

Phytoresources from North Cachar Hills of Assam, India-VII: Semi-domesticated and protected plants

P. Medhi¹ and S. K. Borthakur

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

¹Department of Botany, Haflong Govt.College, Haflong-788819, Assam, India

E-Mail: pramodmedhi@yahoo.com; skbgul@gmail.com

Received revised 30.04.2012; Accepted 11.05.2012

Abstract

The North Cachar Hills, now known as *Dima Hasao* is a southern district of Assam, India and is located between 24°58' N and 25°47' N latitudes and 92°27' E and 93°43' E longitudes. 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 paper provides a comprehensive account of 114 wild species of plants those are either cultivated or protected in the homestead gardens and/or in the vicinity of villages by the ethnic people for their use. The present study records the use of 111 species belonging 87 genera and 45 families. Out of these plants, 59 species have been used in more than one way. Out of the total recorded 77 edible plants, 21 plants are used both as food and/or medicine. It is also observed that most of the semi-domesticated and protected plants have multifarious uses among the ethnic groups.

Key words: Phytoresources, semi-domesticated, protected plants, North Cachar Hills, Assam.

INTRODUCTION

Ethnic groups living in close proximity with forest have an intrinsic relationship with plants. Besides providing food security, wild plants are intimately linked to their cultural practices and beliefs. They regularly include wild plants in their diets and sale some of these wild plants in makeshift markets (Angami *et al* 2006). Plant domestication is continually being carried out by different ethnic communities over the world to support their needs for food, fibre, medicine, building materials, etc. (Vodouhè *et al* 2011). According to Harlan (1992), Zohary & Hopf (1993), exploitation of wild plants generally leads to domestication of selected plants that continues through cultivation. Selection and cultivation of wild plants by human ultimately results in adaptation to agro-ecology. Hence, the genetic differences distinguish the domesticated species from its wild progenitor. Purugganan & Fuller (2009) stated that the domestication of plants is the first step towards an agro-based economy. A plant is said to be domesticated when it grows and reproduce with human intervention. For preferred characteristics plants have been manipulated to grow as crops in subsequent years. Identification of genes associated with crop domestication and evolution to provide a clear understanding of the dynamics of cultivation practices by human being have been undertaken in many countries.

As a part of ethnobotanical study conducted during 2007–2009 information was collected about the semi-domesticated plants and plants provided protection in the vicinity of villages of ethnic groups in different localities of N.C.Hills District of Assam, India. The paper highlights and provides a comprehensive account on semi-domesticated by the ethnic groups and plants protected in and around the vicinity of ethnic villages. These include those wild plants, which grow 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.

Due to poor communication and urbanization most of the people inhabit in the remote areas are largely secluded from market economy. The reason behind such plant domestication and extending protection may be to ensue the easy access to these plant resources instead of going to the forest for their collection. Significantly, 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.

Publications by Alejandro *et al* (1996), Arora (1990), Barooah & Borthakur (2003), Borthakur (1976a), Borthakur (1996), Borthakur *et al* (1998b), Chhetri (2006), Diamond (2002), Heiser (1986), Hooker (1872-1897), Kala (2007), Kanjilal *et al* (1934 – 1940), Kaul (1981), Kayang (2007), Mittre (1985), Narayanan & Kumar (2007), Osche (1977), Pandey & Arora (2004), Pandey *et al* (2008), Scarcelli *et al* (2006) and Schultes (1992) have provided different aspects of plant domestication and protection by different ethnic groups in India and the other parts of the world.

MATERIALS AND METHODS

Study site: The North Cachar Hills, now known as Dima Hasao district is located in the southern part of Assam, India in between 24°58'N and 25°47'N latitudes and 92°27'E and 93°43'E longitudes and has elevations ranging from 140 to 1866 m above msl. More than 70 % of the ethnic people of the area belong to *Indo-Mongoloid* racial stock. The *Dimasas* constitute the largest ethnic group in the district followed by *Zeme Nagas*; both of them belong to *Tibeto-Burmese* racial stock. The *Hmars* are the third largest ethnic group which together with *Hrangkhoh* and *Biates* collectively known as the *Old-Kukis*. The *Jansens* and *Thadous* are known as the *New-Kukis*. The *Sakacheps (Khelmas)* and *Vaipheis* are some other smaller ethnic groups belong to *Chin Kuki Mizo* racial stocks. There are some *Jaintia (Pnars)* belonging to the *Mon Khamer* racial stock and followers of the matriarchal system (Lalsim 2005).

Random population and/or individual selection sampling has been done on the collected plant germplasm considering their mode of propagation. Frequency of occurrence of the species has also been recorded during the preparation of passport data following the standard guidelines of NBPGR descriptor (Sharma 2000). The collected germplasm were submitted to NBPGR Regional Station, Meghalaya, India for multiplication towards further conservation.

Rest of the specimens were made into mounted herbarium-sheets following standard techniques (Jain & Rao 1967) and later identified with the help of local floras and other available references. The voucher specimens on which this study is based have been deposited in the Herbarium of the Department of Botany, Gauhati University (GUBH) for future reference.

RESULTS AND DISCUSSION

The present investigation has recorded 114 wild plants (including four variants of *Dioscorea alata*) having food, medicine and the other uses which have been either domesticated or protected by one or other ethnic group(s) of north Cachar Hills. The plants have been broadly categorized into three groups *viz.* edible plants, medicinal plants and plants used otherwise are presented in Table-1. The vernacular name(s) the plants, their habit, part(s) used, mode of use, traditional knowledge pertaining to use or about the plant and information on plants which are sold in local market are provided in Table 2.

The total number of species, genera and families; frequency of occurrence and habit of recorded plants has been shown in Table-2, 3 and 4 respectively. The family Poaceae represents with 12

68 Semi-domesticated and protected plants
 plants followed by 7 plants each of Dioscoreaceae, Euphorbiaceae and Solanaceae and 6 plants
 each of Cucurbitaceae and Rutaceae.

Table 1. Category wise number of plants recorded.

Category	No. of plants
A. Edible plants:	
a). Vegetables:	12
b). Fruits and seeds:	
i). Cucurbits	06
ii). Legumes/Pods	05
iii). Other fruits, seeds and inflorescences etc.	29
c). Tuber crop resources:	
i) Edible Yams	09
ii) Other edible tubers	02
d). Spices and condiments	14
B. Medicinal plants:	11
C. Plants used otherwise:	
a). Bamboo and Canes:	
i). Bamboo resources	11
ii). Cane resources	04
b). Material uses of plants:	11
Total	114

Table: 1. Semi-domesticated and protected plants from North Cachar Hills of Assam, India

