Mountain Research and Development, 20(2): 146-153, (2000).

The Availability, Fruit Yield, and Harvest of *Myrica esculenta* in Kumaun (West Himalaya), India

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Myrica esculenta Buch.-Ham. ex D. Don is a popular, potentially income-generating wild edible in the Indian Himalaya. The species prefers *Pinus roxburghii* Sarg., *Quercus leucotrichophora* A. Cam., and mixed Quercus forests, contributing 15–26% of total tree density in the forests. It performs best in *Pinus roxburghii* forests, where its density correlates with *Pinus* tree biomass. The regeneration of *Myrica* is poor in all the habitats. However, recruitment of species increases consistently from abundant *Myrica* to no-*Myrica* stands. The fruit yield increases with tree size category and differs between habitats. The potential yield at different sites is 2.0–4.2 tonnes/ha, of which 2.8–7.2% is harvested for income generation. The income generated from *Myrica* fruit is significant, considering the regional annual per capita income. The possible impact of fruit harvesting and other disturbance factors on the regeneration of the species is discussed. There are significant options for enhancing the income-generating potential through value addition.

Keywords: *Myrica esculenta* (Kaiphal); nontimber forest products; Himalayan region; rural economy; fruit yield; regeneration; recruitment; Kumaun; India.

Economic Botany, 58(4):626-638, (2004).

DIETARY USE OF WILD PLANT RESOURCES IN THE SIKKIM HIMALAYA~ INDIA 1

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Abstract

The edible wild plants are greatly valued throughout the Himalayan region and serve as an important source of food for indigenous communities. This paper describes the botanical richness, elevational distribution and dietary use of the edible wild plant resources from the Sikkim Himalaya (Eastern Himalaya), many with promising potential. A total of 190 wild plant species have been screened from the Sikkim Himalaya, this derived from 143 genera and 78 families and accounting for nearly 15% of total edible wild plants resources of India. Of the total, 65% were edible for their fruits, 22%for leaves~shoots, 7% for flowers and 3%for roots/ rhizomes. Nearly 91 wild edible species were recorded from low-hills, 70 from mid-hills and 28 species from high-hill areas. Within Sikkim state, the North and East districts represent maximum diversity of edible wild plants due to the wilderness and inaccessibility to most of the habitats. An average rural family annually consumes nearly 8 types of edible wild plants, and a few species provide over five meals in a season. Selected plants also form a source of earning to a few families that sell them in local markets. It is suggested that the high diversity of edible plants needs to be conserved for future use. Some species may be grown in traditional agroforestry systems and on marginal lands of otherwise low agricultural value. Such measures may help protect wild plant resources in their natural habitats.

Key Words: Dietary uses; species richness; Sikkim Himalaya; traditional food dishes; wild edible plants.

Indian Journal of Traditional Knowledge, 3(3): 305-313, (2004).

Common wild vegetables of Aka tribe of Arunachal Pradesh

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Received 30 September 2003, revised 2 April 2004

Abstract

Arunachal Pradesh is considered as one of the biodiversity “hot spots” in the world. The Aka (Hrusso) tribe in Arunachal Pradesh utilizes many wild plants as food, fodder, medicine, etc. The present paper deals with some of the common wild vegetables used by the tribe. 25 plant species are listed here giving their scientific name, family, local name, diagnostic description, habitat, parts used and uses.

Keywords: Aka tribe, wild vegetables, Arunachal Pradesh.

Mountain Research and Development, 24 (2): 110-113, (2004).

Bioprospecting of Wild Edibles for Rural Development in the Central Himalayan Mountains of India

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Abstract

Despite abundant wild edible plant resources with immense potential for economic development, Uttaranchal, a newly created hill state situated in the Central Indian Himalaya, remains underdeveloped, owing primarily to inaccessibility and poor infrastructure. Development initiatives show little concern for mountain perspectives. Yet the region is rich in resources and underutilized plant species with potential food value, about which there is little knowledge. For the present study, 13 potentially exploitable wild fruit species and 1 semidomesticated species with good potential for exploitation were selected; 6—*Aegle marmelos* (bael or Bengal quince), *Berberis asiatica* (barberry), *Hippophae rhamnoides* (sea buckthorn), Myrica nagi (box myrtle), *Rubus ellipticus* (yellow Himalayan raspberry), and *Prunus armeniaca* (apricot)—were examined closely in terms of economic potential. A variety of value-added edible products such as jam, jelly, juice, and squash were made to generate income from these wild fruits, particularly for poor rural people. This was demonstrated locally to encourage people to engage in small-scale village-level cottage industries.

Indian Journal of Traditional Knowledge, 5(4): 541-550, (2006).

Status and potential of wild edible plants of Arunachal Pradesh

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Abstract

The consumption of wild plants is one of the strategies, adopted by the local people for sustenance, is intrinsically linked to their strong traditional & cultural system and is inseparable. The indigenous communities continuously include wild edibles to their daily food intake and sales from the surplus add to their income. Simultaneously, an emphasis on the sustainable harvesting of wild edible plants will help enhance and maintain the region's biodiversity. As the local people are endowed with a vast knowledge concerning the utilization of wild plants, the paper focuses on their knowledge and illustrates the need to select local priority plant species with potential to become valuable staple foods and important alternatives to the usual cultivated agricultural crops.

