

# Ethnobotanical Survey of Wild Edible Plants of Tehsil Rajgarh, District Sirmaur, Himachal Pradesh (India)

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**Abstract:** *Since ancient times, humanity has relied on Mother Nature to fulfill their fundamental needs. Early humans explored wild edible plants, assessed their suitability for consumption, and eventually began cultivating them. The present study was conducted in Tehsil Rajgarh of District Sirmaur, Himachal Pradesh. The extensive field trips were conducted from 2016 - 2019. Ethnobotanical information on WEPs was gathered through interviews and group discussions with local farmers and elderly individuals. A total of 87 wild edible species representing 72 genera under 40 families have been enlisted from the study area. The most commonly consumed wild edible plants were herbs, with a total of 43 species, followed by shrubs (23 species), trees (19 species), and climbers (2 species). The fruits of 35 plant species, leaves of 29 species, roots of 3 species, seeds and flowers of 6 species each, tubers of 3 species, aerial parts of 5 species, pods and shoots of 2 species each, and fronds of 1 species consumed by inhabitants of the study area. These wild plants are rich in essential nutrients and phytochemicals. Encouraging the younger generation to use wild edible resources is essential for preserving traditional knowledge.*

**Keywords:** Ethnobotany, Rajgarh tehsil, Traditional knowledge, Wild edible plants (WEPs)

## 1. Introduction

The term "ethnobotany" was first coined in 1895 by John William Harshberger, a botanist at the University of Pennsylvania, to refer to the use of plants by aboriginals. According to Schultes (1962) ethnobotany referred to as the study of the relationships between the people of a primitive society and plants. Jain (1987) defined it as the total natural and traditional relationship and interaction between man and his surrounding plant wealth. The origin of ethnomedicinal science can be traced back to ancient India in Vedas and Samhitas. Dr. E. K. Janaki Ammal played a pivotal role in advancing the field of Indian Ethnobotany by creating an 'Ethnobotanical Section' at the Central Botanical Laboratory at BSI, Central Regional Centre, Allahabad in 1960. Initially, humans were fascinated by plants primarily for food and shelter, but later shifted their focus towards exploring their medicinal properties for healing and treating diseases. Wild edible plants are indigenous species that thrive and propagate in their natural environment without human intervention. For centuries, wild edible plants (WEPs) have been utilized for nourishment and medicinal benefits, especially in tribal and rural regions across the globe. In India, mostly rural inhabitants depend on the wild plants to meet supplementary food requirements (Tiwari *et al.*, 2010).

The Himalayan region, with its diverse climatic conditions, provide a habitat for numerous rare, endemic, and threatened species of flora and fauna. The Great Himalayan National Park estimates that there are around 25, 000 plant species in the Himalayas. Among these, 7, 020 species are fungi, 1, 159 species are lichens, and 2, 000 species are bryophytes. The rest of the species consist of ferns, angiosperms (flowering plants), and other varieties. Himachal Pradesh is situated in the heart of the Western Himalayas between

30°22'40'' to 33°12'40'' North latitude and 75°45'55'' to 79°04'20'' East longitude. The geographic area of the state is about 55, 673 km<sup>2</sup> of which the forest cover alone is about 37, 115 km<sup>2</sup>. Indian Himalayas are home to 675 wild edible plant species and Himachal Pradesh being part of it has a rich diversity of wild edibles (Samant & Dhar, 1997; Kala, 2007; Kishor *et al.*, 2018). The present ethnobotanical survey was conducted in Tehsil Rajgarh of District Sirmaur. Located in the famous Shivalik range of the outer Himalayas ranging from 300 m to 3000 m above sea level, district Sirmaur lies between 30°22'30" North latitude to 31°01'20" and 77°01'12" to 77°49'40" East longitude and is bordered by Shimla district to the north, Uttarakhand to the east, Haryana to the south, and Solan district to the northwest. There are 140 villages and 1 town in Tehsil Rajgarh.