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Freq- uency	Hab- it	Parts used/Mode of use	Local market rate (Rs.)
A. Edible plants:					
a). Vegetables:					
<i>Abelmoschus manihot</i> (Linnaeus) Medicus [Malvaceae]; <i>PM-220</i> , 20.12.2007, Boro Waphu	<i>Thakhlaio maikhri gajao</i> (DI), <i>Vai anthur asen</i> (HM)	A	Hr	Young shoot eaten cooked as vegetable	Rs.5/bundle of ± 250 gm
<i>Aralia armata</i> (Wallich) Seemann ex Kurz [Araliaceae]; <i>PM-226</i> , 26.10.2008, Michidui	<i>Lingdon</i> (KU), <i>Ture/Saifok</i> (ZE)	R	Sh	Young shoot eaten cooked as vegetable	Rs.5/bundle of ± 5 shoots
<i>Blumea lacera</i> DC. [Asteraceae]; <i>PM-233</i> , 22.12.2008, Moulveng	<i>Mugongreng/ Gangrima</i> (DI), <i>Anra mang</i> (HM), <i>Peau</i> (ZE)	A	Sh	Leaves eaten cooked as Vegetable (mostly preferred with Brinjal)	Rs.5/bundle of ± 10 shoots
* <i>Clerodendrum colebrookianum</i> Walpers [Verbenaceae]; <i>PM-242</i> , 22.12.2008, Gunjung	<i>Mismau</i> (DI), <i>Anphui</i> (HM)	A	Sh	i. Leaf eaten cooked as vegetable. ii. Half cup juice taken orally early morning for few days controls high blood pressure.	Rs.5/bundle of ± 250 gm
<i>Crassocephalum crepidioides</i> (Benth) S. Moore [Asteraceae]; <i>PM-245</i> , 26.10.2008, Nriachi bungalow	<i>Impingi</i> (ZE)	O	Hr	Leaves eaten cooked as Vegetable	Rs.5/bundle of ± 250 gm
<i>Eurya acuminata</i> DC. [Theaceae]; <i>PM-249</i> , 20.12.2007, Retzol	<i>Chizou</i> (HM/KU), <i>Misimbua</i> (ZE)	A	Tr	Leaf eaten cooked with Pork meat	Rs.5/bundle of ± 500 gm
* <i>Homalomena aromatica</i> Schott [Araceae]; <i>PM-168</i> , <i>IC no.-569108</i> , 12.01.2009, Dikrik	<i>Tharem/Thagong-yungsa</i> (DI)	O	Hr	i. Fresh aromatic leaf sheath either eaten cooked or as <i>chutney</i> with chilies and spices. ii. The delicacy prepared from the leaf sheath is eaten by a mother after 1-3 days of child delivery for early recovery from weakness.	-
<i>Paederia foetida</i> Linnaeus [Rubiaceae]; <i>PM-261</i> , 07.12.2009, Sampharidisha	<i>Saonkiphu</i> (DI), <i>Voi hnam zai</i> (HM), <i>Hebeheu-ria</i> (ZE)	F	Cl	i. Leaf eaten cooked as vegetable. ii. Half cup fresh juice extract is taken orally empty stomach early morning to cure gastric and indigestion etc.	Rs.5/bundle of ± 500 gm
<i>Rhynchosyche ellipticum</i> (Wallich ex D.F.N. Dietrich) DC. [Gesneriaceae]; <i>PM-266</i> , 20.12.2007, Retzol	<i>Mimalai</i> (DI), <i>Telhlep</i> (HM/KU), <i>Endroigi</i> (ZE)	A	Us	Leaves eaten cooked as Vegetable	Rs.5/bundle of ± 10 shoots
* <i>Sarchochlamys pulcherrima</i> (Roxburgh) Gaudichaud [Urticaceae]; <i>PM-268</i> , 21.12.2007;	<i>Mishaigi</i> (DI), <i>Lengo</i> (HM), <i>Endaugi</i> (ZE)	A	Us	i. Young leaf eaten cooked as vegetable preferred with Banana inflorescence. ii. This delicacy is eaten with	Rs.5/bundle of ± 300 gm



PLATE - I. Fig. 1. *Alpinia nigra* (Gaertner) Burt.; **Fig. 2.** *Nicotiana rustica* Linnaeus; **Fig. 3.** *Houttyunia cordata* Thunberg; **Fig. 4.** *Blumea lacera* DC.

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Freq- uency	Ha- bit	Parts used/Mode of use	Local market rate (Rs.)
<i>Paederia foetida</i> Linnaeus [Rubiaceae]; PM-261, 07.12.2009, Sampharidisha	Saonkiphu (DI), Voi hnam zai(HM), Hebeheu-ria (ZE)	F	Cl	i. Leaf eaten cooked as vegetable. ii. Half cup fresh juice extract is taken orally empty stomach early morning to cure gastric and indigestion etc.	Rs.5/bundle of ± 500 gm
<i>Rhynchochelum ellipticum</i> (Wallich ex D.F.N. Dietrich) DC. [Gesneriaceae]; PM-266, 20.12.2007, Retzol	Mimalai (DI), Telhlep (HM/KU), Endroigi (ZE)	A	Us	Leaves eaten cooked as Vegetable	Rs.5/bundle of ± 10 shoots
* <i>Sarchochlamys pulcherrima</i> (Roxburgh) Gaudichaud [Urticaceae]; PM-268, 21.12.2007; Longma-I	Mishaigi (DI), Lengo (HM), Endaugi (ZE)	A	Us	i. Young leaf eaten cooked as vegetable preferred with Banana inflorescence. ii. Twigs boiled in water for brown dye in natural fibres.	Rs.5/bundle of ± 300 gm
* <i>Spilanthes acmella</i> var. <i>oleracea</i> Clarke [Asteraceae]; PM-76, IC no.-560834, 15.12.2007, Khamtal veng	Samberma(DI), Ansa Tlang (HM), Klungbua (ZE)	F	Hr	i. Shoot eaten cooked as vegetable. ii. Inflorescence paste applied locally against tooth ache.	Rs.5/bundle of ± 500 gm
<i>Vitis corniculata</i> Benthham [Vitaceae]; PM-505, 22.09.2008, Gurubari	Dushrem (DI)	O	Cl	Leaf eaten cooked as vegetable & tastes sour.	-

b). Fruits and seeds:

i). Cucurbits

* <i>Cucumis trigonus</i> Roxburgh [Cucurbitaceae]; PM-278, 07.12.2009, Sampharidisha	Thaisim (DI), Fangma tial (HM)	R	Cl	i. Fruit-Vegetable/eaten raw. ii. The Dimasas use this for offerings during worshipping.	Rs.15/ kg fruit
<i>Gymnogetalum chinensis</i>	Dukhathai (DI), Ram	O	Cl	Fruit eaten cooked as vegetable	Rs. 20/kg

