

NTFPs of Uttarakhand: Nature's Treasure



**Dr. Diwaker Pant
&
Rajiv Nayan Nautiyal**



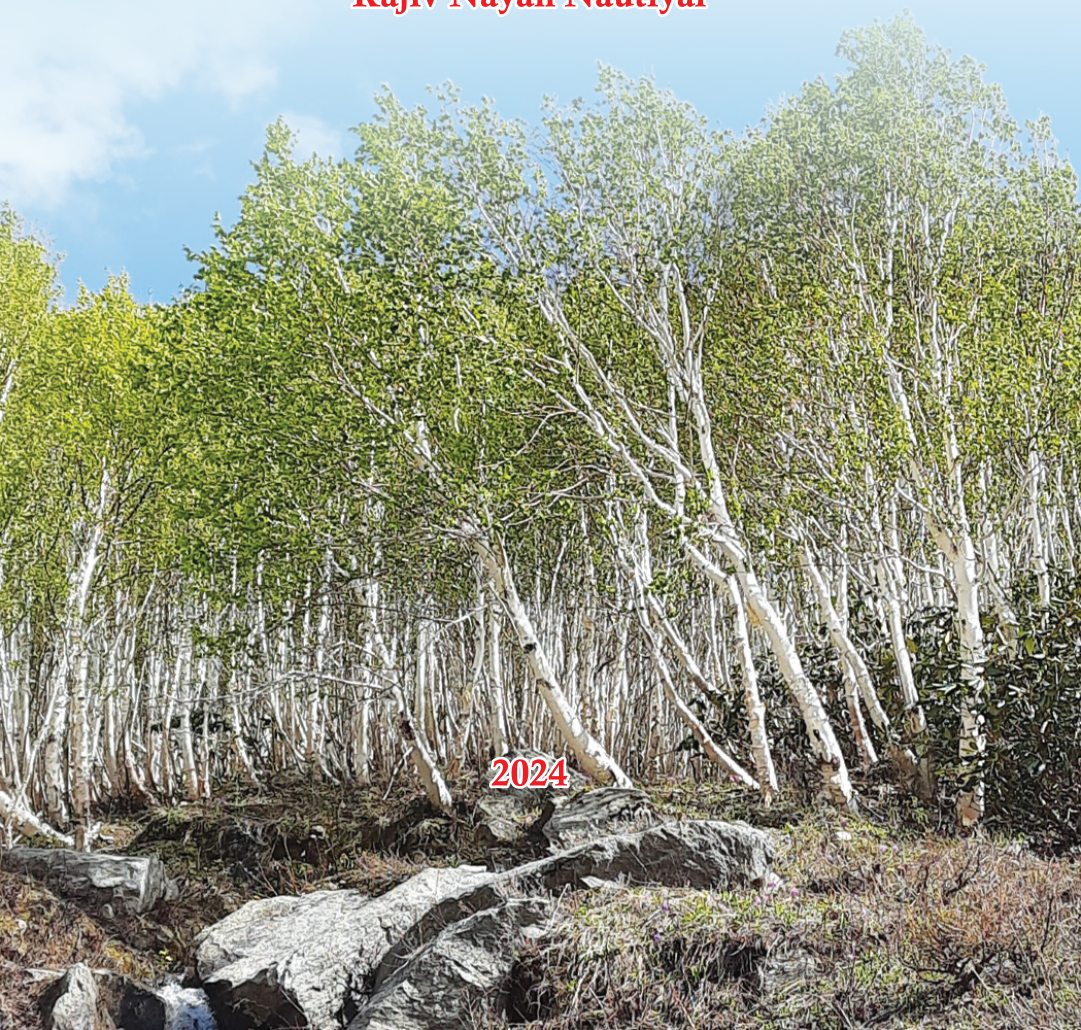
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Dr. Diwaker Pant
&
Rajiv Nayan Nautiyal

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Preface

Welcome to "NTFPs of Uttarakhand: Nature's Treasure," a comprehensive exploration of the diverse and invaluable non-timber forest products (NTFPs) found in the breathtaking landscapes of Uttarakhand. Nestled in the lap of the Himalayas, Uttarakhand is not only renowned for its majestic mountains and serene forests but also for the rich bounty of natural resources it harbours.

This book aims to shed light on the remarkable diversity of NTFPs that play a crucial role in the lives of the people of Uttarakhand. From aromatic herbs and medicinal plants to nutritious fruits and fibers, each chapter delves into the unique characteristics and uses of these natural treasures.

As you journey through the pages of this book, you will discover the traditional knowledge and practices associated with harvesting, processing, and utilizing NTFPs, passed down through generations by the indigenous communities of Uttarakhand. Moreover, you will gain insights into the importance of these invaluable resources.

We hope that this book serves as a tribute to the rich biodiversity of Uttarakhand and as a source of inspiration for conservationists, researchers, policymakers, and nature enthusiasts alike. May it deepen your appreciation for the intrinsic connection between humans and nature and ignite a renewed sense of stewardship towards our planet's precious ecosystems.

Let us embark on this journey together, as we unravel the untold stories of Uttarakhand's NTFPs and celebrate the wonders of nature's treasures.

Dr. Diwaker Pant

&

Rajiv Nayan Nautiyal

Officer Trainees, SFS 2022-24 Batch -I



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Dr. Diwaker Pant
Rajiv Nayan Nautiyal

Introduction

Welcome to "The NTFP of Uttarakhand", an in-depth survey of rich non-timber forest products (NTFPs) embedded in the pristine landscapes of India – the Himalayan gem of Uttarakhand.