## 2. Literature survey

From the Indian perspective, 'Glimpses of Indian Ethnobotany' by Jain (1981), is the first book dealing with Ethnobotany. Many research studies have been carried out to explore the ethnobotanical and ethnomedicinal uses of floristic diversity in Himachal Pradesh (Uniyal and Chauhan, 1971; Chauhan, 1999; Uniyal *et al.*, 2006; Samant *et al.*, 2007; Sood and Thakur, 2004). Different researchers, including Chauhan and Chauhan (1986), Gupta (2012), Kaur and Sharma (2004), Kumar (2005), and Thakur (2011), have made substantial contributions to the field of ethnobotanical research in the Sirmaur District. Wild edible flora of Himachal Pradesh has been explored by several researchers like an account of edible plants used by Gujjars and Gaddis from Mandi District was given by Singh (1966), Wild food plants of Himachal Pradesh: a review by Kishor *et al.* (2018), Wild edible plants used by rural people of Tirthan Wildlife Sanctuary in District Kullu, Himachal Pradesh by Thakur *et al.* (2022), Ethnobotanical studies of wild edible

plants used by ethnic people in Pabbar valley, District Shimla, Himachal Pradesh by Chauhan (2022), Edible plants of Renuka Tehsil, Sirmaur District, Himachal Pradesh (India) by Sharma & Sood (2023), Assessment of wild edible plant diversity in fringe forest areas of Kinnaur District, Himachal Pradesh, India by Singh (2023), Diversity and use of wild edible plants by migratory shepherds in the Himachal Pradesh of the Western Himalayas, India by Radha *et al.* (2018) etc.

### 3. Method / Approach

The extensive field trips were conducted from 2016 - 2019 in Tehsil Rajgarh of District Sirmaur, Himachal Pradesh. To collect ethnobotanical information on WEPs, interviews and group discussions were conducted with local farmers and elderly individuals. The study was conducted using pre-

structured questionnaires aiming at plant part used, mode of consumption, local names, habit and economic value. The specimens of plants were photographed, collected, and preserved as herbarium sheets after mounting on standard herbarium sheets (Jain & Rao, 1997). The collected plants were identified by consulting previously published work and with the help of specimens housed in the herbarium of the Forest Research Institute, Dehradun. Authentication of specimens were also done at Forest Research Institute, Dehradun.

### 4. Results / Discussion

The current study revealed the utilization of 87 wild edible species representing 72 genera under 40 families (Table 1) by the local inhabitants of Tehsil Rajgarh of District Sirmaur.