Keywords: Arunachal Pradesh, Medicinal plants, Sustainable harvesting, Wild edible plants

Natural Product Radiance, 5(4): 302-305, (2006).

Wild edible fruits of Tripura

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Received 1 April 2005; Accepted 6 June 2006

Abstract

Tripura is one of the eight jewels of the North-Eastern States and the state weather is characterized by subtropical, warm and humid condition, which favours the luxuriant growth of various edible fruit crops. In addition to the major fruits grown (Mango, Litchi, Pineapple, Orange, Banana and Jackfruit) in this state, there are many edible fruits exist naturally in forest as well as in cultivable areas. These fruit plants are playing a vital role in providing nutritional and economic security to the poor masses in rural areas but the commercial importance and market value of these wild fruits is unknown to them. This paper lists the wild edible fruits and their uses for further exploration.

Keywords: Fruits, Wild edible fruits, Genetic resources, Tripura.

Natural Product Radiance, 5(4): 306-310, (2006).

Morels (*Morchella* spp.) in Kumaun Himalaya

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Abstract

Morels, also known as sponge mushrooms, belong to the genus *Morchella* Dill. The present paper deals with the most commonly exploited species of this genus in the Darma valley, district Pithoragarh, Kumaun Himalaya with an aim to improve upon the knowledge base about these macrofungi for further exploration.

Keywords: Morels, *Morchella* spp., Kumaun Himalaya, Edible fungi, Medicinal fungi, Sponge Mushrooms

Indian Journal of Traditional Knowledge, 6(1): 169-172, (2007).

Wild vegetables sold in local markets of Karbi Anglong, Assam

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Abstract

The *Karbi* tribes in Assam utilize many wild plants as vegetables. The papers deals with 29 wild vegetables with their botanical name, local (*Karbi*) name, brief description of the plant, time of collection, parts used, mode of use, taste, habitat and regeneration, which are used by the tribe and are also sold in markets of Karbi Anglong. The paper also suggests for detailed ethnobotanical studies, documentation of indigenous knowledge and cultivation of wild vegetable, and develop multi-tier wild edible garden to preserve wild vegetables.

Key words: *Karbi* tribe, Wild edible plants, Wild vegetables, Assam

Indian Journal of Traditional Knowledge, 6(1): 177-181, (2007).

Tribal knowledge on wild edible plants of Meghalaya, Northeast India

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Abstract

Documentation of tribal knowledge on wild edible plants of Meghalaya brought to light a number of wild plant species used as edibles. The plant parts, viz. roots, tubers, stems, leaves, flowers, fruits and seeds are used in raw or cooked forms. The present study records 110 wild growing plants, which are eaten whole or in part by the local people. The paper enumerates and discusses various aspects of the wild plants used by *Khasi*, *Jaintia* and *Garo* tribes of Meghalaya.

Key words: Wild edible plants, *Khasi* tribe, *Jaintia* tribe, *Garo* tribe, Meghalaya

Indian Journal of Traditional Knowledge, 6(1): 182-184, (2007).

Raw edible plants of cold desert Ladakh

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Received 22 August 2006; revised 10 November 2006

Abstract

The paper describes 31 plants species belonging to 15 families, used as raw edibles by the tribal communities of Ladakh region. Various plant parts, viz. bulbs, roots, leaves, leaf-stalks, fruits and seeds used in different ways such as edibles fruits, Chutnies, edibles in salads and used for flavouring food products are discribed. In far-flung areas where, there is no communication available, the tribal communities are still dependant on wild resources for fulfilling their daily needs.

Key words: Raw edible palnt, Ladakh, Tribal communities, Cold desert

Indian Journal of Traditional Knowledge, 6(1): 239-244, (2007).

Prioritization of cultivated and wild edibles by local people in the Uttaranchal hills of Indian Himalaya

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Abstract

The paper deals with the preferences of local communities on the cultivated and wild edible plant species in an Indian Himalayan state, Uttaranchal. The state is comprised of 13 districts, which have 5 major tribal communities (i.e. *Bhotiya, Jaunsari, Boksha, Tharu* and *Raji*). The preferences of local people on the cultivated and wild edible plant species varied across the different localities. A total 23 cultivated food crop species and 15 wild edible fruit species were prioritized as the most preferred species by the local people in the study area. Of the prioritized food crops, *Triticum aestivum, Oriza sativa, Eluesine coracana, Hordium vulgare* and *Brassica campestris* were common preferences of local people, whereas of the wild edible fruits Myrica esculenta, Berberis asiatica, Rubus ellipticus and Ficus auriculata were the common preferences of local people in Uttaranchal. The preferences for different food plants by the local people are further discussed in the changing socio-cultural and socio-economic context.

