants traditionally used as vegetables in Darjeeling hills, India. *Pleione*. 6(1): 186 – 194.
- Sinha, R. & Lakra, V. 2005. Wild tribal food plants of Orissa. *Indian J. Trad. Knowl.* 4(3): 246 – 252.