**Table 1:** List of WEPs consumed by local inhabitants of Tehsil Rajgarh of District Sirmaur

S. No.	Botanical Name	Family	Local Name	Habit	Part/s Used
1.	<i>Achyranthes aspera</i> L.	Amaranthaceae	Berwaseel	Herb	Seeds
2.	<i>Agave sisalana</i> Perrine	Agavaceae	Kwarpatha	Shrub	Leaves
3.	<i>Amaranthus viridis</i> L.	Amaranthaceae	Kala Bathu	Herb	Leaves, Seeds
4.	<i>Angelica glauca</i> Edgew	Apiaceae	Chaura	Herb	Roots
5.	<i>Arisaema tortuosum</i> (Wall.) Schott	Araceae	Khangush	Herb	Tubers (after washing and boiling)
6.	<i>Bauhinia variegata</i> L.	Fabaceae	Karel	Tree	Flower buds
7.	<i>Berberis lyceum</i> Royle	Berberidaceae	Kashmal	Shrub	Fruits, Leaves
8.	<i>Bombax ceiba</i> L.	Malvaceae	Simbal	Tree	Flower buds
9.	<i>Cannabis sativa</i> L.	Cannabaceae	Bhang	Herb	Seeds
10.	<i>Capsella bursa-pastoris</i> (L.) Medik.	Brassicaceae	Khandwa	Herb	Leaves
11.	<i>Carissa spinarum</i> L.	Apocynaceae	Karondyon	Shrub	Fruits
12.	<i>Cascabela thevetia</i> (L.) Lippold	Apocynaceae	Kaner	Tree	Fruits
13.	<i>Celtis australis</i> L.	Cannabaceae	Kharki	Tree	Fruits
14.	<i>Chenopodium album</i> L.	Amaranthaceae	Shanathu	Herb	Aerial parts
15.	<i>Cirsium wallichii</i> DC.	Asteraceae	Bhuon	Herb	Roots
16.	<i>Cornus capitata</i> Wall.	Cornaceae	Thamia	Tree	Fruits
17.	<i>Cotoneaster integrifolius</i> (Roxb.) G.Klotz	Rosaceae	Khilgu	Shrub	Fruits
18.	<i>Daphne papyracea</i> Wall. ex G.Don	Thymelaeaceae	Baruvaa	Shrub	Fruits
19.	<i>Debregeasia saeneb</i> (Forssk.) Hepper & J.R.I.Wood	Urticaceae	Seru	Shrub	Fruits
20.	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Singli-mingli, Tardi.	Climber	Tubers
21.	<i>Diplazium esculentum</i> (Retz.) Sw.	Woodsiaceae	Lingur	Herb	Fronds
22.	<i>Duchesnea indica</i> (Andrew) Teschem.	Rosaceae	Jungli bhoomal	Herb	Fruits
23.	<i>Elaeagnus umbellata</i> Thunb.	Elaeagnaceae	Genhi	Tree	Fruits
24.	<i>Euphorbia heterophylla</i> L.	Euphorbiaceae	Dudhi	Herb	Leaves
25.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Lal Dudhi	Herb	Leaves
26.	<i>Euphorbia royleana</i> Boiss.	Euphorbiaceae	Suru	Shrub	Inner portion of stem
27.	<i>Fagopyrum acutatum</i> Mansf. ex K.Hammer	Polygonaceae	Phafra	Herb	Leaves
28.	<i>Ficus auriculata</i> Lour.	Moraceae	Chimbayo	Tree	Fruits
29.	<i>Ficus carica</i> L.	Moraceae	Anjeer	Tree	Fruits
30.	<i>Ficus palmata</i> Forssk	Moraceae	Phegra	Tree	Fruits
31.	<i>Ficus racemosa</i> L.	Moraceae	Gular	Tree	Fruits
32.	<i>Fumaria indica</i> (Hausskn.) Pugsley	Papaveraceae	Jichda	Herb	Aerial parts
33.	<i>Girardinia diversifolia</i> (Link) Friis	Urticaceae	Lindu Bhabar	Herb	Leaves
34.	<i>Grewia optiva</i> J.R.Drumm. ex Burret	Tiliaceae	Biul	Tree	Fruits