Forests contain rich biodiversity, including aromatic herbs and medicinal plants, which form a biodiversity species from tropical deciduous forests to mountain grasslands (Bughyals) went deep, engaged with local communities and experts in order to uncover the secrets of NTFPs.

Our work highlighted the important role NTFPs play in building livelihoods by providing food, medicines, spices and raw materials to millions of people across rural Uttarakhand. Through careful analysis and insightful discussions, we identified the economic, ecological, social and cultural significance of Uttarakhand's key NTFPs, shedding light on the potential for sustainable development and environmental management has resulted.

Join us as we embark on a journey into the multifaceted world of NTFPs in Uttarakhand, uncovering their importance and significance in shaping the Himalayan landscape.

Study Area

Located in central India's hilly regions, between 28°43' and 31°28' N latitude and 77°49' and 81°03' E longitude, lies Himalayan state called Uttarakhand. Its boundaries are shared by Nepal to the east and China to the north. With a land area of 53,483 square kilometres, Uttarakhand makes up roughly 1.63% of all of India's land area and 15.5% of all territory in the western Himalayas. With 1.22 crore people living in the state, 74.33% of them live in rural areas and 25.67% in urban



areas. Uttarakhand's documented area of 34,662 square kilometres, or around 64.79% of the total land area, is covered by forests.

Reserved forests account for 71.08% of the total wooded area, protected forests for 28.51%, and unclassified forests for 0.41%. Climate and altitude determine the type of flora that grows. Tropical deciduous woods are found in lower regions, followed by Himalayan temperate forests at mid-altitudes and coniferous, sub-alpine, and alpine forests at higher elevations. The state's highest regions are characterized by alpine grasslands and meadows at high altitudes.

The state's lowlands have a tropical climate, while its higher areas mostly have a temperate temperature. The topography is mainly hilly, with steep slopes and large sections covered in snow. The average annual rainfall is 1550 mm. A total of 3.47 million hectares, or 71% of the state's total land area, are covered by forest cover. In terms of the proportion of documented forest area, this places it sixth among the states of India.

Based on altitude, the woods can be divided into many types: Himalayan Moist Temperate Forest (2000-3000 m), Sub-Alpine woods (3400-4000 m), Alpine Forests (4000-5000 m), Tropical/Sub-tropical Moist Forest (500-1000 m), and Sub-Tropical Pine Forest (1000-2000 m). There is a vast variety of flora and fauna in these varied forest environments, including fragrant and medicinal plants.

Throughout our On-Job Training period from August to December 2023, we had the opportunity to study and observe the Non-Timber Forest Products (NTFPs) of the Himalayan State.



Materials and method

Formal and informal talks with local families and knowledgeable individuals from the area were used to obtain information. This made it possible for us to gather reliable information about phenological events, ideal fruiting periods, and customary applications of fruits and other edible parts for medicinal purposes. To double-check the data gathered from local sources and make any required adjustments, we also reviewed published literature pertaining to these factors (Gaur, 1999). Based on published literature, we also ascertained these species' known conservation status (Nayar and Sastry, 1987).

Importance of NTFP Sector

For a great number of individuals, NTFPs provide their main supply of food, medication, spices, and building materials. Even those in less fortunate circumstances can make money by selling NTFP goods. More than 275 million people in rural India depend on NTFPs and forests for their livelihoods; the NTFP industry generates about Rs. 6000 crores yearly and accounts for 50% of all forest revenues and 70% of the nation's income from exports derived from forestry. Forest management techniques have historically prioritized wood production, leading to the frequent disregard of non-timber forest products (NTFPs), which are classified as readily accessible commodities and deemed "minor forest produce." But in recent times, the NTFP sector has demonstrated a strong potential to generate a large number of job possibilities, improving many people's incomes. In states where tree felling has been prohibited, NTFPs remain a major income source

NTFPs have the potential to support a range of sectors from food security to pharmaceuticals, and can serve as a basis for establishing environmentally friendly SMEs in the



community, thus creating better income and employment opportunities for more people.

There are 938 NTFPs in Uttarakhand that are used for a variety of reasons, such as fiber sources (13), oil-yielding plants (32), wild foods (155), soap and detergent sources (22), insecticides/pesticides (15), and medicinal plants (701) (M.Sundriyal).

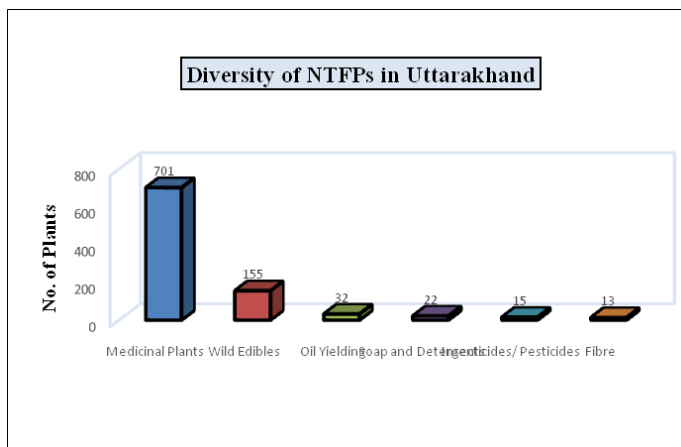


Figure 1: Diversity of NTFPs in Uttarakhand
(Source: M. Sundriyal)



