



Edible wild plant resources of Bilaspur, Hamirpur and Una districts of Himachal Pradesh, India

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Abstract

An ethno-botanical survey of lower parts of Himachal Pradesh (Bilaspur, Hamirpur and Una districts) was carried out. Some of the important plant species used as supplementary food among the native communities of these areas. Utilization of different plant parts was also observed. Presence of 107 species belonging to 92 genera and 52 families was documented. Amongst 107 documented species fruits (42), leaves (43), rhizome (2), roots (5), flowers (17), twigs (3), shoots (11), seeds (28), tubers (2), inflorescence (1), bark (5) and kernel (3) were found to be used as supplementary food by local inhabitants of studied areas.

Keywords: wild edible plant, exploration, Himachal Pradesh, supplementary food

1. Introduction

Wild edible plants have played vital role in human life since ages. Throughout the history, wild edible plants have sustained human populations in each of the inhabited continents (Khyade *et al.* 2009) [15]. "Ethnobotany", the term coined by John Hershberger in 1895, is the study of "plants used by primitive and aboriginal people" (Balick and Paul 1996) [3]. The human society has developed close association with the plant life (De JN 1980) [9] since time immemorial. The relationship between the indigenous people and their surroundings forms the subject of ethnobotany, a science (De JN 1968) [8], which deals with the study of plants used by tribes for food, medicine and clothing (Jain & De JN 1966) [12]. Most of the ethanobotanical reviews and surveys are concentrated merely around medicinal plants. Food security is the main concern in recent scenario therefore, use of wild edible resources can be a great alternative footstep towards balancing human demand and utilization of resources. Wild edible plants can be used not only a staple food but can be used as supplement food as well as a source of income to native communities. Comparatively little attention was given for documentation of wild edible plants of Himachal Pradesh, because the information is scattered, sparse and has various gaps (Arora and Pandey, 1996) [1]. This study was taken to congregate data related to traditional knowledge, diversity, utilization and enumeration of wild edible plants of Bilaspur, Hamirpur and Una districts of Himachal Pradesh.

2. Methodology

2.1 Area of Study

The word Himachal derives its origin from two Hindi words, 'Him' and 'Achal' meaning "Snow" and "Lap" respectively. Himachal Pradesh is situated between 30°22'40" to 33°12'40" North latitude and 75°47'55" to 79°04' 22" East longitude and has an area of 55,673 Km. It is almost wholly mountaineous

with altitude ranging from 350 - 6500 m above the sea level. It has a deeply dissected topography complex geological structure and a rich temperate flora in the sub-tropical latitudes. From the administrative point of view the state has been divided into twelve districts, namely Bilaspur, Chamba, Hamirpur, Kangra, Kinnaur, Kullu, Lahaul & Spiti, Mandi, Shimla, Sirmaur, Solan and Una.

Bilaspur was merged into Himachal Pradesh as the fifth district on 1st July, 1954. The district Bilaspur lies between 31°12'30" and 31°35'45" North latitudes and between 76°23'45" and 76°55'40" East longitudes in the outer hills of the Himalayas. The forests of the Bilaspur district can be divided into three broad categories viz; Pine forest (dominated by Pines), Scrub forest (dominated by Sheasum and Tun) and Bamboo forest (dominated by Bamboo varieties like small khirri, large bans and nal bans).

Hamirpur as a separate district appeared on the map of Himachal Pradesh on the 1st September, 1972 as a result of reorganization of the districts. Hamirpur district is situated between 76°18' to 76°44' East longitudes and 31°52'30" North latitudes. The tract is hilly covered by the Shivalik ranges. Elevation of the district varies from 500-1500 m. The soil is usually deficient, shallow and at times severely eroded. Recent deposits comprise of alluvian fans and terraces of unassorted sand, silt, clay, rock fragments and boulders in varying proportions. The principal forest types found in this region (i.e. sub-montane or sub-tropical region) are: (a) Sal forests (dominated by *Shorea robusta*); (b) Riverine Khair and Sisham forest; (c) Shivalik chil or Chir pine forests; and (d) Lower moist broad-leaved forests. The principal species forming a part of this forest type are *Acacia catehu*, *Aegle marmelos*, *Anogeissus latifolia*, *Feronia limonia*, and *Flacourtia indica*. Bamboo brakes occur in Himalayan foothills (viz. in parts of Solan, Bilaspur, Hamirpur, Una, etc.) under dry and harsh conditions. The main species is the

common bamboo or *Dendrocalamus strictus*. A number of shrubs that are usually a part of the dry deciduous forests also occur in the district.

Una is a small foothill district located on the southwestern border of the state. Una, as an independent district, came into existence on 1st September, 1972. It lies within North latitudes 31°21' and 35°50' and East longitudes 71°55' and 76°28'. The total area of district is 1,540 sq. Km. The important species of Una forests are cheel, khair, bamboo, eucalyptus, mulberry and other species. The forests are under intense biotic pressure in the form of grazing and lopping.