35.	<i>Hedera nepalensis</i> K.Koch	Araliaceae	Kaneri	Climber	Berries
36.	<i>Impatiens scabrida</i> DC.	Balsaminaceae	Tilgra	Herb	Seeds
37.	<i>Lamium amplexicaule</i> L.	Lamiaceae	Ojhta	Herb	Leaves
38.	<i>Lantana camara</i> L.	Verbenaceae	Kesu	Shrub	Fruits
39.	<i>Lepidagathis cuspidata</i> Nees	Acanthaceae	Puthkanda	Shrub	Roots
40.	<i>Lysimachia loeflingii</i> F.J.Jiménez & M.Talavera	Primulaceae	Chandani	Herb	Aerial parts
41.	<i>Malva verticillata</i> L.	Malvaceae	Shochla	Herb	Leaves
42.	<i>Mentha spicata</i> L.	Lamiaceae	Padina	Herb	Leaves
43.	<i>Morus nigra</i> L.	Moraceae	Kimu	Tree	Fruits
44.	<i>Myrica esculenta</i> Buch.-Ham. ex D. Don	Myricaceae	Kaphal	Tree	Fruits
45.	<i>Nasturtium officinale</i> R.Br.	Brassicaceae	Badnal, Chhuch.	Herb	Aerial parts
46.	<i>Opuntia monacanthos</i> (Willd.) Haw.	Cactaceae	Saraltu	Shrub	Fruits
47.	<i>Origanum vulgare</i> L.	Lamiaceae	Sathra	Herb	Leaves
48.	<i>Oxalis corniculata</i> L.	Oxalidaceae	Khati malhori, Khati chaa.	Herb	Leaves
49.	<i>Oxalis latifolia</i> Kunth	Oxalidaceae	Shash	Herb	Leaves
50.	<i>Pavetta tomentosa</i> Roxb. ex Sm.	Rubiaceae	Papari	Shrub	Fruits
51.	<i>Persicaria nepalensis</i> (Meisn.) Miyabe	Polygonaceae	Suana	Herb	Tender shoots and leaves
52.	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Amla	Tree	Fruits
53.	<i>Physalis peruviana</i> L.	Solanaceae	Rasbhari	Herb	Fruits
54.	<i>Pilea umbrosa</i> Wedd. ex Blume.	Urticaceae	Chala	Herb	Leaves
55.	<i>Plantago lanceolata</i> L.	Plantaginaceae	Jungli isabgol	Herb	Leaves
56.	<i>Plantago major</i> L.	Plantaginaceae	Baartng	Herb	Leaves
57.	<i>Prinsepia utilis</i> Royle	Rosaceae	Bhakhel	Shrub	Fruits
58.	<i>Prunus cerasoides</i> Maxim.	Rosaceae	Paza	Tree	Fruits
59.	<i>Punica granatum</i> L.	Lythraceae	Daru	Shrub	Seeds
60.	<i>Pyrus pyrifolia</i> (Burm.f.) Nakai	Rosaceae	Jadoith	Tree	Fruits
61.	<i>Pyrus pashia</i> Buch.-Ham. ex D. Don	Rosaceae	Kainth	Tree	Fruits
62.	<i>Remusatia vivipara</i> (Roxb.) Schott	Araceae	Daklambu	Herb	Tubers
63.	<i>Rhododendron arboretum</i> Sm.	Ericaceae	Baras, Buransh.	Tree	Flowers
64.	<i>Robinia pseudoacacia</i> L.	Fabaceae	Robinia	Tree	Flowers
65.	<i>Rosa brunonii</i> Lindl.	Rosaceae	Kuja	Shrub	Fruits
66.	<i>Rubus macilentus</i> Jacquem. ex Cambess.	Rosaceae	Baryalu	Shrub	Fruits
67.	<i>Rubus ellipticus</i> Sm.	Rosaceae	Hisar	Shrub	Fruits
68.	<i>Rubus niveus</i> Thunb.	Rosaceae	Kamrai.	Shrub	Fruits
69.	<i>Rumex crispus</i> L.	Polygonaceae	Jangli palak.	Herb	Leaves
70.	<i>Rumex hastatus</i> D. Don	Polygonaceae	Mahroda.	Shrub	Leaves
71.	<i>Rumex nepalensis</i> Spreng.	Polygonaceae	Jangli palak	Herb	Leaves
72.	<i>Salvia cana</i> Wall. ex Benth.	Lamiaceae	Kuku-ro-bhat	Herb	Flowers
73.	<i>Scutellaria scandens</i> Buch.-Ham. ex D. Don	Lamiaceae	Kadwi	Herb	Flowers
74.	<i>Senna sophora</i> (L.) Roxb.	Fabaceae	Kasaundi	Shrub	Pods
75.	<i>Senna tora</i> (L.) Roxb.	Fabaceae	Chakunda	Shrub	Leaves, Pods
76.	<i>Solanum americanum</i> Mill.	Solanaceae	Dhadheo	Herb	Fruits
77.	<i>Solanum virginianum</i> L.	Solanaceae	Kadoyangno	Herb	Fruits
78.	<i>Sonchus asper</i> (L.) Hill	Asteraceae	Dudhia	Herb	Leaves
79.	<i>Stellaria media</i> (L.) Vill.	Caryophyllaceae	Badeltu	Herb	Aerial parts
80.	<i>Taraxacum officinale</i> F.H. Wigg.	Asteraceae	Kanphul	Herb	Leaves
81.	<i>Thymus linearis</i> Benth.	Lamiaceae	Jangliajwain	Herb	Leaves
82.	<i>Trifolium repens</i> L.	Fabaceae	Khati shash	Herb	Leaves
83.	<i>Urtica dioica</i> L.	Urticaceae	Bhabar	Herb	Leaves
84.	<i>Vicia sativa</i> L.	Fabaceae	Matari	Herb	Leaves, Seeds
85.	<i>Zanthoxylum armatum</i> DC.	Rutaceae	Timbur	Shrub	Leaves, Fruits
86.	<i>Ziziphus nummularia</i> (Burm.f.) Wight & Arn.	Rhamnaceae	Jangli Ber	Shrub	Fruits
87.	<i>Ziziphus oxyphylla</i> Edgew.	Rhamnaceae	Jangli Ber	Shrub	Fruits

Most commonly consumed wild edible plants were herbs, with a total of 43 species, followed by shrubs (23 species), trees (19 species) and climbers (2 species) (Fig.1).