Key Words: Wild edible plants, Uttaranchal, *Bhotiya, Jaunsari, Boksha, Tharu Raji*

Natural Product Radiance, 6(5): 410-426, (2007).

Wild edible plants of Meghalaya, North-east India

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Abstract

The people of Meghalaya are very close to nature, and forests are one of the important natural resources in the state. The tribes of the state largely depend on forests for their livelihood and have acquired a vast knowledge about plant wealth and utilization of forest products. The present communication aims to document the traditional knowledge about wild edible plants used by tribal people of Meghalaya. During present investigation, a total of 249 species of wild edibles belonging to 153 genera and 82 families were inventorised. Among them 129 are trees, 54 shrubs, 37 herbs and 29 climbers. The majority of the species were fruits bearing (125). Some edible plants have great economic value and are highly linked with socio-economic development of tribal communities of the state. A few such species may be introduced in agroforestry systems, which could be potential genetic resources for tree breeding programmes in other areas of the country and also to provide edible plant resources to the communities in addition to creating photosynthetic pool to counter environmental degradation.

Keywords: Wild edible plants, Traditional knowledge, Meghalaya, North-east India, Agroforestry, Genetic resources.

Journal of Ethnobiology and Ethnomedicine, **4**:15, (2008).

Wild leafy vegetables: A study of their subsistence dietetic support to the inhabitants of Nanda Devi Biosphere Reserve, India

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Abstract

Consumption of greens is a major source of vitamins and micro-nutrients for people using only vegetarian diets rich in carbohydrates. In remote rural settlements where vegetable cultivation is not practiced and market supplies are not organized, local inhabitants depend on indigenous vegetables, both cultivated in kitchen gardens and wild, for enriching the diversity of food. Knowledge of such foods is part of traditional knowledge which is largely transmitted through participation of individuals of households. A total of 123 households in six villages of Nanda Devi Biosphere Reserve buffer zone was surveyed using a schedule to assess the knowledge, availability and consumption pattern of wild leafy vegetables. Quantity estimations were done using regular visits with informants from 30 sample households of the six study villages during the collections. Monetization was used to see the value of wild leafy vegetables harvested during a year. The diversity of wild leafy vegetables being use by the local inhabitants is 21 species belonging to 14 genera and 11 families. This is far less than that being reported to be used by the communities from Western Ghats in India and some parts of Africa. Irrespective of social or economic status all households in the study villages had the knowledge and used wild leafy vegetables. The number of households reported to consume these wild leafy vegetables is greater than the number of households reporting to harvest them for all species except for *Diplazium esculentum* and *Phytolacca acinosa*. The availability and use period varied for the species are listed by the users. The study indicated that the knowledge is eroding due to changing social values and non participation of younger generation in collection and processing of such wild leafy vegetables.

Natural Product Radiance, 7(5): 448-460, (2008).

Wild vegetables of Karbi - Anglong district, Assam

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Abstract

The paper deals with 57 species of wild plants used as vegetable by the *Karbi* tribe of Karbi - Anglong district, Assam. The scientific names of the plants, method of use, regeneration, demand and form of use of these vegetables are included. The paper also highlighted the medicinal value, market price and shelf-life of the vegetables after harvest. The conservation of the indigenous plant wealth through cultivation and further follow up investigation on these plants for chemical analysis has also been emphasized.

Keywords: Karbi- Anglong, *Karbi* tribe, Market prices, Medicinal value, Shelf-life, Wild vegetables

Ethnobotanical Leaflets, 13: 1020-1028, (2009).

Some Important Supplementary Food Plants and Wild Edible Fungi of Upper Hilly Region of District Shimla (Himachal Pradesh), India

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Abstract

An ethnobotanical survey of upper hilly region of Shimla was carried out in 2008 to enumerate some of the important plants used as supplementary food among the people of this area. Presence of twenty four plant species belonging to 20 genera and 14 families was documented under the present study along with 11 macrofungi belonging to 6 genera and 6 families. Generally fruits (51%) and leaves (33%) of these plants were found to be used as supplementary food. Use of seeds, buds, stem and petiole of few plants was also observed. All the important plants and macrofungi used as supplementary food by the people of the locality are grouped on the basis of their mode of use.

Key words: Supplementary Food plants, mode of use, Shimla district.

Genet. Resour. Crop. Evol. 56:729–733, (2009)

‘‘*Tum-thang*’’ (*Crotalaria tetragona* Roxb. ex Andr.): a little known wild edible species in the north-eastern hill region of India

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Abstract

Crotalaria tetragona Roxb. ex Andr., locally known as ‘‘*Tum-thang*’’ was collected from Mizoram state of north-eastern hill region of India during 2008. Its flowers were being sold by the tribal communities in local markets. The buds and flowers are cooked as vegetables and used in garnishing of local food preparations especially in non-vegetarian recipes. This species is reported here as little known Edible type in Indian region and may be considered as a multi-purpose species with potential. Edible uses of some of the *Crotalaria* species in different regions of world have also been included in the present communication.

Keywords: *Crotalaria tetragona*, India, Little known species, North-eastern hill region, Underutilized and neglected crop

Indian Journal of Traditional Knowledge, 9 (2): 300-302, (2010).