1. Tejpat



Botanical Name : *Cinnamomum tamala*

Common Name : Indian Bay Leaf

Vernacular Name : Tejpat/Tejpatta

Family : Lauraceae

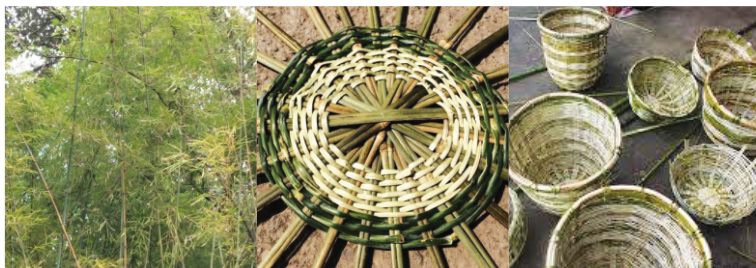
Taxonomic features : Evergreen tree, up to 8-12m tall, with thickened ovate leaves used as spice, producing small white flowers cross-fertilized by honey bees, and dark purple drupe fruits containing seeds.

Parts Used : Leaves

Contribution to the Community Sustenance : Effective for treating common cold, controls cough, releases mucus, and cleans air passages (Kapha balancing); swallow with water or honey after meals; benefits include treating cough and wound infections, while for skin disorders, mix 2-5 drops of tejpatta oil with coconut oil for eczema. Leaves are also used as spices and tea.



2. Ringal/Ningal



- Botanical Name** : *Arundinaria jaunsarensis*
- Common Name** : Indian Fountain Bamboo
- Vernacular Name** : Ringal or ningaw or Jumraringal
- Family** : Poaceae

Taxonomic features : Grow naturally inside the forest or nearby villages. The Indian Fountain Bamboo grows from a creeping rhizome, with stems reaching 10-15 ft high. Stem-sheaths are mottled with hairy margins, while leaves are brilliant green above, slightly glaucous below, edged with bristles. Native to the West Himalayas, it forms dense clusters on older stems.

Parts Used : Whole Plant.

Contribution to the Community Sustenance : Ringal, a vital bamboo type in the Garhwal Himalayas, sustains local livelihoods. Its weaving tradition involves almost every family in rural areas of Uttarakhand. Used for making basket, artifacts and agricultural implements. Roots are used in local medicine.



3. Buransh



Botanical name : *Rhododendron arboreum*

Common name : Rose tree

Vernacular name : Buransh

Family : Ericaceae

Taxonomic features : The tree is evergreen, featuring bright red bell-shaped flowers in clusters of up to 20 blossoms. Its glossy dark green leaves are leathery and oblong to lanceolate, with a velvety texture on the underside. The trunk is crooked and gnarled, with reddish-brown bark that peels off in thin flakes.

Parts Used : Flowers, Leaves, Bark.

Contribution to community sustenance : People use the flowers to make a drink called "buransh juice," jams, jellies, syrups, and medicine for fever, cough, and asthma. Leaves are used to make a soothing tea for digestive and respiratory issues. The bark is used to make red dye for colouring woollen fabrics and for traditional medicine to help with skin problems and pain. This plant has a special meaning in the culture; it's celebrated in local festivals and rituals, adding to the region's cultural heritage.



4. Kaphal



Botanical name : *Myrica esculenta*

Common name : Bayberry

Vernacular name : Kaphal

Family : Myricaceae

Taxonomic features : It is small tree with rough and greyish dark outer bark. Leaves are lanceolate with entire or serrate margin, it bears small, sessile, solitary pistillate flowers in catkin inflorescence, while the staminate flowers are in compound raceme. Fruit drupe, red to dark brown in colour, ellipsoidal or oval in shape and about 2-7 mm in diameter, sweet and sour in taste.

Parts Used : Fruit

Contribution to community sustenance : It is highly valued for its sweet- sour taste and nutritional and medicinal benefits. Ripened fruit is consumed fresh and used for making jams, jellies, and pickles. It's packed with vitamin C and antioxidants, good for the immune system and digestion. Provides income for locals involved in collection and sale, during the summer season.



5. Lingda



Botanical name : *Diplazium esculentum*

Common name : Fiddlehead fern

Vernacular name : Lingda

Family : Athyriaceae

Taxonomic features : It is a large perennial fern with an ascending rhizome, covered with short rufous scales. The plant is bipinnate with long brownish petioles covered with short scales. The fronds can reach up to 1.5 m in length, and the pinnae is about 8 cm long and 2 cm wide.

Parts Used : Shoots

Contribution to community sustenance : Its young shoots are edible and consumed as a vegetable by locals. Used in traditional medicine to treat ailments such as fever, cough, and respiratory disorders. Fronds are utilized to make baskets and brooms, supporting local craftsmanship.



6. Guchhi



Botanical name : *Morchella esculenta*

Common name : Morel mushroom

Vernacular name : Guchhi

Family : Morchellaceae

Taxonomic features : The Stem is white- pale yellow, hollow, and straight with bulbous base. Caps are hollow, about 2–7 cm, pale brownish cream, with large pits and ridges raised on the stem.

Parts Used : Whole Plant

Contribution to community sustenance : It is highly valued edible mushroom and used in various culinary preparations such as soups, stews, and sauces. Provides good income to the collectors and sellers. Finds uses in traditional medicine for its believed antioxidant and anti-inflammatory properties, treating respiratory problems and digestive disorders.



7. Jhula Ghas



Botanical name : *Parmelia perlata*

Common name : Shaileyam

Vernacular name : Jhula

Family : Parmeliaceae

Taxonomic features : Stone Flowers are lichens growing in rosettes or spreading irregularly over the substratum, which gives the appearance of a flower. It is mainly composed of fungal mycelia, which forms a network enclosing algal cells.