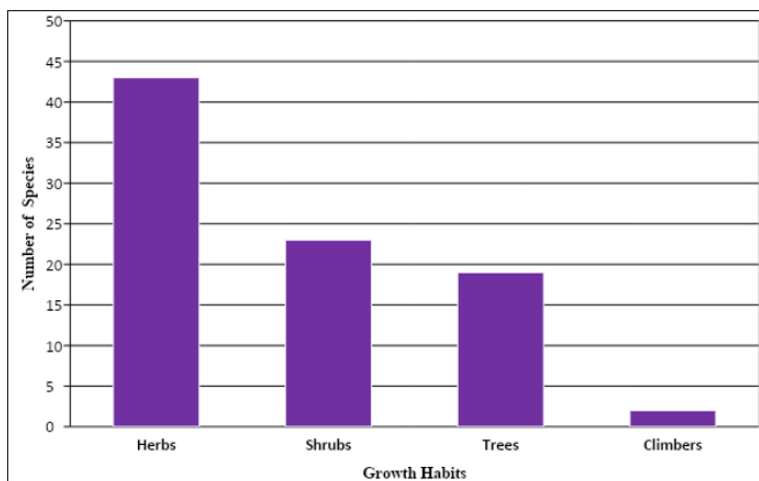


Figure 1: Life form categorization of the species used

The dominating family was found to be Rosaceae with 10 Species, followed by Fabaceae and Lamiaceae (6 species each), Moraceae and Polygonaceae (5 species each), Euphorbiaceae and Urticaceae (4 species each), Amaranthaceae, Asteraceae, and Solanaceae (3 species each), Araceae, Apocynaceae, Brassicaceae, Cannabaceae, Malvaceae, Oxalidaceae, Plantaginaceae and Rhamnaceae (2 species each), the rest of the families comprised of only 1 species each (Acanthaceae, Agavaceae, Apiaceae, Araliaceae, Balsaminaceae, Berberidaceae, Cactaceae, Caryophyllaceae, Cornaceae, Dioscoreaceae, Elaeagnaceae, Ericaceae, Lythraceae, Myricaceae, Papaveraceae, Primulaceae, Rubiaceae, Rutaceae, Tiliaceae, Thymelaeaceae, Verbenaceae, Woodsiaceae (Fig.2).