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Freq- uency	Ha- bit	Parts used/Mode of use	Local market rate (Rs.)
* <i>Spilanthus acmella</i> var. <i>oleracea</i> Clarke [Asteraceae]; PM-76, IC no.-560834, 15.12.2007, Khamtalveng	<i>Samberma</i> (DI), <i>Ansa Tlang</i> (HM), <i>Klungbua</i> (ZE)	F	Hr	i. Shoot eaten cooked as vegetable. ii. Inflorescence paste applied locally against tooth ache.	Rs.5/bundle of ± 500 gm
<i>Vitis corniculata</i> Benthham [Vitaceae]; PM-505, 22.09.2008, Gurubari	<i>Dushrem</i> (DI)	O	Cl	Leaf eaten cooked as vegetable & tastes sour.	-
b). Fruits and seeds:					
i). Cucurbits					
* <i>Cucumis trigonus</i> Roxburgh [Cucurbitaceae]; PM-278, 07.12.2009, Sampharidisha	<i>Thaisim</i> (DI), <i>Fangma tial</i> (HM)	R	Cl	i. Fruit-Vegetable/eaten raw. ii. The <i>Dimasas</i> use this for offerings during worshipping.	Rs.15/ kg fruit
<i>Gymnopetalum chinensis</i> (Loureiro) Merrill [Cucurbitaceae]; PM- 81, IC-560839, Boro Waphu	<i>Dukhathai</i> (DI), <i>Ram berul</i> (HM)	O	Cl	Fruit eaten cooked as vegetable	Rs. 20/ kg fruit
* <i>Luffa cylindrica</i> (Linnaeus) M. Roemer [Cucurbitaceae]; PM-281, 07.12.2009, Sampharidisha	<i>Phronthai</i> (DI), <i>Thenpon</i> (KU), <i>Bhol</i> (NE), <i>Ndeumpi</i> (ZE)	F	Cl	i. Fruit eaten cooked as vegetable. ii. The <i>Luffa</i> is used for cleaning human skin during bathing.	Rs.10/ kg fruits
<i>Solena amplexicaulis</i> (Lamarck) Gandhi [Cucurbitaceae]; PM-283, 07.12.2009, Sampharidisha	<i>Kunduli</i> (AS/NE), <i>Hagrani-thaisummuri</i> (DI)	O	Cl	Fruit/young shoot eaten cooked as vegetable.	Rs.10/ kg fruits
<i>Momordica cochinchinensis</i> (Loureiro) Sprengel [Cucurbitaceae]; PM-284, 26.10.2008, Michidui.	<i>Hangathai</i> (DI), <i>Jankha</i> (HM /VA), <i>Nraupui-chi</i> (ZE)	F	Cl	Fruits eaten cooked as vegetable; The fruits contain more and larger seeds.	Rs.20/ kg fruits
* <i>Momordica charantia</i> var. <i>muricata</i> (Willdenow) H.L. Chakravarty [Cucurbitaceae]; PM-130, IC no.-566714, 25.10.2008, Buolzol	<i>Hagrani gala</i> (DI), <i>Tlang-Chankha</i> (HM/HR), <i>Jankha</i> (MI), <i>Kagai chi</i> (ZE)	F	Cl	i. Young Fruit as eaten cooked as vegetable. ii. Juice taken orally against Diabetes in every 3alternate days for few months.	Rs. 5/ 250 gm fruits
ii). Legumes/Pods					
<i>Acacia farnesiana</i> (Linnaeus) Willdenow [Mimosaceae]; PM-289, 20.12.2007, Retzol	<i>Bairithai</i> (DI), <i>Zongta te</i> (HM), <i>Nkampichibe</i> (ZE)	F	Tr	Fruit eaten cooked as vegetable/Dried fish <i>chutney</i> .	Rs.10/ bundle of 10 fruits
* <i>Acacia pennata</i> (Linnaeus) Willdenow [Mimosaceae]; PM-290, 20.12.2007, Retzol	<i>Suji</i> (DI), <i>Khang muk</i> (HM), <i>Tingchi-heu</i> (ZE)	O	Li	i. Young shoot/Tender pods eaten cooked as vegetable /Dry fish <i>chutney</i> . ii. Stem bark is crushed with stone and used as ichthyotoxins.	Rs.5/ bundle of ± 250 gm
<i>Canavalia ensiformis</i> DC. [Fabaceae]; PM-70, IC-560828, 21.12.2007, Muolkoi	<i>Sobai dao yung</i> (DI), <i>Fangra anzam chi</i> (HM), <i>Kangianeteupi</i> (ZE)	R	Cl	Tender pods /Seeds eaten cooked as vegetable	Rs.10/ four fruits
<i>Mucuna monosperma</i> DC. [Fabaceae]; PM-480, 20.12.2007, Retzol	<i>Bandar kekua</i> (AS), <i>Meisia ryntim</i> (PN), <i>Mapinewne</i> (ZE)	O	Cl	Young pods eaten cooked as vegetable.	-
* <i>Parkia roxburghii</i> G. Don [Mimosaceae]; PM-580, 15.12.2007, Saisel	<i>Zongta</i> (HM/KU), <i>Bairithai</i> (DI), <i>Nkampi</i> (ZE)	F	Tr	i. Young pods/seeds eaten cooked as vegetable and prepares dry fish <i>chutney</i> . ii. Tender pod-paste cures stomach pain.	Rs.10/ four fruits
iii). Other fruits, seeds and inflorescences etc.					
* <i>Aegle marmelos</i> (Linnaeus) Correa [Rutaceae]; PM-373, 22.09.2008, Gurubari	<i>Belthai</i> (DI), <i>Chilongpak chi</i> (ZE)	O	Tr	i. Ripened fruits eaten raw. ii. Sliced, dried young fruits boiled and drink as refreshing tonic.	Rs.5/ two fruits
* <i>Baccaurea raniflora</i> Loureiro [Euphorbiaceae]; PM-376, 20.12.2007, Jatinga	<i>Kosmai thai</i> (DI), <i>Theipangkai</i> (KU), <i>Pangkai thei</i> (HM), <i>Kauchi</i> (ZE)	O	Tr	i. Fruits eaten raw. ii. Fresh leaf paste yields chocolate coloured dye is use to dye cotton & silk.	Rs.10/ bundle of 500 gm
* <i>Castanopsis indica</i> (Roxburgh) A.DC. [Fagaceae]; PM-119, IC no.-566703, 24.10.2008, Buolzol	<i>Isera</i> (HR), <i>Thingsa chi</i> (ZE)	R	Tr	i. Fruit/nuts are edible. ii. Timber used for construction.	Rs.5/ 250 gm
<i>Citrus hystrix</i> DC. [Rutaceae]; PM-	<i>Riba</i> (DI),	O	Tr	Pulp eaten raw.	Rs. 5/ two

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Freq- uency	Hab- it	Parts used/Mode of use	Local market rate (Rs.)
<i>Citrus hystrix</i> DC. [Rutaceae]; PM-365, 24.10.2008, Buolzol	<i>Riba</i> (DI), <i>Setuitam</i> (HM), <i>Sherthum</i> (HR), <i>Satkorachi</i> (ZE)	O	Tr	Pulp eaten raw.	Rs. 5/ two fruits
* <i>Citrus jambhiri</i> Lushington [Rutaceae]; PM-366, 22.09.2008, Gurubari	<i>Thaisa maikhri</i> (DI), <i>Ramser</i> (HM)	O	Sh	i. Pulp eaten raw. ii. Half cup juice for 3-5 days use as cough expectorant.	Rs. 5/ three fruits
<i>Cyphomandra betacea</i> (Cavanilles) Sendtner [Solanaceae]; PM-302, 18.9.2009, Buolzol	<i>Panthao gidibao</i> (DI), <i>Theimanta</i> (HR), <i>Pebang tigi chi</i> (ZE)	O	Sh	Fruits eaten either cooked as vegetable or as salad with hot chillies.	Rs.10/ five fruits
* <i>Dillenia indica</i> Linnaeus [Dilleniaceae]; PM-460, 20.12.2007, Retzol	<i>Thaidi</i> (DI), <i>Ithlang</i> (HM), <i>Mandi</i> (ZE)	O	Tr	i. Fleshy calyx eaten either raw or cooked with rice flour. ii. Good timber yielding for construction of house & fuelwood.	Rs.5/ two fruits
* <i>Elaeagnus conferta</i> Roxburgh [Elaeagnaceae]; PM-569, 22.12.2008, Moulveng	<i>Matau</i> (HM)	F	Li	i. Fruits eaten raw and Jelly prepared. ii. Leaf is boiled with water and is used to bath for curing body ache.	Rs.10/kg of fruits
* <i>Phyllanthus emblica</i> Linnaeus [Euphorbiaceae]; PM-786, 22.09.2008, Gurubari	<i>Hamlait hai</i> (DI), <i>Gam so-lu</i> (MI), <i>Jauka chi</i> (ZE)	F	Tr	i. Fruits eaten raw. ii. Dried fruits use as digestive. ii. Tree is worshiped by a <i>Dimasa</i> father of a sick baby for early recovery.	Rs.10/kg of fruits
<i>Flacourita cataphracta</i> Roxburgh ex Willdenow [Flacourtiaceae]; PM-38, 20.12.2008, Dikrik	<i>Panial</i> (AS), <i>Thaislagunju</i> / <i>Thaislagondi</i> (DI)	O	Tr	Ripened fruits eaten raw.	Rs.5/ 250 gm fruits
* <i>Garcinia pedunculata</i> Roxburgh [Clusiaceae]; PM-304, 16.12.2007, Choto Waphu	<i>Bortheke</i> (AS), <i>Thaikhra gede</i> (DI), <i>Vomva</i> (HM)	O	Tr	i. Dry sliced Fruit-Curry. ii. Against loose motion-boiled stock with dried slices; one cup for 3-4 days.	Rs.5/ one fruit
* <i>Garcinia lanxifolia</i> var. <i>oxyphylla</i> Roxburgh [Clusiaceae]; PM-384, 12.01.2009, Dibrari	<i>Kujitheke</i> (AS), <i>Sushru</i> (DI), <i>Pelte</i> (HM)	O	Tr	i. Fruits eaten raw or cooked as curry with fresh fish. ii. Jelly is prepared from ripe fruits.	Rs.5/ five fruits
<i>Lycopersicon pim pin elifolium</i> (Linnaeus) P. Miller [Solanaceae]; PM-126/566710 & 127, IC No. 566711, 22.09.2008, Gurubari	<i>Gidibao-daodi</i> (DI), <i>Mantathur chin</i> (HM)	F	Hr	Fruit-Vegetable & Salad/ <i>chutney</i> with hot chillies	Rs.20/kg fruits
* <i>Mangifera indica</i> Linnaeus [Anacardiaceae]; PM-744, 07.12.2009, Thajuwari	<i>Thaiju</i> (DI), <i>Thaihai</i> (HM/MI), <i>Hai thai</i> (KU), <i>Mba Chi</i> (ZE)	F	Tr	i. Fruit pulp eaten raw. ii. Wood is good timber for construction and also as firewood.	Rs.10/kg fruits
* <i>Mangifera sylvatica</i> Roxburgh [Anacardiaceae]; PM-388, 07.12.2009, Sampharidisha	<i>Thaiju maïrong</i> (DI), <i>Gam thaihai</i> (MI), <i>Hnamba chi</i> (ZE)	R	Tr	i. Fruit pulp eaten raw. ii. Wood is good timber for construction works.	Rs.10/kg fruits
<i>Musa bulbisiana</i> Colla [Musaceae]; PM-308, 24.08.2008, Longma, Haflong	<i>Thailikatsia</i> / <i>Thailik gibi</i> (DI), <i>Nachang</i> (MI/HM)	F	L Hr	Ripe Fruit eaten raw.	Rs.10/ dozen fruits
<i>Musa velutina</i> Wendland [Musaceae]; PM-312, 24.08.2008, Longma-III	<i>Laishrimdi</i> (DI), <i>Gam Nachang vui</i> (HM/MI), <i>Gumju</i> (ZE)	F	L Hr	Inflorescence (small-short purple) eaten cooked as vegetable	Rs. 10/ three Inflorescences
* <i>Phlogacanthus curviflorus</i> Nees [Acanthaceae]; PM-314, 07.12.2009, Sampharidisha	<i>Aluso</i> (DI)	O	Us	i. Dry/fresh inflorescence as vegetable. ii. Fresh juice as cough expectorant. iii. Stem close to the soil is used to produce red dye for cotton and <i>Eri</i> silk.	Rs.5/ ten inflorescences
* <i>Phlogacanthus tubiflorus</i> Nees [Acanthaceae]; PM-315, 07.12.2009, Sampharidisha	<i>Aluso</i> (DI)	O	Us	i. Dry/fresh inflorescence as vegetable. ii. Fresh juice as cough expectorant.	Rs.5/ ten inflorescences
<i>Prunus nepaulensis</i> (Seringe)	<i>Delaoji</i> (DI), <i>Ngau</i>	R	Tr	Ripe fruits eaten raw.	Rs.10/unit of