Importance of certain tribal edible plants of Tripura

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Abstract

Tribal people of Tripura are used to eat few parts of certain plants. The form of eating and the review on their phytochemical and medicinal importance of those parts of plants are reported.

Keywords: Medicinal plants, *Tripuri*, Tripura

Indian Journal of Traditional Knowledge, 9 (2): 303-308, (2010).

Phytofoods of Nubra valley, Ladakh –The cold desert

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Abstract

The paper presents the findings of an investigation on traditional wild edible plants available in the Nubra valley, Ladakh used for the preparation of traditional food items by the local tribal people. The Nubra, one of the valleys of Ladakh is known for its floral diversity in the cold arid zone. Twenty seven high altitude plant species belonging to 18 families in Nubra valley were identified as edible plants and used for the preparation of *Ladakhi dishes. Shangso chonma, Ldum chonma, Thanthour chonma, Kabra chonma* and *Phololing chamyk* were some of the famous traditional Ladakhi food item prepared from the wild edible plants.

Keywords: Ethnobotany, Phytofoods, Nubra Valley, Wild edible plants, *Ladakhi* dishes, Ladakh

Biodivers. Conserv., 20:545–559, (2011)

Non-timber forest products (NTFPs): a viable option for biodiversity conservation and livelihood enhancement in central Himalaya

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Abstract

The present study aims to document detail information of some of the selected wild edible having enormous potential for livelihood enhancement and socio-economic development by making a variety of value added products. To this end, some of the wild edibles of central Himalaya were selected and prioritized for harnessing their economic potential along with their detail information in terms of distribution, ethnobiology, phenophases and appropriate time of harvesting so as to make communities well aware about the resource availability and their harvesting period round the year. The cost-benefit analysis of each value added product prepared from selected wild edibles was worked out in detail and these analyses revealed that total monetary output, as well as the net return, is very high for all value added products prepared. Since wild edible fruits or other edible parts can be collected from wild free of cost except labour is involved in collection of these wild edibles bio-resources. In addition, information on a participatory action research framework & approaches for promoting participatory conservation of these wild edible species were also highlighted for appropriate management of these resources. The present attempt provides a practical example of sustainable utilization of wild edibles, their potential in livelihood improvement of local people, distribution and phenophases and availability in natural conditions, participatory conservation of these wild edibles may help policy planners at the regional and national levels to link livelihood/socio-economic development with conservation.

Keywords: Wild edible, Bioprospecting, Cost-benefit analysis, Livelihood, Conservation, Central Himalaya

Ecology of Food and Nutrition, 50:281–294, (2011)

Edible Wild Plants of Pastorals at High-Altitude Grasslands of Gurez Valley, Kashmir, India

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Abstract

Alpine grasslands of Kashmir are a storehouse of numerous wild edible plants, besides serving as summer pastures for the flocks of various ethnic communities. Throughout these grasslands, pastorals, nomads, and other indigenous communities collect and use these plants in several different ways. This article reports the richness, distribution, use, mode of use, and frequency of use of edible wild plants by three ethnic communities viz. Bakerwals, Gujjars, and Puhloos (Kashmiri herdsmen) from three alpine grasslands of a hitherto unknown Gurez Valley, Kashmir. Twenty-six plants under 21 genera and 14 families are reported from the surveyed grasslands which are used as wild edibles. Our results indicated that for many species, the local names differed between the communities but yet the folklore uses were common. Further, the frequency of use also varied between the communities, with Bakerwals and Gujjars using the majority of the species while the semi-sedentary Puhloos use the least. We hypothesize that this difference in the use frequency between the communities is a function of differing working nature and the rapid advancement of contemporary societal ideas into their culture and hence necessitates the documentation of their traditional practices and knowledge at the earliest.

Keywords: edible wild plants, pastorals, high altitude, grasslands, Kashmir

Indian Journal of Traditional Knowledge, 10(3): 512-515, (2011).

Wild edible fungal resources used by ethnic tribes of Nagaland, India

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Abstract

The paper documents the knowledge about the wild edible fungal flora of Kohima district of Nagaland, India used by the indigenous tribes through structured questionnaires in consultations. The study revealed that more than 12 ethnic groups of Nagaland were found to be mycophilic and to have extensive traditional mycological knowledge. A total of 13 species of fleshy fungi under 9 genera and 6 families were identified. Further, mushroom selling was observed in Kohima town of Nagaland where women represented 83% of sellers, while indigenous people comprised 67.28%. The sale of some wild edible mushrooms, the large amounts of commercialization, the complicated intermediary process, as well as the insertion of mushrooms into different informal economic practices were all evidence of an existent mycophily in a sector of the population of this region. The study highlights the potentials of the ethno-mycological research and the need for documentation of wild edible fungal flora of Nagaland.

Keywords: Ethno-mycology, Mushroom, Ethnic tribes of Nagaland, Wild edible fungi

Journal of Ethnobiology and Ethnomedicine, 7:29, (2011).