Parts Used : Whole

Contribution to community sustenance : It is used in dishes like nihari, biryani etc. It is mixed with other aromatic herbs, such as jatamansi for flavouring and curing tobacco. When mixed with other aromatic herbs to be used as incense in hawan puja.



8. Pine Resin/ Lisa



Botanical Name : *Pinus roxburghii*

Common Name : Chir Pine

Vernacular Name : Chir/Kulain

Family : Pinaceae

Taxonomic features : The tree can grow up to 55 meters tall, with dark red-brown bark deeply fissured and scaly. Its needles are slender, growing in bundles of three, while its seeds are found in ovoid cones measuring 10 x 20 x 6-9 cm, with scales that are thick and stiff. The seeds themselves are 8-12 mm long, with prominently swollen apophyses and a triangular, protruding umbo.

Parts Used : Resin exuded from tree trunks.

Contribution to the Community Sustenance : It's effective for respiratory issues like bronchitis and asthma, and its application reduces joint inflammation and pain due to its anti-inflammatory and analgesic properties. Used for making turpentine oil manufacturing of varnishes, adhesives, paints, herbicides etc.



9. Deodar Oil



Botanical Name : *Cedrus deodara*

Common Name : Himalayan Deodar

Vernacular Name : Dewdar

Family : Pinaceae

Taxonomic features : A tall tree with a diameter of up to 3 meters, initially conical but becoming rounded as it matures, with horizontal branches ending in pendulous tips. It bears blue-green needles in clusters of 30, each measuring 3-5cm, and its cones are either solitary or in pairs, changing from bluish when young to reddish-brown when ripe.

Parts Used : The chips from the tree stumps are boiled in water to extract cedar wood oil by steam distillation.

Contribution to the Community Sustenance : Cedar wood oil is used in acne treatment, pain relief, stress and anxiety relief, better sleep, hair growth and also has anti-bacterial properties.



10. Bhojpatra/ Himalayan Birch



Botanical Name : *Betula utilis*

Common Name : Himalayan Birch

Vernacular Name : Bhojpatra

Family : Betulaceae

Taxonomic features : A cold-resistant tree in high altitudes, growing up to 20m, often bent by snow. It has serrated ovate leaves, flowers from May-July, and bears fruits in September October. The bark is thin, shiny, and ranges from reddish-brown to white, while the wood is hard, heavy, and brittle, with pink or light reddish-brown heartwood.

Parts Used : Bark

Contribution to the Community Sustenance : The bark of the tree is used in traditional medicine to treat various ailments, including fever, cough, and urinary disorders. It is also believed to have anti-inflammatory and anti-bacterial properties.



11. Jatamasi



Botanical Name : *Nardostachys jatamansi*

Common Name : Indian spikenard

Vernacular Name : Jatamasi

Family : Caprifoliaceae

Taxonomic features : *Nardostachys jatamansi*: Flowering plant of the honeysuckle family found in the eastern Himalayas, primarily in Kumaon, Nepal, Sikkim, and Bhutan, growing 10–50 cm tall with pink, bell-shaped flowers, and thriving at altitudes of 3,000–5,000 m.

Parts Used : Rhizomes (underground stems)

Contribution to the Community Sustenance : Nard oil, derived from Jatamansi, is used for perfume, incense, and herbal medicine, offering benefits such as calming effects, treatment for anxiety and insomnia, and enhancing memory and mental health. Additionally, its essential oil, with a sweet, woody fragrance from the roots, is utilized in the perfume industry.



12. Brahmi



Botanical Name : *Centella asiatica*

Common Name : Indian pennywort

Vernacular Name : Brahmi

Family : Apiaceae

Taxonomic features : The plant is a small trailing herb with glabrous, striated stems rooting at nodes, featuring fleshy orbicular to reniform leaves with long, smooth upper surface petioles and hairy undersides. Its flowers form in pink and white fascicled umbels, and the oblong, dull brown fruits have a hard, thickened, woody white pericarp.

Parts Used : Leaves

Contribution to the Community Sustenance : It is used for the antimicrobial, antidiabetic, anti-inflammatory, anti-depressant, and memory enhancing properties. It is widely sold as a dietary supplement in capsule, powder, tincture, and topical formulations.



13. Thuner



Botanical name : *Taxus wallichiana*

Common name : Himalayan Yew

Vernacular name : Thuner

Family : Taxaceae

Taxonomic features : It is a moderately sized evergreen, coniferous, dioecious tree. The shoots are initially, green, turning brown, with thin, scaly bark after three or four years. The leaves are slender, flat, slightly curved like a sickle, spirally arranged on the shoots but twisted at the base. The leaves are highly poisonous. The seed cone is berry-like, with a single scale modified into a soft, juicy red aril.

Parts Used : Leaves, bark.

Contribution to community sustenance: It has been used traditionally by the native populations for treating common cold, cough, fever, and pain. The bark is used for making tea by the Bhotiya tribal community. It is source of important anti-Cancer drug, called Taxol, extracted from the bark and leaves.



14. Timru



Botanical Name : *Zanthoxylum armatum*

Common Name : Toothache tree

Vernacular Name : Timru

Family : Rutaceae

Taxonomic features : Timru is an evergreen shrub or tree, up to 6m tall, with pungent, aromatic, imparipinnate leaves, lanceolate leaflets, and small red fruits. Its flowers appear in dense terminal or sparse axillary panicles, ranging from green to yellow.

Parts Used : Fruits and stem.