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Frequency	Habit	Parts used/Mode of use	Local market rate (Rs.)
<i>Prunus nepaulensis</i> (Seringe) Steudel [Rosaceae]; PM-393, 07.12.2009, Sampharidisha	<i>Delaoji</i> (DI), <i>Ngau chi</i> (ZE)	R	Tr	Ripe fruits eaten raw.	Rs.10/ unit of \pm 250 gm
* <i>Spondias pinnata</i> (Linnaeus f.) Kurz [Anacardiaceae]; PM-400, 26.10.2008, Michidui	<i>Thaisudi</i> (DI), <i>Jongmot</i> (HM), <i>Njing-chi</i> (ZE)	F	Tr	i. Ripened fruits eaten raw and tender fruits eaten cooked with fish. ii. A bagfull fruits soaked in stagnant water (3-5days) and is ichthyotoxins. iii. Ripe fruit pulp roasted and applied to cure infection in between fingers.	Rs.5/ ten fruits
<i>Solanum indicum</i> Linnaeus [Solanaceae]; PM-317, 20.12.2008, Dikrik	<i>Panthao khimkhatai</i> (DI), <i>Sam tok</i> (HM), <i>Leenguipi</i> (KU), <i>Karinchi</i> (ZE)	A	Us	Young fruits are eaten cooked with mixed vegetable.	Rs.5 for \pm 100 gm fruits
<i>Solanum spirale</i> Roxburgh [Solanaceae]; PM-271, 22.9.2008, Gurubari	<i>Kanarengma</i> (DI), <i>Nkabua</i> (ZE)	O	Hr	Prepares chutney with chillies and dried fish by mixing boiled young fruits or young shoots.	Rs.5/ bundle of \pm 350 gm
* <i>Solanum torvum</i> Swartz [Solanaceae]; PM-479, 20.12.2008, Dikrik	<i>Panthao khimkhatai gidiba</i> (DI), <i>Sam tok</i> (HM), <i>Leenguipi</i> (KU), <i>Karinchi</i> (ZE)	A	Us	i. Young fruits eaten cooked with mixed vegetable; ii. That controls high blood pressure.	-
* <i>Syzygium cumini</i> (Linnaeus) Skeels [Myrtaceae]; PM-401, 22.12.2008, Gunjung/ PM-550, 25.10.2008, Buolzol	<i>Jambu thai</i> (DI), <i>Sepuinusu</i> (HM), <i>Thei-vom</i> (KU), <i>Hmuizolong</i> (HR), <i>Jamun</i> (NE), <i>Mui-chi</i> (ZE)	O	Tr	i. Fresh ripened fruits eaten raw. ii. The bark is boiled with cotton or <i>Eri</i> silk yarn and trap nets, thus shows the purple brown coloration. iii. Dried fruits grinded and mixed with water and use to curing diabetes. iv. Good timber for house construction.	Rs.10/ kg of fruits
* <i>Tamarindus indica</i> Linnaeus [Caesalpiniaceae]; PM-402, 18.02.2008, Gurubari	<i>Tintri</i> (DI), <i>Theipai</i> (HM & KU)	F	Tr	i. Fruit eaten raw. ii. Good timber for construction works.	Rs.10/ kg fruit
* <i>Terminalia chebula</i> Retzius [Combretaceae]; PM-403, 22.12.2008, Moulveng	<i>Shilikha thai</i> (DI), <i>Ortoki</i> (HR)	O	Tr	i. Fruit eaten raw at young or dried. ii. Use against stomach pain. iii. Wood is good timber.	Rs.10/kg. fruits
* <i>Travesia palmata</i> (Roxburgh) Visiani [Araliaceae]; PM-318, 22.12.2008, Moulveng	<i>Kemtaudi</i> (DI), <i>Kotebel</i> (HM)	O	Sh	i. Inflorescence eaten cooked as vegetable or boiled <i>chumey</i> . ii. Boiled inflorescences paste is taken orally to cure dysentery. iii. Grinded fruits are ichthyotoxins.	Rs.10/ bundle of \pm 300 gm inflorescence
* <i>Zizyphus mauritiana</i> Lamarck [Rhamnaceae]; PM-405, 22.09.2008, Boro Waphu	<i>Thaigundā</i> (DI), <i>Ngai-chi</i> (ZE)	O	Tr	i. Fresh/ dried fruits eaten raw. ii. Good timber and firewood.	Rs.10/ kg of fruits
c). Tuber crop resources:					
i) Edible Yams					
<i>Dioscorea aculeata</i> Linnaeus [Dioscoreaceae]; PM-160/ IC no. - 569100, 22.12.2008, Moulveng	<i>Thagdi</i> (DI), <i>Barhtlum</i> (HM)	O	Cl	White barked sweet tuber eaten boiled and also as vegetable.	Rs.15/kg of tuber
<i>Dioscorea alata</i> Linnaeus [Dioscoreaceae]; PM-156/ IC no. - 569096, 18.12.2008, Choto Waphu	<i>Thaphukhlong</i> (DI), <i>Banra</i> (HR), <i>Hereu</i> (ZE)	O	Cl	Large red barked tuber cooked with vegetable and also mixed with rice.	Rs.10/kg of tuber
<i>Dioscorea alata</i> Linnaeus [Dioscoreaceae]; PM-157/ IC no. - 569097, 18.12.2008, Choto Waphu	<i>Thaphu sathai</i> (DI), <i>Bahra</i> (HM), <i>Baha</i> (KU/VA), <i>Basa</i> (MI)	O	Cl	Small white tuber cooked with vegetable and also mixed with rice	Rs.10/ kg of tuber
<i>Dioscorea alata</i> Linnaeus [Dioscoreaceae]; PM-161/ IC no. - 569101, 22.12.2008, Gunjung	<i>Thayung</i> (DI)	O	Cl	Long slender tuber eaten cooked as vegetable and also used as pig fodder when available.	-
<i>Dioscorea alata</i> Linnaeus [Dioscoreaceae]; PM-163/ IC no. - 569103, 05.01.2009, Gurubari	<i>Thaphu Gajao</i> (DI)	F	Cl	Large red barked tuber cooked with vegetable and also mixed with rice.	Rs.10/ kg of tuber
* <i>Dioscorea bulbifera</i> Linnaeus	<i>Thaphu</i>	O	Cl	i. Small red tuber cooked with	Rs.10/ kg of