Dietary Use and Conservation Concern of Edible Wetland Plants at Indo-Burma Hotspot: A Case Study from Northeast India

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Abstract

Background: The wetlands of the North East India fall among the global hotspots of biodiversity. However, they have received very little attention with relation to their intrinsic values to human kind; therefore their conservation is hardly addressed. These wetlands are critical for the sustenance of the tribal communities.

Methods: Field research was conducted during 2003 to 2006 in seven major wetlands of four districts of Manipur state, Northeast India (viz. Imphal-East, Imphal-West, Thoubal, and Bishnupur). A total of 224 wetland-plantcollectors were interviewed for the use and economics of species using semi-structured questionnaires and interview schedules. Imphal, Bishenpur and Thoubal markets were investigated in detail for influx and consumption pattern of these plants. The collectors were also inquired for medicinal use of wetland species. Nutritive values of 21 species were analyzed in laboratory. The vouchers were collected for all the species and deposited in the CSIRNEIST (Formerly Regional Research Laboratory), Substation, Lamphelpat, Imphal, Manipur, India.

Results: We recorded 51 edible wetland species used by indigenous people for food and medicinal purposes. Thirty eight species had high medicinal values and used in the traditional system to treat over 22 diseases. At least 27 species were traded in three markets studied (i.e. Imphal, Thoubal and Bishenpur), involving an annual turnover of 113 tons of wetland edible plants and a gross revenue of Rs. 907, 770/- (US$1 = Rs. 45/-). The Imphal market alone supplies 60% of the total business. Eighty per cent of the above mentioned species are very often used by the community. The community has a general opinion that the availability of 45% species has depleted in recent times, 15 species need consideration for conservation while another 7 species deserved immediate protection measures. The nutrient analysis showed that these species contribute to the dietary balance of tribal communities.

Conclusions: Considering the importance of wild wetland plants in local sustenance, it is suggested to protect their habitats, develop domestication protocols of selected species, and build programs for the long-term management of wetland areas by involving local people. Some medicinal plants may also be used to develop into modern medicines.

Keywords: Wetland plant resources, tribal communities, dietary use, ethnobotanical survey, livelihood, marketing, nutritive value, conservation

Ethnobotany Research & Applications, 10:357-367, (2012)

Assessment of Local Dependency on Selected Wild Edible Plants and Fruits from Senapati district, Manipur, Northeast India

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Abstract:

Market and household surveys were conducted in four locations in Senapati district, Manipur, Northeast India. Thirty- two common wild edible plants belonging to 25 families were identified. On average 73% of households surveyed are involved in collecting some edible plants, and 38% collect edible fruits. 32% use the collected plant materials for both household consumption and market trade. On average collectors share in 63% of the sales price of wild edible plants. A comparison of total monetary value generated per annum from different wild edible plants showed that *Lentinula lateritia* (Berk.) Pegler and *Docynia indica* (Wall.) Decne. contributed the greatest value.

Forest Policy and Economics, 14: 28–40, (2012)

Utilization of non-timber forest products in humid tropics: Implications for management and livelihood

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Community dependence on forest resources for diverse needs has high implications for long term management of forests. Sustainable extraction of non-timber forest products (NTFPs) is considered best feasible strategy for forest conservation in biodiversity rich areas. This paper examines the heterogeneity of NTFPs use by tribal communities in northeast India, a global hot spot by examining diversity of NTFPs at-large, its consumption pattern, and contribution to rural income and forest revenue. A total of 343 NTFPs recorded used for diverse purposes by tribal communities. When species choice grouped as per use category, utilization for medicinal (163 species), edible fruits (75 species) and vegetables (65 species) purposes was reasonably high. Community dependence on forest resources was 100% for firewood and house construction material. 76 plant species were sold in three major local markets while an additional 22 species traded at commercial scale mainly outside the state. NTFPs contributed 19–32% of total household income for different tribal communities, which was significant. *Illicium griffithii, Rubia cordifolia, Oroxylum indicum, Swertia chirayita, Litsea sebifera, Taxus wallichiana, Valeriana jatamansii, Thalictrum foliolosum, Picrorhiza kurrooa, Everniastrum cirrhatum, Cordyceps sinensis, Aconitum fletcherianum, Nardostachys jatamansi, Picrorhiza kurrooa, Gymnadenia orchidis, Calamus, Quercus* and *Pinus roxbughii* were important commercial species. NTFPs also generated substantial revenue to the State government, though it is falling year after year, which is alarming. To meet community livelihoods, income and forest revenue from NTFPs, it desires a thorough management plan and policy guidelines for these resources from all line departments. The knowledge on diversity, its consumption pattern, and contribution to rural income and forest revenue may enable planners to accurately plan sustainable management of NTFP resources and community development in near future.