Contribution to the Community Sustenance : The fruits, seeds, and bark of Timru serve as an aromatic tonic for dyspepsia and fever, while the fruits and seeds provide dental benefits, aiding dental troubles and used in dental paste/powder. Tender twigs are used to brush teeth and alleviate toothache, and the essential oil extracted from the fruits has deodorant and antiseptic properties.



15. Bedu



Botanical name : *Ficus palmata*

Common name : Indian fig

Vernacular name : Bedu

Family : Moraceae

Taxonomic features : It is small tree, growing up to 10m tall with smooth bark, brownish-grey, young hairy twigs. The Leaves are broadly suborbicular, orbicular to ovate and cordate at the base with tomentose petiole.

Parts Used : Fruit

Contribution to community sustenance : It is valued for nutritional and medicinal uses. Its fruit is used to make chutneys, jams, and in other traditional foods, being good source of nutrition, rich in vitamins, minerals, and antioxidants. It is utilized in traditional medicine to treat ailments like diabetes, high blood pressure, and digestive disorders.



16. Timla



Botanical name : *Ficus auriculata*

Common name : Elephant Ear Fig

Vernacular name : Timla

Family : Moraceae

Taxonomic features : A middle sized tree with spreading crown, young parts pubescent, young branches are hollow. Leaves moderate sized, broad, ovate-orbicular, glabrous above, pubescent beneath. Receptacle in fascicles on short thick leafless branches or on trunk at lower portion. Fruits are 2 - 3 inch. large, purplish- orange when ripe

Parts Used : Fruit, Leaves

Contribution to community sustenance : Fruit is edible with a sweet taste, used fresh or in making jams and chutneys. Leaves used in traditional medicine to treat ailments such as diabetes, high blood pressure, and fever. Wood is used for fuel and timber, contributing to local energy needs and construction.



17. Gular



Botanical Name : *Ficus gromerata*

Common Name : Cluster Fig Tree

Vernacular Name : Gular

Family : Moraceae

Taxonomic features : Deciduous tree, up to 30m tall, bearing figs clustered on warty branches or main stem, rarely axillary, flowering and fruiting from March to August.

Parts Used : Fruit, Leaves, Bark and roots.

Contribution to the Community Sustenance : Gular has diverse medicinal uses, including antioxidant and anti-cancer properties, blood sugar reduction, improved digestion, and immunity. Traditionally used for skin ailments, diarrhoea, and dysentery. Its fruits are edible, leaves are used as fodder, and wood is used in religious rituals.



18. Amla



Botanical Name : *Phyllanthus emblica*

Common Name : Indian gooseberry

Vernacular Name : Amla

Family : Phyllanthaceae

Taxonomic features : The tree is small to medium-sized, 1–8m tall, with mottled bark and finely pubescent deciduous branchlets. Its leaves are simple, light green, closely set along branchlets, resembling pinnate leaves. Flowers are greenish-yellow, and fruit is nearly spherical, light greenish-yellow, with six vertical stripes.

Parts Used : Fruit

Contribution to the Community Sustenance : Amla fruits are potent rejuvenating agents rich in Vitamin C and various beneficial compounds. Studies show their effectiveness against diabetes, high lipids, microbes, inflammation, oxidation, liver issues, and nausea. Amla is used alone or in formulations like Chyavanaprasa and Amalaki Rasayana.



19. Semal



Botanical Name : *Bombax ceiba*

Common Name : Cotton Tree

Vernacular Name : Semal

Family : Malvaceae

Taxonomic features : Deciduous trees, up to 45m tall, with straight boles and prickled buttresses. Grey bark with white mottling, digitately-compound stipulate leaves, and capsules with dark brown seeds in white cotton.

Parts Used : Bark, Wood, flower, seeds and Fiber.

Contribution to the Community Sustenance : *Bombax ceiba* is utilized in Ayurveda, with its bark known for its astringent properties, effective in treating diarrhoea, dysentery, and gastrointestinal issues. Additionally, its flowers and seeds are employed for their potential therapeutic effects in traditional medicine.



20. Chiura/ Chiur



Botanical Name : *Diploknema butyracea*

Common Name : Indian Butter Tree

Vernacular Name : Chiura/Chiur

Family : Sapotaceae

Taxonomic features : The Indian Butter Tree grows up to 25 m tall with thick, round branchlets. Its leaves are leathery and elliptic-oblong, with yellowish-brown to brown velvety surfaces. Flowers appear in clusters with petals ranging from oblong to ovate. The fruit is ovoid-globose to oblong, smooth, and contains 1-3 seeds.

Parts Used : All Parts of the tree are used.

Contribution to the Community Sustenance : The Indian Butter Tree is essential to locals for food, fuel, medicine, and more. Its seeds yield ghee, used in cooking and as lotion. The fruit is eaten fresh and used in alcohol distillation. Other parts serve as fuel, fodder, and medicine for various ailments.



21. Malu



Botanical Name : *Bauhinia vahlii*

Common Name : Camel's Foot Creeper

Vernacular Name : Malu

Family : Fabaceae or Caesalpiniaceae

Taxonomic features : Malu is a robust climbing shrub that can ascend to the canopy of forest trees. Its woody stems reach lengths of 10 - 30 meters and diameters of up to 20 cm, relying on tendrils for support.

Parts Used : Leaves, Flowers, and Buds.

Contribution to the Community Sustenance : The climbing shrub offers edible flowers, and buds, with leaves also serving as fodder. *Bauhinia vahlii* provides quality fiber from its inner bark for strong ropes and straw mat sewing. Stems are used in matting and basketry, while leaves serve for thatching, umbrella-making, and makeshift utensils. The bark, rich in up to 17% tannins, is challenging to extract but of high quality.