2.2 Data collection

Exploration trips were carried out to collect the plants for herbarium and preserved in Himachal Pradesh University, Shimla. Local inhabitants of the selected study areas were interviewed for making sustainable use of plant resources. An attempt was made to get the useful information on edible plants growing in wild and few of them cultivated sporadically. Information was also collected from different floras namely: Flora Simlensis by Collett (1902, 1921) [6, 7], Flora of Bushar Himalayas by Nair (1977) [17], Flora of Lahaul and Spiti by Aswal and Mehrotra (1994) [2], Flora of Kullu by Dhaliwal and Sharma (1999) [11] Flora of Cold Deserts of Western Himalaya Vol. 1 (Monocotyledons) by Murti (2001)

[16], and Flora of Sirmaur by Kaur and Sharma (2004) [13], Flora of Chamba district (Himachal Pradesh) by Singh and Sharma (2006) [25] Flora of Pin Valley National Park by Chandra Sekar and Srivastava (2009) [4], and Flora of Cold Deserts of Western Himalaya Vol. 2 by Srivastava and Shukla (2015) [26]. Information was also collected from Seth (2003, 2006) [19], Seth and Kumar (2007) [20], Seth and Usha Devi (2013) [8], Devi *et al* (2013) [10], Seth and Thakur (2013 a, 2013 b) [22, 23], and Seth *et al* (2014) [21], Swaran Lata, Seth and Kaushal (2016) [14] and Kaushal, Seth and Swaran Lata (2016) [27].

3. Result & Discussion

Out of 107 species of angiosperms belonged to 52 families and 92 genera were distributed into different life forms, with trees and shrubs having the most number of species (Figure 1). Few plant species also listed simultaneously in two categories like can be tree or shrub. The genera represented by the highest number of species were *Ficus* and *Diospyros* (4 species), *Bauhinia* and *Setaria* (3 species) and *Terminalia*, *Grewia*, *Dendrocalamus*, *Polygala* and *Brachiaria* (2 species) which is followed by rest of genera comprising only one species. A list of plant species along with their vernacular name, family, distribution, part used and life form (habit) is given in Table 1.

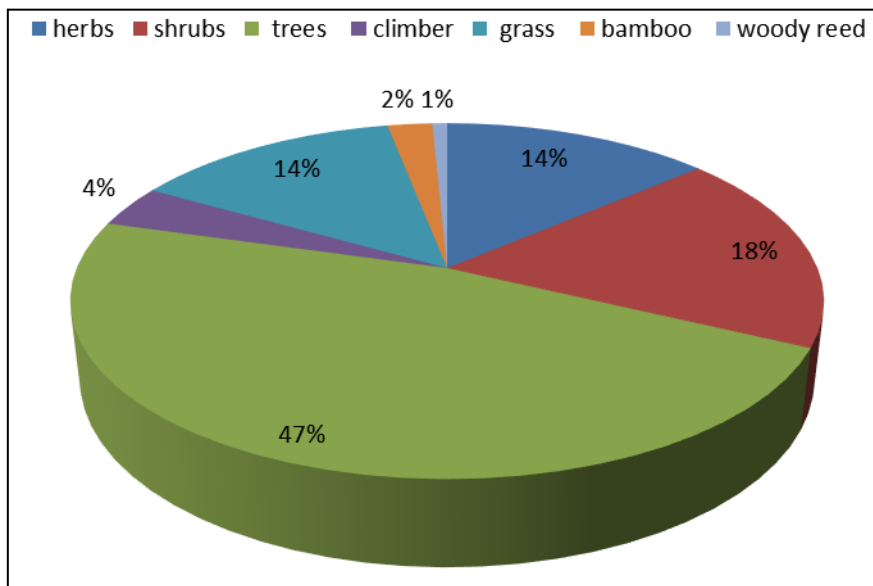


Fig 1: Frequency of wild edible plants arranged by life forms

Table 1: List of plant species with part/parts used for edible purpose

Botanical name	Common /Vernacular name	Family	Distribution -World/India/Himachal	Part used	Habit
<i>Abrus precatorius</i> Linn.	Gunchi, Rati	Fabaceae	South China, Pacific Island, Tropical Africa, West Indies, all tropical countries Throughout India Chamba (Dalhousie), Hamripur, Kangra, Mandi, Sirmaur (Paonta Sahib, Rajgarh), Solan (Kunihar), Una	leaves	climber
<i>Acacia nilotica</i> Delile spp. <i>indica</i> (Benth) Brenan	Black babool, Kikar	Fabaceae	Temperate Himalaya Throughout India Bilaspur, Hamripur, Kangra, Mandi, Sirmaur (Nalagarh, Rajgarh), Solan (Kunihar), Una	leaves	tree/shrub
<i>Aegle marmelos</i> (L.) Correa. ex Roxb.	Bael tree, Golden appel, Stone apple	Rutaceae	Sub-Himalayan tract of, Burma Throughout India Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Mandi (Nachan, Suket), Kinnaur, Solan	fruits	tree