Keywords: Non-timber forest products, Commercial extraction, Consumption pattern, Forest management, Rural income, Community livelihood

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Genetic resources of wild edible plants and their uses among tribal communities of cold arid region of India

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Abstract

This paper analyzes the diversity, consumption and gathering patterns, and uses of wild edible plants among the tribal communities living in cold arid region of Indian Himalaya. Eco-geographically, extremely cold climate, open vegetation, strong afternoon winds and loose soils characterize the region. Wild edible plants have special significance in the livelihoods of tribal people particularly during harsh winters when nothing grows on field. We gathered information on 164 wild edible plant species belonging to 100 genera and 37 families sharing 14% of total plants species occurring here. Around 83% plant species were present in pure wild state while 17% were in semi wild state/cultivated occasionally. Wild plants are eaten more as vegetable and it was found that out of 101 plants used as vegetable, 57 are cooked and eaten and the rest (44) eaten raw. The species like *Pinus gerardiana*, *Prunus armeniaca*, *Hippophae rhamnoides*, *Bunium persicum* are harvested more for commerce in the downtown markets while *Lepidium latifolium*, *Taraxacum officinale*, *Urtica hyperborea*, *Capparis spinosa*, *Fagopyrum tataricum*, *Malva verticillata*, and *Rhodiola heterodonta* are preferred for their medicinal and nutritional properties locally. Infrastructure development, more tourists flow, agricultural intensification, more jobs and business opportunities have led to rapid changes in the life styles and food habits of the people. Consequently, the age-old tradition of gathering wild edible plants is fading particularly among younger generations. Nevertheless, people do realize the importance of wild edible plants, and therefore to harness the benefits of this unique diversity participatory management and conservation programs, investigations on nutritional and pharmacological attributes, and regulated market support for some important WEPs have taken up in the region.

Keywords: Cold arid, Food , India, Wild edible plants

Genet. Resour. Crop. Evol., 59:1767–1776, (2012)

Studies on wild edible fruits of Mizoram, India used as ethno-medicine

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Abstract

The traditional knowledge system has gained a prime importance in context with conservation, utilization and sustainable development of plant resources. The ethno-medicinal plants play a major role amongst the tribal and rural people in their traditional healthcare system. Considering the importance of ethno-medicines amongst the tribal people, a study was undertaken to enumerate the ethno-medicinal uses of wild edible fruits among the Mizo tribes of Aizawl district, Mizoram, India. The study was based on extensive field surveys, plant collection and the interviews with the traditional healers. Altogether 60 wild edible fruit species belonging to 35 families have been enumerated in this paper. The documented wild edible fruits are mostly used to cure gastrointestinal disorders, dermatological problems, respiratory problems, cardiovascular compliance, ENT diseases, mental problem, muscular illness, bone diseases, gynecological problem, cancers, snake bite, allergy and malaria. This indigenous system of treatment based on wild edible fruits is still an important part in Mizo social life and culture but this traditional knowledge of the local people has been transferred orally from generation to generation without proper documentation. Therefore, the claimed therapeutic values of the reported species are to be critically studied to establish their safety and effectiveness and to preserve these high valued wild edible fruits.

Keywords: Ethno-medicine, India , Mizoram, Traditional healers, Wild edible fruits

Indian Journal of Natural Products and Resources, 3 (1): 84-109, (2012).

Phytoresources from North Cachar Hills of Assam-III: Edible plants sold at Haflong market

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Abstract

The hilly town Haflong is located at the foothill of Borail range at the elevation of 936.04 m above msl and between 25° 11' N latitude and 93° 11' E longitude. The present paper deals with the extensive collection and study (during October 2007 to January 2009) of the edible phytoresources sold mostly by the folk women in weekly market at Haflong. Emphasis was mainly given to wild as well as landraces and local cultivars of the crop plants. The study provides information on their botanical name, family, vernacular names, frequency, habit, biological status, plant parts used, mode of use and also market rate of the plant resources observed. Study reveals that out of 254 plants/local cultivars collected and identified belongs to 170 genera and 75 families. Biological status analysis recorded as: primitive cultvar/jhum cultivar/cultivar (151), semi-wild/semi-domesticated (49), wild (45) and weed (09) species/varieties of plants. A total of 49 edible species have also been recorded to be domesticated from the study area.

Keywords: Edible plants, Folk women, Haflong market, North Cachar Hills, Phytoresources, Semi-domesticated plants, Tribes.

Indian Journal of Traditional Knowledge, 11 (1): 45-50, (2012).

Traditional knowledge of eating raw plants by the Meitei of Manipur as medicine/nutrient supplement in their diet

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Abstract

Meitei, the valley inhabitant of Manipur have the tradition of eating raw leaves, young inflorescences, tender stalks and other plants' parts with their indigenous sauce *Ametpa* or with indigenous dish *Eromba* or as an ingredient of indigenous salad *Singju* with the main course of food. The present work was based on the methodical field survey conducted during the year 2007 and 2009. Local people of 30-70 yrs age group of both genders were interviewed (using standard questionnaires) on the different types of plants' parts they have been eating raw for generations and medicinal values they obtained from this mode of eating. The interviewees are represented from wide array of the disciplines of the localities (vendors, collectors, users, scientific societies, etc.) to gather the maximum information related to plants and benefits derived. Altogether 64 plants belonging to 46 genera and 25 families (ranging from Gymnosperm to Angiosperm) are discuss briefly with particular emphasis on their scientific name, local name, family, parts used and medicinal benefit they claimed to obtain from these plants in this mode of eating.