22. Guiral



- Botanical name** : *Bauhinia purpurea*
Common name : Camel's foot orchid tree
Vernacular name : Guiral
Family : Fabaceae

Taxonomic features : It is a small to medium-size deciduous tree, growing up to height of 17-18 feet. The leaves are 10–20 centimetres (3.9–7.9 in) long and broad, rounded, and bilobed at the base and apex. The flowers are conspicuous, pink, and fragrant, with five petals.

Parts Used : Bark, Leaves and Flowers

Contribution to community sustenance : Bark used in traditional medicine for treating fever, diarrhoea, inflammation, and as a remedy for venomous bites. Ornamental value with showy, pink-purple flowers used in landscaping, ornamental gardening, and religious/cultural purposes festivals.



23. Kunju



Botanical Name : *Artemisia roxburghiana*

Common Name : Common mugwort

Vernacular Name : Kunju/Kunja

Family : Asteraceae

Taxonomic features : *A. vulgaris* is a tall perennial herb, typically 1–2 m tall, occasionally 2.5 m. It spreads via rhizomes rather than seeds, with dark green pinnate leaves, and grooved reddish-purple stems.

Parts Used : Leaves and Stem.

Contribution to the Community Sustenance : *A. vulgaris*, the "mother of herbs," is prized in traditional Chinese, European, and Hindu medicine for its wide-ranging pharmacological benefits. Its leaves oil is also used as insecticide. It is also used in religious functions.



24. Bhuin Kaphal



Botanical Name : *Flagaria vesca*

Common Name : Wild Strawberry, Snake Berries or fake Strawberry

Vernacular Name : Bhuin Kaphal

Family : Rosaceae

Taxonomic features : The plant bears 5 to 11 soft, hairy white flowers on a stalk measuring 3–15 cm. Its light-green trifoliate leaves have toothed margins. It spreads via runners and viable seeds.

Parts Used : Fruit and Leaves

Contribution to the Community Sustenance : The berries, found in wooded areas and open fields, are rich in protein, sugar, and Vitamin C. The entire plant is considered antiseptic; crushed leaves treat burns, boils, and insect bites. Flower infusion improves blood circulation, while fruits are used for skin diseases.



25. Almoda/ Halmoda



Botanical Name : *Rumex hastatus*

Common Name : Arrowleaf dock

Vernacular Name : Almoda/Halmoda

Family : Polygonaceae

Taxonomic features : A small shrub thriving on dry slopes, rocks, and walls in North Indian hill stations between 700-2500 m. It features bushy stems, woody at the base, with narrow, arrow-shaped leaves varying in size. Numerous thin branches bear slender clusters of tiny greenish-pink or pinkish-green flowers, with elongated stalks in fruit. Flowering spans from June to October.

Parts Used : Whole Plant

Contribution to the Community Sustenance : People use the leaf extract of this plant on wounds and cuts to stop bleeding. It's also thought to help with Kandali. The root acts as a laxative, tonic, and anti-rheumatic, and can be used for skin conditions too. Plant is used for making sauce.



26. Hinsalu



Botanical name : *Rubus ellipticus*

Common name : Himalayan raspberry

Vernacular name : Hinsul

Family : Rosaceae

Taxonomic features : It is a shrub, growing up to 2 m tall, bearing prickles and reddish hairs. It bears alternate, three round - blunt leaflets about 5-10 cm long whose undersides are lighter while the upper surface is covered with downy hairs. The flowers are small, white with five petals. The fruit is a round yellow cluster of drupelets, easily detachable from the receptacle.

Parts Used : Fruit, Leaves Stem and Roots

Contribution to community sustenance : Its fruit is edible and used in making jams, jellies, and desserts. Leaves and stem used in traditional medicine to treat ailments such as diarrhoea, dysentery, and fever. Its roots also used in traditional medicines.



27. Kingoda



Botanical name : *Berberis asiatica*

Common name : Asian Barberry, Dar-hald

Vernacular name : Kingore, Kasmal

Family : Berberidaceae

Taxonomic features : Is a much-branched evergreen shrub with 2-3 m span with pale yellow branches. The leaves are thick rigid, ovate to elliptic, shining dark green above and greyish beneath and with 2-5 spiny teeth. It bears pale yellow flowers, in flat-topped clusters with red hairless stalks. The fruit is small, oblong, glaucous and of dark purple colour.

Parts Used : Fruit, roots, stem.

Contribution to community sustenance : Fruit is edible, sour, and acidic and used to make pickles, jams, and chutneys. Used in traditional medicine to treat ailments such as liver disorders, jaundice, and skin diseases. The roots and stems are used to make a yellow dye.



28. Mehal



- Botanical Name** : *Pyrus pashia*
Common Name : Wild Himalayan Pear
Vernacular Name : Mehal or Mole
Family : Rosaceae

Taxonomic features : *Pyrus pashia*, a deciduous tree, has an oval crown, finely toothed leaves, white flowers with red anthers, and small pear-like fruits. Mature trees are 6 to 10 meters tall and wide, with fuzzy leaves and smooth branchlets as they age. Leaves are long-pointed, toothed, and shiny, 5 to 10 cm long. Some may have spiny branches and rough, dark bark.

Parts Used : Fruits, Leaves and woods.

Contribution to the Community Sustenance : Locals use the edible fruits for various purposes, including treating conjunctivitis and diarrhoea with the juice. The wood is used for fuel, agricultural implements, and fencing. Rootstocks are used for grafting, and decayed parts serve as fodder. Additionally, the tree helps control erosion on steep hillsides.