			(Kunihar), Sirmaur (Nahan, Rajgarh), Una		
<i>Albizzia odoratissima</i> Benth.	Black siris, Kala siris	Mimosaceae	Tropical Asia Throughout Indian Subtropics Bilaspur, Chamba (Dalhousie), Hamripur, Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	leaves	tree
<i>Alisma Plantago-aquatica</i> L.	Water plantain, Mad-dog weed	Alismataceae	Bihar, West Bengal, Himalaya from Kashmir to Manipur Chamba, Hamripur, Kangra, Kinnaur, Mandi, Shimla	rhizome and roots	herb
<i>Anthocephalus cadamba</i> / <i>Anthocephalus indicus</i> A. Rich	Wild cinchona, Kadamba	Rubiaceae	Sub-Himalayan tract from Nepal, eastward to Burma South India to Andhra Pradesh, Western Ghats Bilaspur (Deoli Lake), Mandi	flowers and fruits	tree
<i>Argemone mexicana</i> L.	Prickly poppy, Mexican poppy	Papaveraceae	Native to America Throughout India Una	leaves	herb
<i>Arundo donax</i> L. Bor.	Great reed, Spansih cane, Branal	Poaceae	Western Asia, North Africa, Europe Lower Himalayas from Kashmir to Assam, Nilgiris Bilaspur, Chamba, Kinnaur, Kullu, Mandi, Shimla	leaves and twigs	woody reed
<i>Asparagus adscendens</i> Roxb.	Sparrow grass, Safed musli	Liliaceae	Throughout Western Himalayas Throughout Tropical Bilaspur, Chamba, Hamripur, Kangra, Mandi (Joginder Nagar, Nachan, Karsog), Solan.	roots and shoots	shrub
<i>Azadirachta indica</i> A. Juss.	Neem tree, Nim	Meliaceae	Sub-tropical regions Throughout India Kangra (Nurpur), Sirmaur (Nahan, Rajgarh), Solan (Kunihar)	fruits and leaves	tree
<i>Bambusa arundinacea</i> Willd.	Thorny bamboo, Bans	Poaceae	Myanmar, Srilanka introduced into West Indies Throughout India Including Assam, Manipur, Meghalaya Bilaspur, Chamba (Dalhousie), Hamripur, Kangra, Mandi (Nachan, Suket), Kinnaur, Shimla, Sirmaur (Nahan), Solan (Kunihar), Una	shoots and seeds	tree
<i>Bauhinia purpurea</i> Linn.	Butter fly tree, Khairwal	Fabaceae	Sub-Himalayan tracts, Nepal Assam, Andhra Pradesh, Khasia Hills, West Bengal Bilaspur, Hamripur, Kangra, Sirmaur, Solan, Una	flowers, leaves and seeds	tree
<i>Bauhinia racemosa</i> Lam.	Purple bauhinia, Kachnal	Fabaceae	China, the Malay isles, Timor Throughout India Bilaspur, Hamripur, Kangra (Nurpur), Kinnaur, Mandi (Nachan), Sirmaur (Nahan), Solan, Una	flowers, leaves and seeds	tree
<i>Bauhinia variegata</i> Linn.	Bauhinia, mountain ebony, Kachnar	Fabaceae	Sub-Himalayan tract from the Indus astwards Dry forests of Eastern, Central, South India Bilaspur, Chamba, Hamripur, Mandi (Joginder Nagar, Sunder Nagar, Nachan), Sirmaur, Solan, Una	flowers, leaves	tree
<i>Bombax malabaricum</i> Dc.	Silk cotton tree, Sembal	Bombaceae	Tropical eastern Himalaya, Java, Sumatra Throughout hotter parts of India Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Shimla, Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	flowers, seeds	tree
<i>Brachiaria ramosa</i> (L.) Stapf.	Makraghas	Poaceae	Srilanka, several tropical parts of the old world Throughout the plains of India Bilaspur, Hamripur, Kinnaur, Una	seeds	grass
<i>Brachiaria reptans</i> (L.) Gard.	Shani pillu	Poaceae	Srilanka, other Tropical parts of the world from Polynesia to N. Australia Tamilnadu, Jammu & Kashmir, Uttar Pradesh, Bihar, Delhi, W. Bengal, Orissa, Assam, Meghalaya, Maharashtra, Kerala, Gujrat Una	seeds	grass
<i>Bryonia laciniosa</i> Linn.	The bryony	Cucurbitaceae	Throughout Himalaya to Ceylon Warmer parts of India Chamba (Dalhousie), Bilaspur, Hamripur, Kangra (Nurpur, Murtgarh, Chotidhar, Mahndhar, Tatal, Malkbal, Dhedukuthed), Kinnaur, Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	fruits and leaves	climber
<i>Butea monosperma</i> (Lam) Kuntze.	Flame of the forest, Dhak, Palas	Fabaceae	Himalaya to Ceylon, Burma, Myanmar Sub-tropical regions of India Bilaspur, Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	leaves and roots	tree
<i>Careya arborea</i> Roxb.	Kumbi	Lecythidaceae	Sub-Himalayan tract, Bengal, Burma Throughout India Bilaspur, Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	fruits and leaves	tree
<i>Carica papaya</i> Linn.	Papaya, Papeta	Caricaceae	Native of Tropical Central America Commonly in India Bilaspur, Kangra (Nurpur), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	leaves	tree
<i>Carissa opaca</i> Stapf. ex Haines.	Karaunda, Gan	Apocynaceae	Pakistan, Mynmar, Sri Lank Drier parts of India Kangra, Mandi, Una	fruits	shrub
<i>Cassia fistula</i> Linn.	Golden shower, Amaltas	Fabaceae	Myanmar, Himalaya, Srilanka Throughout India Bilaspur, Chamba, Hamripur, Kangra, Kinnaur, Mandi	flowers and leaves	tree