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Frequency	Habit	Parts used/Mode of use	Local market rate (Rs.)
<i>*Dioscorea bulbifera</i> Linnaeus [Dioscoreaceae]; PM-158/ IC no.-569098, 18.12.2008, Choto Waphu	<i>Thaphu miyungwablai</i> (DI), <i>Basel phauk</i> (HM), <i>Baha</i> (MI)	O	Cl	i. Small red tuber cooked with vegetable and also Rice ii. Tender shoots are crushed and rubbed on the wet hairs and skin to produce lather for bathing	Rs.10/kg of tuber
<i>Dioscorea pentaphylla</i> Linnaeus [Dioscoreaceae]; PM-159/ IC no.-569099, 20.12.2008, Dikrik/ Gurubari	<i>Thaphin</i> (DI), <i>Ram bahra</i> (HM), <i>Baha</i> (MI)	O	Cl	Large oblong soft tuber is eaten cooked. <i>Note:</i> Contains fewer roots and leaf lamina is hairy.	-
<i>Smilax china</i> Duhamel [Smilacaceae]; PM-167/ IC no.-569107, 22.12.2008, Dikrik	<i>Thassap/ Susni</i> (DI), <i>Reucheu</i> (ZE)	O	Cl	Boiled tuber stock taken orally as revitalizing tonic daily.	Rs.20/ kg of tuber
<i>Stemona tuberosa</i> Loureiro [Stemonaceae]; PM-442, 22.12.2008, Moulveng	<i>Basel phauk</i> (HM)	R	Cl	Tuber eaten boiled and also as vegetable.	-
ii) Other edible tubers:					
<i>Amorphophallus bulbifera</i> (Roxburgh) Blume [Araceae]; PM-107/ IC no.-566691, 27.10.2008, Boro Waphu	<i>Thabema</i> (DI), <i>Saldong</i> (HM), <i>Telcong</i> (KU), <i>Teldon</i> (MI)	O	Hr	Tuber preferred to eaten cooked with meat.	Rs.10/ kg of tuber
<i>*Manihot esculenta</i> Crantz [Euphorbiaceae]; PM-250, 16.12.2007, Choto Waphu	<i>Ruthi</i> (DI), <i>Thing kowlkai</i> (HM), <i>Bathing</i> (HR)	F	Us	i. Tuber-eaten boiled & raw. ii. The leaf is used for feeding <i>Eri</i> silkworm (<i>Samia ricini</i> Donovan).	Rs.10/ kg of tuber
d). Spices and condiments:					
<i>Albizia myriophylla</i> Benth [Mimosaceae]; PM-422, 07.12.2009, Sampharidisha	<i>Themra maizu</i> (DI)	O	Li	Barks used for flavoring local beer by mixing with the yeast cake.	Rs.10/ bundle of 200 gm
<i>Allium schoenoprasum</i> Linnaeus [Alliaceae]; PM-322, 22.10.2008, Moulveng	<i>Tlang purun</i> (HM), <i>Tingdra</i> (ZE)	F	Hr	Whole plant used for ethnic cuisine	Rs.5/ bundle of ± 250 gm
<i>*Alpinia nigra</i> (Gaertner) Burtt [Zingiberaceae]; PM-490, 07.12.2009, Sampharidisha	<i>Deragong</i> (DI), <i>Aihredon</i> (HM)	A	Hr	i. Pith and inflorescence eaten cooked as vegetable. ii. Use as spice for flavouring curry.	Rs.5/ 250 gm pith/ five inflorescences
<i>Ammorium maximum</i> Roxburgh [Zingiberaceae]; PM-324, 20.12.2007, Retzol	<i>Aihere tel</i> (HM)	R	Hr	Crowded fruits arising from base used as <i>chutney</i> .	Rs.5/ five fruits
<i>Cinnamomum tamala</i> Nees [Lauraceae]; PM-408, 20.12.2007, Jatinga	<i>Tezpata/Hnarimnei/Hnarimse</i> (HM)	O	Tr	Leaf used for flavouring curry.	Rs.5/bundle of ± 250 gm
<i>Cinnamomum zeylanica</i> Blume [Lauraceae]; PM-327, 20.12.2007, Jatinga	<i>Dalchini /Thing hong thum</i> (HM)	O	Tr	Leaf used for flavouring non-veg curry.	Rs.25/ 100 gm
<i>Eryngium foetidum</i> Linnaeus [Apiaceae]; PM-331, 15.12.2007, Saisel	<i>Patikhom</i> (HM), <i>Naga Dhania</i> (NE), <i>Bakhor</i> (ZE)	F	Hr	Whole plant for flavouring curry/as <i>chutney</i> .	Rs.5/ bundle of ± 5 plants
<i>*Houttuynia cordata</i> Thunberg [Saururaceae]; PM-332, 15.12.2007, Saisel	<i>Mojoukhmo</i> (DI), <i>Aithang</i> (HM), <i>Jarmendo</i> (PN)	F	Hr	i. Leaf/creeping stem. ii. Boiled stock drink cures Dysentery.	Rs.10/ bundle of ± 300 gm
<i>*Murraya koenigii</i> (Linnaeus) Sprengel [Rutaceae]; PM-335, 07.12.2009, Sampharidisha	<i>Thamsi-youngihabia</i> (DI), <i>Narashingha</i> (NE)	O	Sh	i. Leaf used for flavouring curry. ii. Smearred leaves are kept in the animal house as vermin repellent.	Rs.5/ bundle of about 250gm
<i>*Persicaria posumbu</i> (Buch.-Ham. ex D. Don) H. Gross [Polygonaceae]; PM-503, 07.12.2009, Sampharidisha	<i>Singju</i> (DI), <i>Heganturia</i> (ZE)	R	Hr	i. Young shoot used as vegetable. ii. Spice and also <i>chutney</i> .	Rs.5/bundle of ± 300 gm
<i>*Rhus sanialata</i> Murray [Anacardiaceae]; PM-545, 25.10.2008, Buolzol	<i>Khokma</i> (HR), <i>Gambao/ Khongna</i> (DI), <i>Kemeu</i> (ZE)	F	Tr	i. Pounded seeds eaten raw as <i>chutney</i> . ii. Seed powder is taken orally twice daily against dysentery and is also digestive and Carminative.	Rs.10/ unit of 50 gm chutney
<i>*Zanthoxylum armatum</i> DC.	<i>Mejen</i> (DI), <i>Singzor</i>	O	Us	i. Young shoot as spice &	Rs.5/ shoots