29. Baheda



Botanical Name : *Terminalia bellirica*

Common Name : Baheda

Vernacular Name : Baheda

Family : Combretaceae

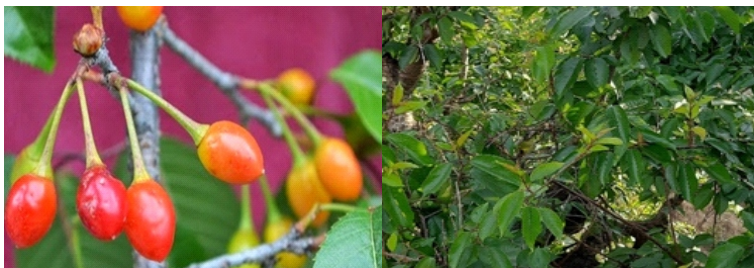
Taxonomic features : Large deciduous trees, up to 40 m tall, with whitish bark and smooth branchlets. Leaves are simple, alternate, and clustered at twig ends. Fruits are single-seeded drupes, round or oval, about 3 cm wide, with slight ridges.

Parts Used : Fruit.

Contribution to the Community Sustenance : Its fruits are used in tanning and are a key component of Triphala with *Terminalia chebula* and Amla. In Ayurvedic medicine, *Terminalia bellirica* fruit is believed to aid digestion and liver protection, with less impact on the heart compared to other *Terminalia* species. Although commonly used for various ailments like constipation, cough, diabetes, diarrhoea, and high cholesterol, scientific evidence backing these claims is insufficient.



30. Paiyan/ Paiyun



- Botanical Name** : *Prunus cerasoides*
Common Name : Padam or Wild Himalayan Cherry
Vernacular Name : Paiyan/Paiyun
Family : Rosaceae

Taxonomic features : *Prunus cerasoides* is a tree that can grow up to 30 meters tall. It is identified by its glossy, ringed bark and long, dentate stipules when not in flower. Flowering occurs twice a year, in autumn (September to November) and spring (January to April), with pinkish-white hermaphroditic flowers. The tree produces ovoid yellow fruit, which ripens to red.

Parts Used : Whole Tree.

Contribution to the Community Sustenance: In Uttarakhand's Himalayan region, the Paiyan tree holds sacred significance for communities in Garhwal and Kumaon. Never cut down, it blooms in winter and adorns village wedding entrances. Its edible fruit and chewable gum are valued, along with its seeds used for food and dye. The tree's hard, aromatic wood is also utilized, with branches commonly repurposed as walking sticks.



31. Bhamora



Botanical name : *Benthamidia capitata*

Common name : Himalayan strawberry tree

Vernacular name : Bhamora

Family : Cornaceae

Taxonomic features : It is an evergreen tree growing up to 12 m in height. The leaves are grey-green and pale underneath. It bears white flowers. The infructescence is a small aggregate of several red to black, individual fruits fused together.

Parts Used : Fruits

Contribution to community sustenance : Fruit is sweet and sour; consumed fresh or used in making jams, jellies, and beverages. Finds uses in traditional medicine to treat ailments such as diarrhoea, dysentery, and stomach disorders. Multi-purpose tree used for timber, fuelwood, and as an ornamental plant.



32. Giwain



- Botanical name** : *Elaeagnus angustifolia*
Common name : Silver berry, Wild Olive
Vernacular name : Giwain/ Kiwain
Family : Elaeagnaceae

Taxonomic features : It is a large woody climber with young stem, leaves below and Leaves are alternate, oblong, pointed at tip, narrowed at base, densely scaly beneath. It bears short flower in racemes and with silvery and coppery scales inflorescence. The fruit is oblong drupe, peppers orange-red on opening.

Parts Used : Fruit and wood

Contribution to community sustenance : Fruit is edible with a sweet and sour taste, used fresh or in making jams and chutneys. Finds uses in traditional medicine to treat ailments such as cough, cold, fever, and respiratory disorders. Wood is used to make small tools and handicrafts, supporting local craftsmanship.



33. Kandali



Botanical name : *Urtica parviflora*

Common name : Nettle

Vernacular name : Kandali

Family : Urticaceae

Taxonomic features : It is Perennial, monoecious herb with quadrangular stems and long stoloniferous rhizomes. Leaves are Dark green, coarsely toothed, opposite with stinging hairs on both surfaces. Fruits are broadly ellipsoidal shaped achenes.

Parts Used : Leaves and Stem Fiber

Contribution to community sustenance : The Young leaves are nutritious and consumed as vegetable by local people. Medicinal uses in treating disorders such as goitre, cough, allergies, alopecia, and fevers. Leaf extract is used to treat baldness and in hair wash Stem fibre is used to make ropes, fishing nets. Finds uses in veterinary medicine to alleviate inflammation in domestic animals.



34. Bhimal



Botanical name : *Grewia optiva*

Common name : Dhaman

Vernacular name : Bhimal

Family : Malvaceae

Taxonomic features : It is Deciduous, moderate-sized multipurpose tree, with grey bark, with a spreading crown. Leaves are 5-10cm long, rough, ovate-lanceolate, acuminate, toothed, usually 3-nerved and lower surface pale, pubescent. It bears yellow Flowers, in stalked, 3-5 flowered cymes. Petals are shorter than the sepals. Fruit is olive-green drupe, 2-4 lobed, and blue- black when ripe.

Parts Used : Bark, Leaves and wood.

Contribution to community sustenance : It is highly valued fodder for milch cattle and heavily lopped as fodder in the winter season. The bark yields a fibre that is used for cordage and clothing. It is also used as hair wash in the form of Shampoo as it contains saponin.