			(Sundernagar, Jogindernagar, Karsog), Shimla, Sirmaur, Solan, Una		
<i>Celastrus paniculatus</i> Willd	Black oil, Malkangni	Celastraceae	Sub tropical parts of Himalayas Bombay, Gujarat, M.P., South India Kangra (Nurpur), Mandi (Jogindernagar, Nachan), Sirmaur (Nahan), Una	flowers and fruits	climber
<i>Cichorium intybus</i> L. Hook.	Chicory, Wild endive, Kasni	Asteraceae	Indigenous to Europe, Baluchistan North-Western India, grown in Bombay, Punjab. Chamba, Una	leaves and shoots	herb
<i>Clerodendrum serratum</i> Spreng.	Barangi	Verbenaceae	Ceylon, Malay, Peninsula Decan Carnatic, West-coast district of Tamil Nadu state, Kumaon, Sikkim, Assam to Tenasserim Hamripur, Kangra, Sirmaur (Nahan-Paonta Sahib, Nalagarh), Una	flowers, leaves and seeds	shrub
<i>Coccinia grandis</i> (L.) Voigt.	Ivy gourd, Kunduri	Cucurbitaceae	Throughout India Una	fruits and shoots	herb
<i>Crataeva religiosa</i> Hook.	Barna, Bilari	Capparidaceae	Burma, Sub-Himalayan tract Siwalik tract in the east of the Punjab and frequently seen planted at wells, as far as Jhelum, South Multan Bilaspur, Hamripur, Kangra (Nurpur), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	fruits and leaves	tree
<i>Dactyloctenium aegyptium</i> (L.) P. Beauv.	Makra, Makri	Poaceae	Myanmar, Srilanka, Africa, Afghanistan etc., introduced into America Throughout tropical regions of India Bilaspur, Hamripur, Kinnaur, Mandi, Una	seeds	grass
<i>Dendrocalamus hamiltonii</i> Nees & Arn.	Pecha. Pashing., Kaghsiban	Bambusaceae	Eastern Himalaya Kumaon, Assam Hamripur, Kangra	shoots	bamboo
<i>Dendrocalamus strictus</i> Nees.	Male bamboo, Bans	Poaceae	Nepal, Myanmar, Java All over India including Assam, Meghalaya Bilaspur, Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	seeds and shoots	bamboo
<i>Dioscorea belophyla</i> Voigt ex Hains.	Zamin-kand	Dioscoreaceae	Sub-tropical Himalaya Bihar, Jammu & Kashmir, Punjab, Uttar Pradesh, Bengal, Sikkim, Assam, Orissa, South India Bilaspur, Chamba, Mandi, Shimla	tubers	climber
<i>Diospyros cordifolia</i> Roxb. Parker.	Bistendu, timru	Ebenaceae	Sub-Himalayan tract Throughout India Hamirpur, Una	fruits and leaves	tree
<i>Diospyros embryopteris</i> Pers	Gaub persimmon, Kalatendu.	Ebenaceae	Ceylon, Siam, Malayan Peninsula Bengal Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	fruits	tree
<i>Diospyros melanoxylon</i> Roxb	Coromande ebony persimmon	Ebenaceae	Sub-Himalayan tract from Ravi to Nepal Madhya Pradesh, Maharashtra, Orissa, Uttar Pradesh, Bihar, West Peninsula Kangra (Nurpur), Sirmaur (Nahan), Una	bark and fruits	tree
<i>Diospyros tomentosa</i> Roxb.	Nepal ebony persimmon, Tendu	Ebenaceae	Plains of India Una	fruits	tree
<i>Dodonaea viscosa</i> (L.) Jacq.	Sanatha, Mehndi	Sapindaceae	Most warm countries Throughout India Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Shimla, Sirmaur (Nahan), Solan, Una	seeds	shrub
<i>Emblica officinalis</i> Gaertn	Emblic myrobalan, Indian goseberry, Amla,	Euphorbiaceae	Throughout tropical and subtropical India Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra, Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	fruits	tree
<i>Erythrina indica</i> Lam.	Indian coral tree, Mandara	Fabaceae	Burma Tropical Regions of India Bilaspur, Hamirpur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Shimla, Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	leaves and shoots	tree
<i>Ficus bengalensis</i> Linn.	Banyan, Bar, Bargad, Bor	Moraceae	Sub – Himalayan regions Throughout India Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Shimla, Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	bark and fruits	tree
<i>Ficus glomerata</i> Roxb.	Gular, Umar	Moraceae	Outer Himalaya, Ceylon, Burma Rare in Punjab plains, occasionally wild in eastern parts of Punjab, Siwalik tract, Salt Range Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	fruits	tree
<i>Ficus palmata</i> Ferrk.	Anjiri, Bedu	Moraceae	Himalayas from Kashmir to Nepal, Westward to Egypt-Abyssinia, Afghanistan North-West India, U.P., Mount Abu Bilaspur, Chamba (Dalhousie), Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Sirmaur (Nahan), Solan (Kunihar), Una	fruits and shoots	tree
<i>Ficus religiosa</i> Linn.	Peepul tree, Peepal	Moraceae	Pakistan to Bhutan Punjab, Eastern parts of Siwalik tract Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Shimla	fruits	tree