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Freq- uency	Ha- bit	Parts used/Mode of use	Local market rate (Rs.)
* <i>Zanthoxylum armatum</i> DC. [Rutaceae]; <i>PM-341</i> , 26.10.2008, Michidui	<i>Mejen</i> (DI), <i>Singzor</i> (HM), <i>Nech chi</i> (ZE)	O	Us	i. Young shoot as spice & vegetable. ii. Grinded fruits are fish stupifying.	Rs.5/ shoots of ± 350 gm
* <i>Zanthoxylum oxyphyllum</i> Edgwarth [Rutaceae]; <i>PM-342</i> , 20.12.2007, Jatinga	<i>Singite</i> (HM), <i>Timur</i> (NE), <i>Leuer</i> (PN)	O	Sh	i. Young leaf/seed used as <i>Chutney</i> . ii. The crushed fruits applied locally for curing toothache.	Rs.5/ bundle of 5 - 8 shoots
<i>Zingiber casumunar</i> Roxburgh [Zingiberaceae]; <i>PM-489</i> , 26.10.2008, Michidui	<i>Naga Hajing</i> (DI), <i>Kaphu/ Kebeb</i> (ZE)	O	Hr	Rhizomes flesh light yellowish coloured and used as spice.	-
B. Medicinal plants:					
* <i>Acorus calamus</i> Linnaeus [Araceae]; <i>PM-521</i> , 25.10.2008, Buolzol	<i>Inamchek</i> (HR)	O	Hr	i. Plant paste is taken orally to cure gastric, but never during pregnancy. ii. Plant part is believed to expel evil spirits from a house. iii. Python repellent in animal house.	-
* <i>Justicia adhatoda</i> Linnaeus [Acanthaceae]; <i>PM-592</i> , 26.10.2008, Saikam	<i>Gewim-heu</i> (ZE)	F	Sh	i. Leaf extract is taken orally twice daily to cure tonsillitis and cough. ii. Boiled leaf extract is also useful in controlling malaria fever.	-
* <i>Bryophyllum pinnatum</i> Kurz [Crassulaceae]; <i>PM-600</i> , 27.10.2008, Nriachi bunglow	<i>Miru heu</i> (ZE), <i>Tenga</i> <i>pata</i> (NE), <i>Maikhri</i> <i>lai</i> (DI)	O	Hr	i. Luice taken orally against stomach pain (i.e. removing kidney stones). ii. Paste applied on burned surfaces.	-
<i>Asparagus racemosus</i> Willdenow [Asparagaceae]; <i>PM-559</i> , 15.12.2007, Saisel	<i>Rum bahl</i> (HM), <i>Satmul</i> (NE)	O	Cl	Fasciculated root juice taken orally, once daily in the early morning to cure hypertension and dysentery.	Rs.5/ unit of 250 gm roots
* <i>Jatropha curcas</i> Linnaeus [Euphorbiaceae]; <i>PM-535</i> , 25.10.2008, Buolzol; <i>PM-574</i> , 15.12.2007, S. Saisel.	<i>Mut maleng</i> (HM), <i>Dimul</i> (HR), <i>Rudaokhlong</i> (DI), <i>Lankhong</i> (ZE)	A	Sh	i. Latex is used as anti- inflammatory and in cut- wounds. ii. Dried beaded seeds in a bamboo stick burned and used as torch. iii. Mixture of latex and <i>Aloe</i> <i>vera</i> paste applied to burned skin. iv. Grown as a live fencing.	-
* <i>Jatropha gossypifolia</i> Linnaeus [Euphorbiaceae]; <i>PM-536</i> , 25.10.2008, Buolzol	<i>Dimul</i> (HR), <i>Rudaokhlong gajao</i> (DI)	A	Sh	i. The latex is applied to cure teeth ache and mouth ulcer. ii. Plants grown as a live fencing.	-
* <i>Plumbago zeylanica</i> Linnaeus [Plumbaginaceae]; <i>PM-728</i> , 22.09.2008, Buolzol	<i>Thikerei</i> (HR)	O	Sh	i. Fresh latex is used to cure scabies, ringworm and leprosy. ii. Smearred leaves kept in animal keeping house as vermin repellent.	-
* <i>Euphorbia pulcherrima</i> Klotzsch [Euphorbiaceae]; <i>PM-543</i> , 25.10.2008, Buolzol	<i>Daingul per</i> (HR), <i>Flasik par</i> (HM), <i>Christmas gaschi</i> (KU), <i>Hekarapa</i> (ZE)	O	Sh	<i>Hrangkhols</i> use: i. Dried latex chewed in teeth ache. ii. Dried latex chewed by children. iii. Grown as a live fencing.	-
<i>Solanum verbascifolium</i> Linnaeus [Solanaceae]; <i>PM-549</i> , 22.09.2008, Buolzol; 25.09.2008, Gurubari	<i>Panthao lai</i> (DI), <i>Manta pui</i> (HR)	O	Sh	Paste of young shoot and juice, half cup once daily in empty stomach until curing the jaundice.	-
<i>Tinospora cordifolia</i> (Willdenow) Hooker f. & Thomson [Menispermaceae]; <i>PM- 553</i> , 22.09.2008, Buolzol; 07.12.2009,	<i>Kimkathai lot</i> (DI), <i>Amarlata</i> (NE)	O	Cl	Crushed stem juice taken orally early morning to cure dysentery, gastric and gall bladder problems.	Rs.5/ bundle of 6-9 inches long stem - 5 pieces