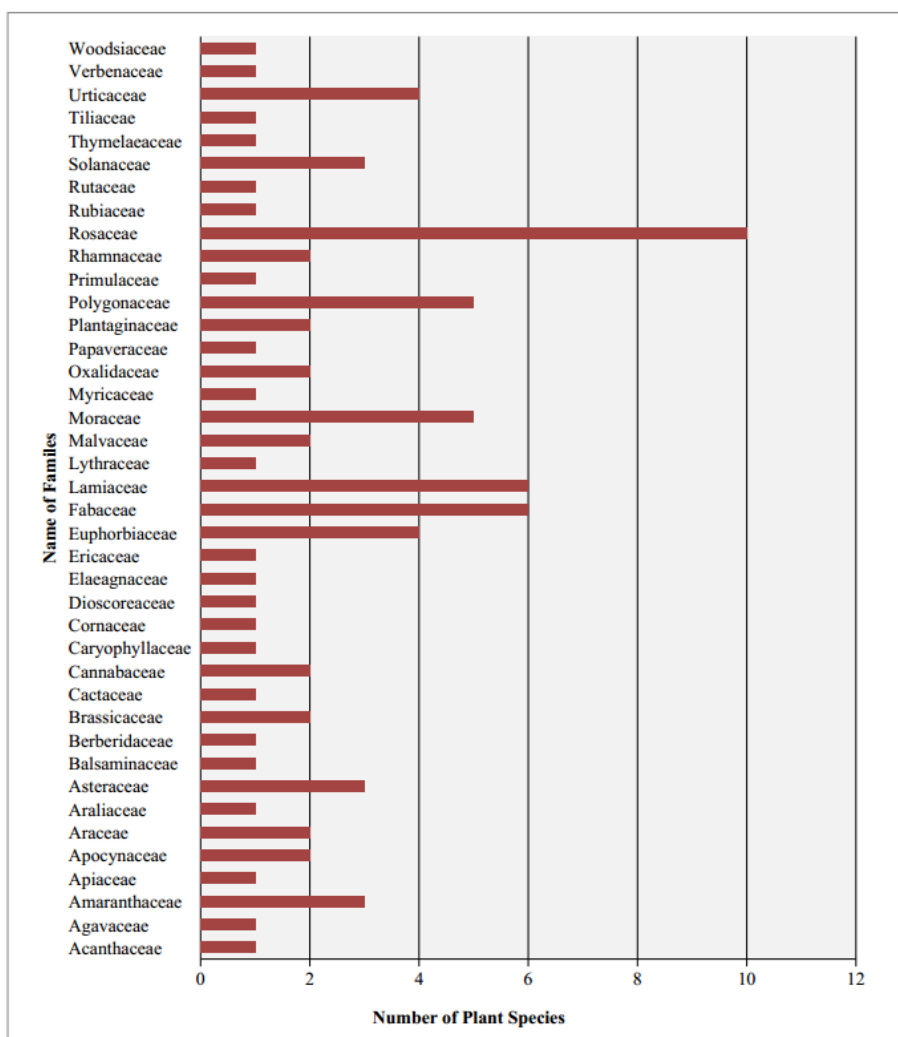


Figure 2: Bar graph showing families and number of plant species studied during the survey

In reference to the plant part used, 10 edible parts were recorded. Fruits were most commonly used edible plant part (38%) followed by leaves (32%), seeds and flowers (7%

each), aerial parts (5%), tubers and roots (3% each), shoots and pods (2% each) and fronds (1%) (Fig.3). Villagers consumed these plants either raw or after being cooked.

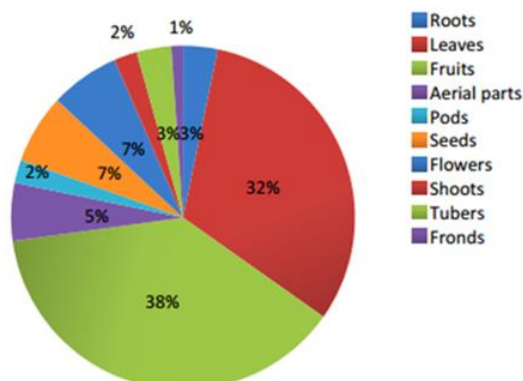


Figure 3: Pie chart depicting the percentage of different plant parts used

## 5. Conclusion

The wild edible plants in the study area fulfill the dietary and nutritional needs of the indigenous population. Besides edibility, the villagers also utilize these wild plants for various purposes such as fencing, fuel, fodder, medicine, and agricultural implements. Furthermore, they preserve certain naturally occurring beneficial species along the borders of their agricultural fields like *Bauhinia variegata*, *Grewia optiva*, *Prunus cerasoides*, *Pyrus pyrifolia*, *Pyrus pashia* etc. The importance of wild edible plants (WEPs) in providing vital micronutrients is increasingly being ignored, leading to the loss of traditional knowledge linked to them. Thus, documentation and conservation of wild edible plants is crucial in enhancing our understanding of indigenous knowledge systems.

## 6. Future scope

WEPs provide an alternative source of nutrition to meet the increasing demands for food supply and security in the country. Commercialization of these plants can generate income for poor rural people. The physicochemical properties of wild products suggest that they could serve as a cost-effective source for developing nutraceuticals.

## Acknowledgements

The authors are deeply thankful to the local inhabitants of the study area for their invaluable contributions and cooperation during the course of this work. Authors are also thankful to the Forest Research Institute Dehradun (Uttarakhand) for specimens' identification and authentication.

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