			(Kotgarh), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una		
<i>Flacourtia rhamontchii</i> L. Herit.	Governor's plum, Madagascar Plum	Flacourtiaceae	Suliman range Delhi, to the west, in the Salt range Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	fruits and leaves	tree
<i>Flemingia congesta</i> Roxb.	Bara-salpan, Bhalia	Fabaceae	North-western, Central Himalaya Warmer parts of India Bilaspur, Hamirpur, Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar)	flowers	shrub
<i>Grewia asiatica</i> L. Mant.	Dhamin, Phalsa, Parsuha	Tiliaceae	Sub-Himalayan tract, Burma Throughout India, especially in Punjab, UP, Rajasthan, Maharashtra Una	fruits	tree
<i>Grewia optiva</i> Drummond ex Burret.	Biul, Biung, Bhimal	Tiliaceae	North-Western Himalaya from Indus to Nepal Punjab to Bengal Chamba, Hamirpur, Kangra, Kinnaur, Shimla, Solan, Una	fruits	tree
<i>Helicteres isora</i> Linn.	East indian screw tree, Marorphali	Sterculiaceae	Siwalik tract, Ceylon Punjab, throughout central and western India, Jammu, central Peninsula Bilaspur, Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	fruits	shrub
<i>Holarrhena antidysenterica</i> Wall.	Kurchi Bark, Karchi, Karra	Apocynaceae	Sub Himalayan tract Throughout India Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra (Nurpur), Mandi (Sarkaghat), Sirmaur (Nahan), Solan (Kunihar), Una	flowers and seeds	tree
<i>Holoptelia intergifolia</i> Planch.	The entire leaved elm, Kanju, Papri	Ulmaceae	Sri lanka, Burma, China Throughout India Kangra (Nurpur), Sirmaur (Nahan, Rajgarh), Solan, Una	fruits, leaves and seeds	tree
<i>Hydrocotyle asiatica</i> Linn.	Indian pennywort	Umbelliferae (apiaceae)	Tropical and sub-tropical countries Throughout India Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra (Nurpur), Kinnaur, Mandi (Nachan), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	leaves	herb
<i>Impatiens balsamina</i> L.	Balsam, gulmendhi	Balsaminaceae	Native of South-East Asia, China, Malaya, Nepal Throughout India Shimla, Una	leaves and seeds	herb
<i>Imperata cylindrica</i> (L.) P. Beauv.	Thatch grass, Dabh, Siru	Poaceae	Sri Lanka Bengal, Punjab and Sind, Uttar Pradesh, Madhya Pradesh, West Bengal, N.E. India, Tamil Nadu, Karnataka Hamirpur, Kullu, Shimla, Una	inflorescence and rhizome	grass
<i>Indigofera pulchella</i> Roxb.	Hakna, Sakena	Fabaceae	Throughout the Himalayan tract Plains of North India Chamba (Dalhousie), Hamirpur, Kangra, Kinnaur, Kullu (Siraj), Mandi (Nachan, Suket), Shimla (Chopal, Kotgarh, Rohru), Sirmaur (Nahan, Rajgarh), Solan, Una	flowers and leaves	shrub
<i>Ipomoea carnea</i> Jacq. ssp. <i>fistulosa</i> (Mart. ex Choisy) D. Don.	Walaiti ak, Pahariak	Convolvulaceae	Native of tropical America, Nepal, Mexico, West Indies, Brazil Jammu Una	leaves	shrub
<i>Ischaemum rugosum</i> Salisb.	Bar, Bardi, Bher	Poaceae	Himalaya, China, Malaya Assam, Manipur, Meghalaya, Tripura Bilaspur, Kangra, Kinnaur	seeds	grass
<i>Jatropha curcas</i> Linn.	Physic nut, Purging Nut	Eurphorbiaceae	Indigenous to tropical America, West Indies Throughout India, Andaman Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Shimla, Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	leaves	shrub/tree
<i>Leptochloa chinensis</i> (L.) Nees.	Chanhel	Poaceae	South East Asia, Africa Subtropical parts of Bengal, Tamil Nadu, Uttar Pradesh, Madhya Pradesh, Bihar, West Bengal, Arunachal Pradesh, Assam, Meghalaya, Orissa, Maharashtra, Delhi Una	seeds	grass
<i>Leucas mollissima</i> Wall. ex Benth.	Getta-kushir, Gitilarak	Lamiaceae	Throughout India Shimla, Una	leaves	herb
<i>Limonia crenulata</i> Roxb.	Beli	Rutaceae	Warmer and moist regions of India Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	fruits	shrub
<i>Mangifera indica</i>	Mango, Aam	Anacardiaceae	Tropical Himalaya Throughout warmer parts of India Bilaspur, Chamba (Dalhousie), Hamirpur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	fruits	tree
<i>Michelia champaca</i> Linn.	Champak, Champa, Champaca	Magnoliaceae	Wild in Nepal, Burma Cultivated throughout India Bilaspur, Chamba (Bhatiat, Dalhousie), Hamirpur, Kangra (Nurpur), Kinnaur, Mandi (Nachan), Sirmaur (Nahan), Solan (Kunihar)	fruits	tree
<i>Momordica dioica</i> Roxb. ex Willd.	Kaksa	Cucurbitaceae	Himalaya to Sri Lanka Throughout India Shimla, Una	leaves, fruits and roots	climber
<i>Moringa pterygosperma</i>	Drumstick tree,	Moringaceae	Western Himalaya Wild in the Siwalik region in the	flowers,	tree