35. Kedarpati



Botanical name : *Skimmia laureola*

Common name : Ner patar

Vernacular names : Kedarpati

Family : Rutaceae

Taxonomic features : It is an evergreen aromatic, gregarious shrub that can grow up to 1.50 m tall. Leaves are elliptic-oblong and dark green. Bears flowers in short racemes with greenish yellow petals. Fruits are sub globose, 7 - 8mm in diameter and black.

Parts Used : Leaves

Contribution to community sustenance : The plant likely holds cultural and religious significance in local communities, used as incense in Puja. Finds uses in traditional medicinal systems to treat various health conditions, including rheumatism, fever, inflammation, headache.



36. Bhang



Botanical name : *Cannabis sativa*

Common name : Hemp, Gallow grass

Vernacular name : Bhaang

Family : Cannabaceae

Taxonomic features : It is unisexual, annual herbaceous plant. The staminate plants are usually taller and less robust than pistillate. Its leaves are composed of slender, elliptical, serrated, and hairy 3-5 leaflets, with an aromatic fragrance and contain nicotine. The flowers are clustered in compact terminal racemes.

Parts Used : Leaves, seeds, fibre.

Contribution to community sustenance : Hemp fibers are durable and used in bags, rope, apparel, and more. Its seeds make oil, flour, and animal feed, and are popular in chutneys. Medicinally, hemp reduces inflammation, pain, insomnia, and anxiety. Uttarakhand promotes hemp cultivation for fibers and non-psychoactive cannabinoids, with regulations to prevent misuse.



37. Bhangjeera



Botanical name : *Perilla frutescens*

Common name : Perilla

Vernacular name : Bhangjeera

Family : Lamiaceae

Taxonomic features : It is aromatic, annual with a mint-like smell, growing 2-3 feet height. The leaves are opposite, broad oval shaped with serrated margins, pointy ends and long leafstalks. The leaves have occasional purple touches on the underside. Seeds are soft or hard, white, grey, brown or dark brown in colour and globular in shape and 1000 seeds weigh about 4-5g.

Parts Used : Seeds, leaves.

Contribution to community sustenance : The leaves and tiny, greyish aromatic seeds are used in spices and with the Himalayan rock salt to form flavoured salt and making chutney. Oil extracted from the seeds, rich in Omega 3 & Omega 6 is used in cooking, in pickles or as a medicine. Roasted seeds provide good nourishment to those suffering from jaundice and measles.



38. Ghingarū



Botanical name : *Pyracantha crenulata*

Common name : Himalayan firethorn

Vernacular name : Ghingarū

Family : Rosaceae

Taxonomic features : It is a deciduous, profusely branched and thorny shrub. The dark brown stem bark becomes glabrous (hairless) when mature. Leaves are green with a tapering end, smooth exterior. The flowers are bisexual, in compound corymb white inflorescence with five sepals and five petals. It bears orange-red to dark red berry-like fruits.

Parts Used : Fruit, Leaves

Contribution to community sustenance : Fruit is edible, used in making jams, jellies, and pickles. Used to treat digestive disorders and respiratory problems, in traditional medicine. Leaves are used in traditional medicine; thorns are used as a toothbrush. Thorny branches used as fencing material, supporting local construction needs.



References:

Bhupendra Koul. "Chapter 4 Plants with Anticancer Potential", Springer Science and Business Media LLC, 2019.

Content available at: indiabiodiversity.org.

Manju Sundriyal. "Development of NTFPs Sector for Income Generation and Environmental Conservation", Journal of Graphic Era University, 2021.

N. Kabutarwala, Divyang. "Evaluation of Antioxidant and Hepatoprotective Effect of Herbal Formulations", Rajiv Gandhi University of Health Sciences (India), 2023.

Meenakshi Rawat et. al. "Important Plant-Based Non-Wood Forest Products of Tons Valley, Uttarakhnad", IIS University Journal of Science and Technology, Vo. 5(1), 56-61, 2016.

Vikram S. Negi, R. K. Maikhuri, L. S. Rawat. "Non-timber forest products (NTFPs): a viable option for biodiversity conservation and livelihood enhancement in central Himalaya". Biodiversity and Conservation, 2011.











Dr. Diwaker Pant was born in Pauri Garhwal, India. He received his B.Tech. degree with Honors in Electronics and Communication Engineering from Kurukshetra University Kurukshetra, India in 2008, the M.E. degree in Electronics and Communication Engineering from National Institute of Technical Teachers Training and Research (NITTTR)

Chandigarh, India in 2013, and Ph.D. degree from Uttarakhand Technical University, Dehradun, India in 2021. Currently he is undergoing State Forest Service Induction Training (2022-24) at Central Academy for State Forest Service, Coimbatore. He has published more than 20 scientific research papers in reputed International Journals, book chapters and Conferences. He is the recipient of Young Scientist Award from Uttarakhand Council of Science and Technology (UCOST). His research Interest includes the Wireless Communication, Internet of Things, Wireless Sensor Networks and use of Technologies in Wildlife Management.



Rajiv Nayan Nautiyal was born in Uttarkashi, India. He received his B. E. Degree in Electronics and Communication Engineering from Govind Ballabh Pant Engineering College, Pauri Garhwal, India in 2008. He had worked in Bharat Electronics Ltd and is currently undergoing State Forest Service Induction Training (2022-24) at Central Academy for State

Forest Service, Coimbatore. His interests include use of Technologies in Human Wildlife Conflicts mitigation and Forest fire management.