Keywords: *Meitei*, Imphal valley, Raw plants' part, Tradition

Indian Journal of Traditional Knowledge, 11 (1): 166-171, (2012).

Wild edible plants used by Garo tribes of Nokrek Biosphere Reserve in Meghalaya, India

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Abstract

The paper deals wild edible plants of Nokrek Biosphere Reserve, Meghalaya used by the *Garo* tribes. It comprises of 71 species under 61 genera and 42 families. Of which 38 species are used as vegetable and 33 species edible as raw or cooked. All plants are arranged alphabetically in the tabular form, followed by families, vernacular name(s), plant part(s) used and methodology.
Keywords: Wild edible plants, Nokrek Biosphere Reserve, *Garo* tribes, Meghalaya

Indian Journal of Natural Products and Resources, 4(2): 197-204, (2013).

Wild edible macrofungal species consumed by the Khasi tribe of Meghalaya, India

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Abstract

Wild edible macrofungi collected from the forests by the ethnic tribes and sold in the local markets of the Khasi hills of Meghalaya, India have been documented for their traditional knowledge and ethnic relevance. The ethnic tribal population have extensive ethnomycological knowledge based on which they discretely collect and sell the edible macrofungi. We observed considerable diversity among the edible macro-fungal species sold in the local markets. During the study period a total of 11 different species were identified based on their morphology that belonged to 9 genera and 8 families. *Clavulina* spp. was the most abundantly available species whereas *Albatrellus* spp. was rarely available in the local markets.

Keywords: Wild edible, Macrofungi, Ethnic tribes, Clavulina spp., Mushrooms.

Indian Journal of Traditional Knowledge, 13 (4): 698-705, (2014).

Diversity of food composition and nutritive analysis of edible wild plants in a multi-ethnic tribal land, Northeast India: an important facet for food supply

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Abstract

In view of increasing threat of climate change, extreme whether conditions, and recent financial crisis there has been a concern for augmenting agriculture and food supply to growing population, particularly to the rural areas. Fortunately the communities living near biodiversity rich areas depend on wide variety of plant resources for their survival; selected species have high potential for food supply in near future. In this study, we investigated a multi-ethnic area in North east India, a global hotspot, where communities show high dependence on wild plant resources for their sustenance. We addressed the issues of diversity of food plants being collected from wild habitats and their prospect as new food items, broad nutritive values of selected edible wild plants, and suggested some guiding policy concerns for management of these valuable resources. The investigation was done during 2006 to 2011; a total of 289 plants species were recorded used by selected tribal communities for diverse needs; 75 plant species used for their fruits, 65 as vegetables, 18 as mushrooms, 163 as medicinal plants, 13 as spices, and 11 species for making local drinks and beverages. Use of an algae *Prasiola crispa* as vegetable was found confined to *Monpa* and *Sherdukpens* only. Nearly 76 species were traded in markets involving a good annual turnover. Most promising medicinal plant species of the area comprised *Aconitum fletcherianum* G.Taylor, *Clerodendrum colebrookianum* Walp., *Swertia chirayita* H.Karst., *Cordyceps sinensis* (Berk.) Sacc., *Picrorhiza kurrooa* Royle, *Dendrobium nobile* Lindl., and *Artemisia nilagirica* (C.B.Clarke) Pamp. that were harvested on commercial scale for selling in national and international markets. More species were used at higher altitudes showing greater dependence on wild plant resources. Nutritive values of 16 most preferred edible species revealed that they comprised considerable proximate and macro-nutrients; some are well comparable with commercial fruits and crops in their nutritional quality. It is found the wild edible species play an important role in dietary nutritional balance, and access to these wild plant resources ensures communities to overcome uncertain food stocks particularly during adverse and extreme weather conditions. The study highlights the need to protect these plants in their wild habitats; selected species be domesticated by developing cultivation protocols. It is also emphasized that wild edible plants is an ignored facet of food supply, however if properly planned it can facilitate to develop multifunctional agricultural policies for securing food production along with sustaining landscapes, biodiversity and cultural heritage in rural areas at any part of the globe.