Gaertn.	Munga		Eastern Punjab Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Shimla, Sirmaur (Nahan), Solan (Kunihar), Una	leaves and twigs	
<i>Mucuna pruriens</i> (L.) Dc.	Common cowitch, Cowhage, Goncha	Fabaceae	Tropical regions of Africa, America All over India Bilaspur, Kangra (Bharwain, Dehra, Jwalamukhi, Nurpur), Mandi (Sarkaghat), Shimla (Tattapani), Sirmaur (Nahan), Solan (Nauni-Khaltoo)	fruits and seeds	herb
<i>Murraya koenigii</i> Spreng.	Curry leaves tree, Gandhela, Kathnim	Rutaceae	Srilanka, China, Laos, Java, Cambodia Throughout India in warmer regions, Andaman Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Kinnaur, Kullu (Siraj), Mandi (Nachan), Shimla (Kotgarh), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	fruits and leaves	shrub
<i>Nyctanthes arbortristis</i> Linn.	Weeping tree, Night jasmine	Oleaceae	Sub-Himalayan, Burma and Ceylon Common in West Bengal, Bihar, Assam, Central India, Andhra Pradesh, Tamil Nadu Hamripur, Kangra, Kinnaur, Mandi, Sirmaur, Solan, Una	leaves and twigs	shrub
<i>Odina wodier</i> Roxb.	Jhingan, Wodier, Kaimil	Anacardiaceae	Himalaya Throughout the hotter parts of India Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Mandi (Suket), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	leaves	tree
<i>Opuntia dillenii</i> Haw.	Prickly pear, Slipper thorn	Cactaceae	Native of Mexico, South America Throughout India chiefly in dry regions Bilaspur, Hamripur, Kangra (Nurpur), Sirmaur (Nahan), Solan (Kunihar), Una	fruits	shrub
<i>Oroxylum indicum</i> Vent.	Arlu, Soona	Bignoniaceae	Burma, Ceylon, Malaya, Malacca, China. (Kunihar), Throughout India Bilaspur, Chamba, Hamripur, Kangra (Nurpur), Kinnaur, Kullu (Siraj), Mandi (Nachan), Shimla (Kotgarh), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	bark, flowers, fruits and seeds	tree
<i>Ougeinia oojeinensis</i> Roxb. Hotch	Sandan, Panjan	Fabaceae	Throughout outer Himalayas, Bhutan Central India, Deccan Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Kinnaur, Mandi (Nachan), Sirmaur (Nahan), Solan (Kunihar), Una	flowers	shrub/tree
<i>Panicum trypheron</i> Schult.	Bhatur	Poaceae	Sri Lanka, S.E. Asia, China, Africa Commonly distributed Una	seeds	grass
<i>Paspalidium flavidum</i> (Retz.) A. Camus	Baunr, Dhanera	Poaceae	Tropical Asia, Australia Throughout India Hamripur, Mandi, Una	seeds	grass
<i>Paspalum scrobiculatum</i> L.	Kodo millet	Poaceae	Srilanka, Singapore Tropical and sub-tropical parts of India. chiefly in Assam, Madras Hamripur, Kangra, Una	seeds	grass
<i>Pennisetum typhoides</i> (Burma. F.) Stapf.	Pearl millet, Bajra	Poaceae	Punjab, Andhra Pradesh, Tamil Nadu, Rajasthan, Maharashtra Una	seeds	herb
<i>Phoenix sylvestris</i> Roxb.	Wild date palm, Khajur	Arecaceae	Burma Throughout india Bilaspur, Kangra (Nurpur), Solan (Kunihar), Una	fruits	tree
<i>Pinus roxburghii</i> Sargent.	Three leaved pine, Chir	Pinaceae	Kashmir to Bhutan Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Kinnaur, Kullu (Siraj), Mandi (Nachan, Suket), Shimla (Chopal, Kotgarh, Rohru), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	seeds	tree
<i>Pistacia khinjuk</i> Stew. ex Brandis.	Kakar, Kakru.	Anacardiaceae	Himalayas Indus to Kumaon, occur in Kashmir, Punjab Bilaspur, Chamba, Hamripur, Kangra, Kinnaur, Kullu, Mandi, Shimla, Sirmaur, Solan	fruits and kernel	tree
<i>Plumbago zeylanica</i> Linn.	White flowered leadwort, Chitra	Plumbaginaceae	Cultivated in Indian gardens Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Mandi, Shimla, Sirmaur, Una	leaves	shrub
<i>Polygala arvensis</i> Willd.	Meradu	Polygalaceae	Throughout plains of India, Nicobar Bilaspur, Chamba, Hamripur, Kinnaur, Mandi, Shimla, Una	leaves	herb
<i>Polygala crotalarioides</i> Buch-Ham. ex Dc.	Gaighura kathi	Polygalaceae	Temperate Himalaya Throughout India Chamba, Hamripur, Lahul & Spiti, Shimla, Solan	leaves	herb
<i>Polygonum plebeium</i> R. Br.	Macheti	Polygalaceae	Africa, China, South-East, Western Asia, Australia Throughout tropical India Kangra, Kullu, Lahul & Spiti, Shimla, Una	leaves	herb
<i>Portulaca pilosa</i> L.	Jangali gajar	Portulacaceae	Throughout India Hamripur	roots	herb
<i>Premna latifolia</i> Roxb.	Basota	Verbenaceae	Deccan Peninsula, Eastern India Bilaspur, Hamripur, Kangra (Nurpur), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	bark, leaves and shoots	tree
<i>Prunus cerasoides</i> D. Don	Himalayan wild cherry, Paddam	Rosaceae	Temperate Himalayan Kashmir to Bhutan, Akai and Khasi hills in Assam, Manipur Bilaspur, Chamba,	fruits	tree