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Freq- uency	Ha- bit	Parts used/Mode of use	Local market rate (Rs.)
<i>Tinospora cordifolia</i> (Willdenow) Hooker f. & Thomson [Menispermaceae]; PM- 553, 22.09.2008, Bulozoi; 07.12.2009, Sampharidisha	<i>Kimkathai lot</i> (DI), <i>Amarlata</i> (NE)	O	Cl	Crushed stem juice taken orally early morning to cure dysentery, gastric and gall bladder problems.	Rs.5/ bundle of 6-9 inches long stem - 5 pieces
<i>Zingiber zerumbet</i> (Linnaeus) Roscoe ex Smith [Zingiberaceae]; PM- 554, 22.09.2008, Bulozoi; 07.12.2009, Sampharidisha	<i>Hajing gidiba</i> (DI), <i>Gawang</i> (ZE)	F	Hr	Rhizome paste is applied locally to cure boil infections on human body.	-
C. Plants used otherwise:					
a). Bamboo & Canes:					
i). Bamboo resources:					
<i>Bambusa arundinacea</i> (Retzius) Willdenow [Poaceae]; PM-609, 16.12.2007, Choto Waphu	<i>Kotoh bah</i> (AS), <i>Washi</i> (DI)	O	LGr	Mainly used for construction of houses and bridges etc.	-
<i>Bambusa cacharensis</i> R. Majumdar [Poaceae]; PM-613, 07.12.2009, Sampharidisha	<i>Wa lao</i> (DI)	F	LGr	Mainly used for construction of houses and bridges etc. Endemic to N.C.Hills.	-
* <i>Bambusa jaintiana</i> R. Majumdar [Poaceae]; PM-615, 08.12.2009, Sampharidisha	<i>Washi</i> (DI)	O	LGr	i. Mainly for houseconstruction. ii. bamboo basketry etc.	-
<i>Chimonobambusa callosa</i> (Munro) Nakai [Poaceae]; PM-622, 25.12.2008, Diyungmukh	<i>Wa shu</i> (DI)	O	LGr	Used for light construction works.	-
<i>Chimonobambusa quadrangularis</i> (Fenzi) Makino [Poaceae]; PM-624, 08.12.2009, Sampharidisha	<i>Washi thapra</i> (DI)	O	Lgr	Used for light construction works.	-
* <i>Dendrocalamus asper</i> Backer ex Heyne [Poaceae]; PM-625, 21.09.2008, Upper Bagetter	<i>Washim</i> (DI)	O	LGr	i. Mainly for houseconstruction. ii. Handle of the household & agricultural implements etc.	-
* <i>Dendrocalamus giganteus</i> Munro [Poaceae]; PM-626, 26.10.2008, Nriachi bunglow	<i>Wa mishel</i> (DI), <i>Kepaii</i> (ZE)	R	LGr	i. The culms are used for carrying and storage of water, salt etc. ii. Used for construction works. iii. Scrapped stem cotton is use to bandage cut wounds.	-
* <i>Dendrocalamus hamiltonii</i> Nees et Arnott ex Munro [Poaceae]; PM-630, 12.01.2009, Sabudhan Razi	<i>Kako bah</i> (AS), <i>Washim</i> (DI)	O	LGr	i. Mainly for houseconstruction. ii. bamboo basketry etc.	-
* <i>Dendrocalamus strictus</i> (Roxburgh) Nees [Poaceae]; PM-631, 12.01.2009, Disgao razi	<i>Wa mishel</i> (DI), <i>Kepaii</i> (ZE)	O	LGr	i. Mainly for houseconstruction. ii. bamboo basketry etc.	-
* <i>Melocanna baccifera</i> (Roxburgh) Kurz [Poaceae]; PM-257, 21.12.2007, Longma-II	<i>Mulibah</i> (AS), <i>Wathi</i> (DI), <i>Kauchew/Nria</i> (ZE)	A	LGr	i. Shoot preferred to eaten cooked with meat/as fermented <i>Chutmey</i> . ii. Exclusively use to make the wall and roof of thatch house. iii. Culms used in <i>Misengba</i> ceremony and offering of beer (<i>Judima</i>) in <i>Dimasa</i> worshipping.	Rs.10 -15/ kg of shoots
* <i>Melocalamus compactiflorus</i> (Kurz) Bentham [Poaceae]; PM-635, 07.12.2009, Sampharidisha	<i>Wayung</i> (DI)	A	LGr	i. Shoot preferred to eaten cooked with pork meat/fermented <i>Chutmey</i> . ii. The heavy culms are used for pillar, floor and wall of the house.	Rs.10 -15/ kg of shoots
ii). Cane resources:					
* <i>Calamus gracilis</i> Roxburgh [Arecaceae]; PM-643, 20.12.2008, Dikrik	<i>Raigong dukha</i> (DI)	O	Li	i. Mainly used in bamboo basketry. ii. One end of pith is inserted in an infected nail and the other end is burned and the released fume cures the nail.	Rs.10/about 5 m long cane
* <i>Calamus acanthospathus</i> Griffith [Arecaceae]; PM- 646, 20.12.2007, Jatinga	<i>Raigong phang gidiba</i> (DI)	O	Li	i. Used in house construction. ii. Bamboo basketry etc.	-

Botanical name & Family; Coll. no./ I.C.no.; Date; Place	Vernacular name	Freq- uency	Ha- bit	Parts used/Mode of use	Local market rate (Rs.)
* <i>Calamus acanthospathus</i> Griffith [Arecaceae]; PM- 646, 20.12.2007, Jatinga	Raigong phang gidiba (DI)	O	Li	i. Used in house construction. ii. Bamboo basketry etc.	-
* <i>Daemonorops jenkinsianus</i> (Griffith) Martius [Arecaceae]; PM- 647, 20.12.2007, Retzol	Raigong gidiba (DI), Heart/Jui (ZE); Thiam/Rumai-tuni (HR)	O	Li	i. Used in house construction. ii. Bamboo basketry etc.	-
<i>Plectocomia assamica</i> Griffith [Araceae]; PM-641, 20.12.2007, Jatinga	Raigongang (DI)	O	Li	Fruits are edible.	Rs.10/ bundle of ± 20-25 fruits
b). Material uses of plants:					
<i>Baphicacanthus cusia</i> (Nees) Bremekamp [Acanthaceae]; PM- 661, 12.01.2009, Dibrari	Janglongphang (DI)	O	Sh	Dried leaf and barks grinded and boiled with water to get indigo blue dye used for dyeing cotton fibers.	-
<i>Heteropanax fragrans</i> Seemann [Araliaceae]; PM-708, 22.09.2008, Gurubari	Gungsur (DI)	F	Tr	The leaves are used for traditional rearing of <i>Eri</i> silkworm (<i>Samia ricini</i> Donovan).	-
<i>Litsea assamica</i> Hooker f. [Lauraceae]; PM-710, 22.09.2008, Gurubari	Dislim (DI)	F	Tr	The leaves are used for traditional rearing of <i>Eri</i> silkworm (<i>Samia ricini</i> Donovan).	-
<i>Morinda angustifolia</i> Roxburgh [Rubiaceae]; PM- 670, 12.01.2009, Dibrari	Serlong-phang (DI)	O	Sh	Fresh roots cut into pieces and boiled in water. The boiled juice is used to dye cotton fibres.	-
* <i>Nicotiana rustica</i> Linnaeus [Solanaceae]; PM-772, 22.12.2008, Moulveng	Damalai (DI), Dum hna (HM/KU), Nkeu (ZE)	F	Hr	i. <i>Tuiburtui</i> (HM), intoxicating liquor is prepared from the leaves by a traditional distillation method. ii. Dried leaf as masticator. iii. Dried leaves are insect repellent.	Rs. 15 for 375 ml of <i>Tuiburtui</i> and Rs.10/ 100 gm of dried leaf
<i>Pandanus</i> sp. [Pandanaeae]; PM- 690, 22.09.2008, Buolzol	Pat khui (HR)	O	Us	Dried fruit is used as cleaning brush.	-
* <i>Pearsea lanceolata</i> Nees [Lauraceae]; PM-713, 16.12.2007, Choto Waphu	Rathang (DI)	F	Tr	i. The leaves are used for traditional rearing of <i>Eri</i> silkworm. ii. Wood is good timber that is used as planks for construction of house.	-
<i>Phrynium capitatum</i> Willdenow [Marantaceae]; PM-773, 22.09.2008, Gurubari	Lairu gidiba (DI), Mathial (HM), Mot (KU), Nungnegu(ZE)	F	Hr	Leaves lamina is widely used as plate and packing material by all the ethnic communities.	-
* <i>Ricinus communis</i> Linnaeus [Euphorbiaceae]; PM-714, 16.12.2007, Choto Waphu	Rudao (DI), Lungando (KU)	F	Sh	i. The leaves are the primary food for <i>Eri</i> silkworm. ii. Beaded dried seeds in a bamboo stick burned and use as torch. iii. Crude oil is used for massaging to relieve from body pain.	-
<i>Thysanolaena latifolia</i> (Roxburgh ex Horneman) Honda [Poaceae]; PM-776, 07.12.2009, Sampharidisha	Balongchi (DI)	O	Us	The dried inflorescences/panicles are used as broom.	Rs.15 for each broom
* <i>Vitex negundo</i> Linnaeus [Verbenaceae]; PM-729, 26.10.2008, Nriachi bunglow	Cheuli (ZE)	O	Sh	i. Smearred leaves used as vermin repellent in animal keeping house. ii. Grown as live fencing.	-

* = The species is used for more than one purpose

Abbreviations used:

- (AS) – Assamese, (DI) – Dimasa, (HM) – Hmar, (HR) – Hrangkhoh, (KU) – Kuki, (MI) – Mizo, (NE) – Nepali, (PN) – Pnar (Jaintia), (VA) – Vaiphei, (ZE) – Zeme Naga.
- A – Abundant, F – Frequent, O – Occasional, R – Rare.
- Cl – Climber, Hr – Herb, Li – Lianes, LHR – Large Herb, LGr – Large Grass, Sh – Shrub, Tr – Tree, Us – Undershrub.