Keywords: Global hotspot, Indigenous communities, Non timber forest products, Commercial extraction, Consumption pattern, Forest management, Rural income, Community livelihood, Nutritive values, Wild edible plants, Mineral contents

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Traditional knowledge of wild food plants in a few Tibetan communities

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Abstract

Background: This paper aims to present the author's field research data on wild food plant use in Tibetan regions. It provides a general perspective on their significance in past and present Tibet, and examines the concept of wild edible plants as medicinal plants. The fieldwork was conducted in Dhorpatan (Nepal, May-August 1998), Lithang town and surroundings (Sichuan, China, April-September 1999, May-August 2000); Southern Mustang District (Nepal, July-August 2001); and Sapi (Ladakh, Jammu and Kashmir, India, July 1995, August 2005).
Methods: The research was conducted with 176 informants. The methodology included ethnographic research techniques: participant observation, open-ended conversations, semi-structured interviews, and studies of Tibetan medical texts. The author worked in the field with Tibetan colloquial and written language.
Results: The 75 total wild food plants and mushrooms belong to 36 genera and 60 species. 44 specimens are used as vegetables, 10 as spices\condiments, 15 as fruits, 3 as ferments to prepare yoghurt and beer, 5 as substitutes for tsampa (roasted barley flour, the traditional staple food of Tibetan people), 4 as substitutes for tea, and 3 to prepare other beverages. Data from Lithang, which are more representative, show that among 30 wild food plant species exploited, 21 are consumed as vegetables, 5 as spices, 4 as fruits, 3 represent substitutes for roasted barley flour, 2 substitutes for tea, and 1 is used as fermentation agent.
Conclusion: Tibetans have traditionally exploited few wild food plants. These mainly compensate for the lack of vegetables and fruit in traditional Tibetan diet, notably among pastoralists, and are far more important during famines as substitutes for roasted barley flour. Today few wild food plants are regularly consumed, less in the main towns and villages and moreso in remote areas and among pastoralists. Younger generations from towns have almost lost traditional botanical knowledge. Owing to modernisation and globalisation processes, many local people have specialised in collecting natural products increasingly demanded in China and abroad. Tibetan people strongly benefit from these activities. Tibetan medicine sees diet as a way of curing diseases and medical treatises describe therapeutic properties of several wild food plants that Tibetans nowadays consume.

Keywords: Wild edible plants, Traditional knowledge, Tibet

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Wild edible macro-fungi- A source of supplementary food in Kinnaur District, Himachal Pradesh, India

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Abstract

The paper documents information on use of wild edible macro-fungi as supplementary food in Kinnaur district, Himachal Pradesh, India, collected through interviews and discussions with informants. Study revealed that twelve edible macro-fungi belonging to ten families and ten genera were used by people as supplementary food. Family Morchellaceae had three species, while all other nine families had one species each. *Sparassis crispa* and *Ramaria botrytis* were found the most significant supplementary food species. Most of the fungi had fruiting bodies as sources of food. This paper also highlights the potentials of wild edible macro-fungi as supplementary food and need for ethno-mycological research on these species.
Keyword: Interview, Ethno-mycology, Informants, Vegetable

Genet. Resour. Crop Evol. 62:1113–1120, (2015)

‘‘Meetha patta’’ (*Plukenetia corniculata* Sm.): a new report of leafy vegetable crop from north-eastern region of India

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Abstract

During survey and field collection of crop genetic resources in diverse parts of north east India, the authors came across *Plukenetia corniculata* Sm. under cultivation at field as well as homestead level for use as a leafy vegetable, a species otherwise known under cultivation from Southeast Asia. Its preference over other leafy vegetables by the Naga tribes was noted during market survey in Dimapur and Mokokchung districts of Nagaland. Apart from being delicious and easy to cultivate, higher nutritive values in the edible portion indicate its potential for popularization. Detailed information on botany, ecology, cultivation and utilization is provided here. Collecting more diverse germplasm, identifying elite types and their biochemical characterization, and developing standard cultivation practices would aid in popularising the crop at the country as well as regional level.
Keywords: Assam, Crop, Leafy vegetable, ‘Meetha patta’, Nagaland, *Plukenetia corniculata*

Indian Journal of Traditional Knowledge, 15(1): 121-127, (2016).

Utilization of wild Citrus by Khasi and Garo tribes of Meghalaya

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Abstract

Uses of wild and semi-wild Citrus are inculcated in the culture of tribal people of Meghalaya owing to its ubiquitous distribution and availability. In this paper, the traditional uses of *Citrus hystrix* DC syn. *Citrus macroptera* Montrouz., *Citrus latipes* (Swingle) Yu.Tanaka and *Citrus indica* Yu.Tanaka by the *Khasi* and *Garo* tribes of Meghalaya are documented. The study was conducted in 16 villages of the state having significant area under forest with Citrus species as natural component of forest vegetation using standard socio economic research methods. Distribution of these species are mostly confined to sacred groves, community conserved forests, core zone of protected areas and home gardens. Fruits and its parts are used for various medicinal and culinary purposes by these tribes. Owing to its distribution, *Citrus latipes* (Swingle) Yu.Tanaka is more commonly used by the *Khasi* people; Citrus indica Yu.Tanaka is more used by the *Garo* people while *Citrus macroptera* Montrouz. is equally popular among people of both the tribes. Wild Citrus spp and traditional knowledge associated with it are faced with a great threat of loss and call for protection and conservation. Documentation of traditional knowledge associated with *Citrus* spp could be a treasure for the future generation.

Keywords: Wild, Utilization, *Khasi* tribe, *Garo* tribe, *Citrus macroptera* Montrouz., *Citrus latipes* (Swingle) *Yu.Tanaka*, *Citrus indica* Yu.Tanaka, Meghalaya