			Hamripur, Kangra, Kullu, Shimla, Sirmaur, Solan, Una		
<i>Psidium guajava</i> Linn.	Guava ,Amrud	Myrtaceae	Mexico to Columbia, Peru, possibly including Brazil Cultivated throughout India Bilaspur, Hamripur, Kangra (Nurpur), Kinnaur, Mandi (Nachan), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	fruits	tree
<i>Pueraria tuberosa</i> Dc.	Indian kudzu, Bankumra	Fabaceae	Western himalayans, Nepal Throughout India Hamripur, Kangra, Mandi (Karsog), Sirmaur (Nahan, Rajgarh), Solan (Nalagarh, Niharhand, Prithipur, Saloi), Una	leaves and tubers	shrub/ herb
<i>Punica granatum</i> Linn.	Pomegranate, Anar	Punicaceae	Native of Iran, Afghanistan, Baluchistan Cultivated throughout India Bilaspur, Chamba, Kangra, Kullu, Mandi (Gumma, Seri And Drang Areas Of Jogindernagar), Shimla, Sirmaur, Solan (Solan-Giripul)	leaves	tree
<i>Randia dumetorum</i> (Retz.) Poir.	Common emetic nut, Maniphall	Rubiaceae	Java, eastern tropical Africa, south china, Sumatra. Throughout India Hamripur, Kangra, Mandi (Sarkaghat), Sirmaur (Nahan - Paonta Range), Solan (Nalagarh), Una	fruits	shrub/ tree
<i>Ricinus communis</i> Linn.	Castor oil plant, Erandi	Euphorbiaceae	Throughout the tropics, indigenous to Africa Throughout india. Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Sirmaur (Nahan, Rajgarh), Solan, Una	fruits	shrub
<i>Rivea hypocrateriformis</i> (Desr.) Choisy.	Midnapore creeper, Phang	Convolvulaceae	North-western India Una	leaves and shoots	shrub
<i>Setaria glauca</i> (L.) P. Beauv.	Pigeon or bottle grass, Bandra	Poaceae	America, Australia Warmer parts of India Bilaspur, Hamripur, Kangra, Knnaur, Kullu, Mandi, Shimla ,Solan	seeds	grass
<i>Setaria intermedia</i> Rome. et Schult.	Arranki gaddi	Poaceae	Myanmar, Sri Lanka extending to Malaysia, Polynesia Plains and hills of India Bilaspur, Chamba ,Kinnaur ,Mandi ,Shimla,Una	seeds	grass
<i>Setaria verticillata</i> (L.) P. Beauv.	Rough bristle-grass, Kulta	Poaceae	Pakistan, Sri lanka, Africa, introduced into America Widely distributed throughout India Bilaspur, Kinnaur	seeds	grass
<i>Sorghum halepense</i> (L.) Bor.	Johnson grass, Jwari	Poaceae	Bangladesh, Sri lanka Tropical parts of India, Punjab, west bengal, Uttar Pradesh, Madhya Pradesh, Nagaland, Bihar, Orissa Bilaspur, Chamba, Kinnaur	seeds	grass
<i>Syzygium cumini</i> (L.) Skeels.	Jambol, Jaman	Myrtaceae	China, Australia, Srilanka Throughout india Chamba, Hamripur, Mandi , Sirmaur , Una	fruits	tree
<i>Terminalia bellirica</i> Roxb.	Belliric myrobalan, Bahera	Combretaceae	Pakistan, Srilanka, indo Malaysia, Malacca Throughout greater parts of India Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	seeds and kernel	tree
<i>Terminalia chebula</i> Retz.	Black myrobalan, Harar	Combretaceae	Ceylon, Burma Occasional in Karnataka, Karla, Tamil Nadu, Andhra Pradesh, U.P., West Bengal Hamripur, Kangra, Mandi, Una	fruits	tree
<i>Trapa natans</i> L. Var. <i>bispinosa</i> (Roxb.) Makino.	Water chest nut, Singhara	Trapaceae	Throughout the hotter parts of India Bilaspur, Sirmaur	kernel	herb
<i>Trema politoria</i> (Planch.) Blume	Khardol	Ulmaceae	Subtropical Himalaya Bilaspur, Chamba	fruits	tree
<i>Trichodesma indicum</i> (L.) R. Br.	Chhotakulpha	Baraginaceae	Baluchistan, Ceylon, Afghanistan, Persia Throughout India Chamba, Kangra, Kinnaur, Mandi, Shimla, Una	fruits and leaves	herb
<i>Urginea indica</i> (Roxb.) Kunth.	Jangli piyaz	Liliaceae	Western Himalaya Bihar, Konkan, Coromandal coast Bilaspur, Hamripur, Kangra, Mandi, Sirmaur, Solan (Herbal Garden at Nauni)	leaves	herb
<i>Vallisneria spiralis</i> (L.) O. Kuntze.	Chmari-ki-vel, Ramsar	Apocynaceae	Tropical Himalaya Grows in Karnataka Kangra, Mandi, Sirmaur , Una	seeds	shrub
<i>Vitex negundo</i> Linn.	Common chaste tree, Shambalu	Verbenaceae	Tropical regions, Afghanistan to Bhutan, China, South Eastern Asia Throughout India Bilaspur, Chamba (Dalhousie), Hamripur Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Shimla, Sirmaur (Nahan, Rajgarh), Solan (Kunihar), Una	flowers	shrub/ tree
<i>Withania somnifera</i> Dunal	Punir	Solanaceae	Baluchistan, Ceylon Drier parts of India Bilaspur, Chamba (Dalhousie), Kangra (Nurpur), Sirmaur (Nahan), Solan, Una	fruits	shrub
<i>Woodfordia floribunda</i> Salisb	Red bell bush, Gulbaha	Lythraceae	Baluchistan Throughout India Bilaspur, Chamba (Dalhousie), Hamripur, Kangra (Nurpur), Kinnaur, Mandi (Nachan, Suket), Sirmaur (Nahan, Rajgarh), Solan(Kunihar) ,Una	flowers and shoots	shrub
<i>Ziziphus oenoplia</i> (L.) Mill.	Jackal jujube	Rhamnaceae	Tropical Asia, Australia Throughout hotter parts of India Una	fruits	tree