The total number of species, genera and families; frequency of occurrence and habit of recorded plants has been shown in the following Table-3, Table-4 and Table-5 respectively. The family Poaceae represents with 12 plants followed by 7 plants each of Dioscoreaceae, Euphorbiaceae and Solanaceae and 6 plants each of Cucurbitaceae and Rutaceae.

Table 3. Species, generas and families.

Category	Monocot	Dicot	Total
Species	36	75	111
Generas	25	62	87
Families	11	34	45

Table 4. Frequency analysis.

Frequency	No. of Species
Abundant	13
Frequent	30
Occasional	61
Rare	10

Table 5. Habit group analysis.

Habit	No. of Species
Herb/Large herb	21
Large grass	11
Climber	21
Lianes	07
Undershrub	10
Shrub	18
Tree	26

Out of the 111 species recorded, 59 species are known to have more than one use, 11 species are recorded to have only medicinal value. Out of total 77 wild edible protected plant species recorded 21 species are used as medicine also viz. *Aegle marmelos*, *Citrus jumbhiri*, *Clerodendrum colebrookianum*, *Elaeagnus latifolia*, *Phyllanthus emblica*, *Garcinia pedunculata*, *Houttyunia cordata*, *Momordica charantia* var. *muricata*, *Paederia foetida*, *Parkia roxburghii*, *Phlogacanthus curviflorus*, *Phlogacanthus tubiflorus*, *Rhus semialata*, *Smilax china*, *Solanum torvum*, *Spilanthes acmella* var. *oleracea*, *Spondias pinnata*, *Syzygium cumini*, *Terminalia chebula*, *Travesia palmate* and *Zanthoxyllum oxyphyllum*.

The different parts of *Baccaurea ramifolia*, *Phlogacanthus curviflorus*, *Sarchochlamys pulcherrima* and *Syzygium cumini* are recorded for their use both as dye yielding plants as well as for edible purpose.

Different parts of *Acacia pennata*, *Spondias pinnata*, *Travesia palmata* and *Zanthoxyllum armatum* are recorded to be eaten and also different parts are used as ischthyotoxin.

Houttyunia cordata, *Rhus semialata* and *Zanthoxyllum oxyphyllum* are recorded for their use as spices and condiments as well as for medicinal use.

The leaves of *Heteropanax fragrans*, *Litsea assamica*, *Persea lanceolata* and *Ricinus communis* are used not only for rearing of *Eri* silkworm (*Samia ricini* Donovan) but also used as source of timber from first three species and oil from the fourth one.

It is also noteworthy that the tuber crops recorded in the present study has much significance as these tubers are mixed and eaten cooked with rice by the ethnic people of the area to meet the need of household when the food grains exhausts.

Present study provides a comprehensive account of plants for domestication and protection by the ethnic groups of North Cacher Hills. The plants are selected primarily on the basis of their multifarious uses. This provides food security and ensures plant resources needed by the ethnic people of the area. The plant resource management at local level is important tool for

studying domestication and evolution of crops among the ethnic societies. Further scientific investigation covering different aspects is expected to open up new developmental vistas in the area including Northeastern part of India.

Significantly, the semi-domestication and protection of phytoresources by the ethnic people of the present study area has been practiced since long. Such plant species have not only great traditional/socio-cultural dimension to the ethnic groups of the area but also become the integral part of their sustenance practices. It is also noteworthy that these plants/plant-parts also have high demand among the urban dwellers of different ethnic groups of the district and for which many of these plants/plant products are sold in the makeshift markets.

Acknowledgements

Authors are thankful to the ethnic people of N.C. Hills and other informants of the locality who are fond of local natural resources and their management.

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 Ecology* 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 *Contribution to Indian Ethnobotany*, ed. S.K.Jain. pp.137-152. Scientific publ., Jodhpur, India.
- Barooah, C. & Borthakur, S.K. 2003. *Diversity and Distribution of Bamboos in Assam*. Bishen Singh Mahendra Pal Singh, Dehradun, India.
- Borthakur, S.K. 1976a. Less known medicinal uses of plants among the tribes of Karbi Anglong (Mikir Hills), Assam. *Bull. Bot. Surv. India* 18 (1-4): 166 – 171.
- Borthakur, S.K. 1996. Wild edible plants in markets of Assam, India-An ethnobotanical investigation. In *Ethnobiology in Human Welfare*, ed. S.K.Jain. pp. 31-34. Deep Publ., New Delhi.
- Borthakur, S.K.; Sharma, T.R.; Nath, K.K. & Deka, P. 1998b. The House gardens of Assam: A traditional Indian experience of management and conservation of Biodiversity-II. *Ethnobotany* 11: 65 – 80.
- Chhetri, R.B. 2006. Trends in ethnodomestication of some wild plants in Meghalaya, Northeast India. *Indian J Trad. Knowl.* 5(3): 342 – 347.
- Diamond, J. 2002. Evolution, consequences and future of plant and animal domestication. *Nature* 418: 700 – 707.
- Harlan, J.R. 1992. *Crops and Man*. 2nd Edition. Madison (WI): American Society of Agronomy/ Crop Science Society of America.
- Heiser, C.B. 1986. Domestication of Cucurbitaceae: Cucurbita and Lagernaria. In *Recent Advances in the Understanding of Plant Domestication and early Agriculture*, eds. D.Y. Harris, & G. Hillman. pp. 11. World Archaeol. Cong., Southhampton.
- Hooker, J.D. 1872 – 1897. *Flora of British India*. 7 vols. L. Reev & Co, London.
- Jain, S. K. & Rao, R. R. 1967. *A handbook of field and herbarium methods*. Today & Tomorrow Printers and Publishers, New Delhi.
- 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 N.L. Bor), (Reprinted 1982).
- Kaul, G.L. 1981. *Development of horticulture in northeastern region-a case study from N.C.Hills district, Assam*. North Eastern Council Secretariat, Shillong, India.
- Kayang, H. 2007. Tribal knowledge on wild edible plants of Meghalaya, Northeast India. *Indian J. Trad. Knowl.* 6(1): 177 – 181.
- Lalsim, R. 2005. *Tribes of N.C.Hills, Assam*, 1st edition, N.C.Hills Autonomous Council publ., Assam.
- Mittre, V. 1985. The use of wild plants and the processes of domestication in the Indian subcontinent. In *Rec. Adv. Indo-Pacific Hist.*, eds. V.N.Mishra & P.Sellwood. pp. 281 – 291. Oxford & IBH, New Delhi.
- 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 and co. B.V. Amsterdam.
- Pandey, A. & Arora, R.K. 2004. Potential for domestication of wild species in the Indian gene centre. In *Plant genetic resource management*, eds. B.S. Dhillon, R.K. Tyagi, L. Arjun, S. Saxena. pp. 56–78. Narosa Publ. House, Delhi.
- 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.
- Purugganan, M.D. & Fuller, D.Q. 2009. The nature of selection during plant domestication. *Nature* 457: 843 – 848.
- 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). *Genetic Resour. Crop Evol.* 53(1): 121 – 130.
- Schultes, R.E. 1992. Ethnobotany and Technology in the northwest Amazon: a partnership. In *Sustainable Harvest and Marketing of Rain Forest Products*, eds. M. Plotkin, L. Famolare. pp.7 – 13. Island Press, Washington.
- Sharma, G.D. 2000. *Minimal descriptors (for characterization and evaluation) of agricultural crops (part-I)*. Nat. Bur. Plant Gen. Resour., New Delhi, India.
- Vodouhè R.; A. Dansi; H. T. Avohou1; B. Kpèki & F. Azihou. 2011. Plant domestication and its contributions to *in situ* conservation of genetic resources in Benin. *Intn. J. Biodivers. Conserv.* 3(2): 40 – 56.
- Zohary, D. & Hopf, M. 1993. *Domestication of plants in the Old World*. Oxford: Clarendon Press.