A high number of food plants belonged to Poaceae family with 17 spp. (*Arundo donax*, *Bambusa arundinacea*, *Brachiaria ramosa*, *Brachiaria reptans*, *Dactyloctenium aegyptium*, *Dendrocalamus strictus*, *Imperata cylindrica*, *Ischaemum rugosum*, *Leptochloa chinensis*, *Panicum trypheron*, *Paspalidium flavidum*, *Paspalum scrobiculatum*, *Pennisetum typhoides*, *Setaria glauca*, *Setaria intermedia*, *Setaria verticillata*, *Sorghum halpense*) followed by Fabaceae with 13 spp. (*Abrus prectorius*, *Acacia nilotica*, *Bauhinia purpurea*, *Bauhinia racemosa*, *Bauhinia variegata*, *Butea monosperma*, *Cassia fistula*, *Mucuna pruriens*, *Pueraria tuberosa*, *Flemingia congesta*, *Indigofera pulchella*, *Ougeinia oojeinensis*, *Erythrina indica*) and Ebenaceae (*Diospyros cordifolia*, *Diospyros embryopteris*, *Diospyros melanoxylon*, *Diospyros tomentosa*), Moraceae (*Ficus bengalensis*, *Ficus glomerata*, *Ficus palmata*, *Ficus religiosa*)

with 4 spp. in each family, Apocynaceae (*Holarrhena antidysenterica*, *Vallis solanacea*, *Carissa opaca*), Cucurbitaceae (*Momordica dioica*, *Bryonia laciniata*, *Coccinia grandis*), Polygalaceae (*Polygala arvensis*, *Polygala crotalarioides*, *Polygonum plebeium*), Rutaceae (*Aegle marmelos*, *Limonia crenulata*, *Murraya koenigii*), Verbenaceae (*Clerodendrum serratum*, *Premna latifolia*, *Vitex negundo*) with respective 3 spp. in each, Liliaceae (*Asparagus adscendens*, *Urginea indica*), Euphorbiaceae (*Ricinus communis*, *Emblica officinalis*), Myrtaceae (*Psidium guajava*, *Syzygium cumini*), Rubiaceae (*Anthocephalus cadamba*, *Randia dumetorum*), Tiliaceae (*Grewia asiatica*, *Grewia optiva*) Ulmaceae (*Holoptelia intergifolia*, *Trema politoria*) with 2 plant species and afterward rest of the families with one species representative. Frequency of consumption of various plant parts in surveyed area is given in Fig.2.

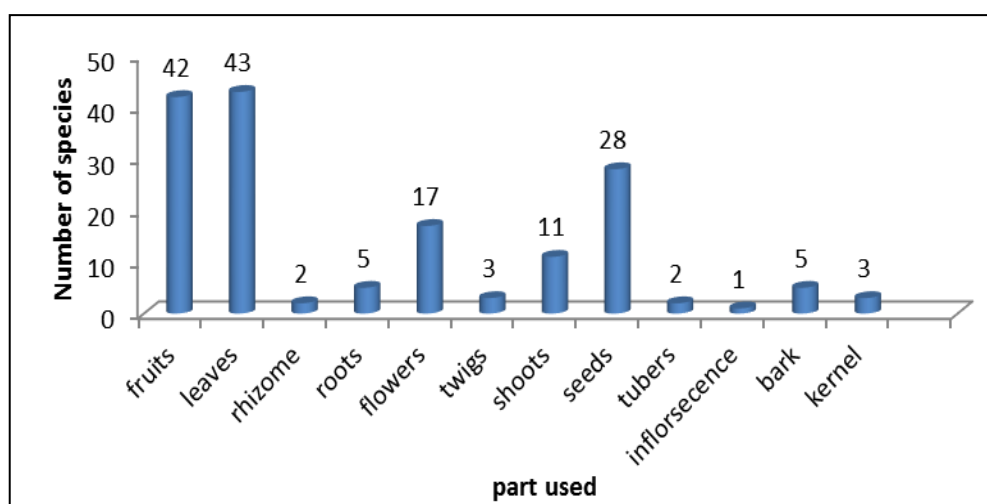


Fig 2: Frequency of wild edible plant parts.

There is a scope of exploration, conservation, utilization and cultivation of our natural resources to contribute towards food security and traditional sustainability

4. Conclusion

Traditional, indigenous and local communities conserve and use domestic and wild species sustainably, which helps to ensure food security, improved livelihoods, incomes and participation in markets. These communities also provide food to other societies all over the world. They can reduce food insecurity risks by complementing their traditional knowledge and practices with information and support from governments and other agencies including rapid response systems and capacity building for disaster preparedness, mitigation and management. It is expected that the database generated could contribute in filling the gaps for the compilation of a local biodiversity register, a key gadget for achieving the goals of regional and global biodiversity conservation and sustainable development. In view of seeing the exploitation of the biodiversity, traditional knowledge in developing countries like India is eroding at a faster rate. Therefore, it is imperative to document all the ethnobotanical information available into diverse ethnic communities before the traditional culture is

completely lost.

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