IMPORTANCE AND SCOPE OF NON WOOD FOREST PRODUCTS IN JAMMU AND KASHMIR

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ABSTRACT

Non wood forest products (NWFP) play a key role in the life and economy of communities living in and around forest. These products sustain people (especially the landless and marginalized group) during lean season and supplement their income during other season. Tribal population depend heavily on NWFPs for income and subsistence one season for NWFPs are so important for tribals is that they have been pushed towards more and more marginal areas. Significance of NWFP is realized and appreciated in Ayurvedic, Unani and Sidha system of medicine since the ancient time. In the recent years the plant products have also been extensively used on allopathic as well as homeopathic system of medicine. It is essential that the biological quality of plants products is properly listed before channelising these materials to drug and food/feed industries.There is an urgent need for a clear policy and a well-directed approach to research. Research capacity has to be improved, both qualitatively and quantitatively. In view of the resource constraints, priorities will have to be clearly identified and research should focus on critical high-impact areas. Linkages between institutions have to be strengthened, so that research becomes more demand driven and leads to technologies for enhanced value addition. Considering the limitations of conventional approaches, an alternative framework that provides more scope for local innovations seems necessary. Empowerment of local communities through improved access to information and technology should be a major objective of research. Mechanisms to overcome barriers to technology transfer at all levels have to be devised; otherwise the potential of NWFPs will remain unrealized.

INTRODUCTION

Non-wood forest products (NWFP) were formerly known as minor forest products, other forest products, other economic products and non-timber forest products because of their little contribution in the state and forest revenues. Agenda 21 and forest principles adopted at the United Nations Conference on Environment and Development (UNCED) held in Riode Janeiro in 1992, identified forest products other than wood as an important area requires increased attention, development over the past two decades, an increasing number and variety of organizations, such as government, non-government institutions as well as private sector have become involved with promotion and utilization of NWFP and its effects on sustainability of products as well as forest. It is now widely recognized that NWFP play an important role for local communities in and around forest. The Indian forests are considered to be an important world repository of raw materials for manufacture of the large variety of commercial products in the country. Besides timber, fodder and fire wood , it is also a major source of natural gums, resins, turpentine and fatty oils and perfumery materials and a host of

other products. Infact, forest is the legendry cradle of our ancient Ayurvedic medicines and still a large number of plant drugs used in the Indian systems of medicine and the Indian Pharmacopocia come from their wild growth in the forest. It is known about a thousand plant species distributed in various climate zones, in India are found to have therapeutic values but only a handful of these are commercially collected for use within the country and for export.

Several reports and studies provide a general indication of the current and potential importance of NWFPs in the Asia-Pacific Region (Beer and McDermott, 1989). The region is reported to be the richest in terms of product diversity and the volume and value of trade of NWFPs (Iqbal, 1994) and every country has a long list of species, either used locally or traded in the local or international markets. There are nearly 1,000 plants yielding NWFPs in China (Shi Kunshan, 1994), 3,000 plants in India (Gupta, 1994) and 700 species of medicinal plants in Nepal (Khatri, 1994). More than 1,000 medicinal plants have been reported from Peninsular Malaysia (Rao, 1991). Of the 1,500 species of medicinal and aromatic plants in Pakistan, 300 are used in traditional medicine. In Korea 1,000 medicinal and aromatic plants have been reported (FAO, 1993a). Annual collection of beedi leaves from India is valued at US$ 200 million and 3 million persons are estimated to be employed in collection and processing (Rao, 1994).

India is a country of vast diversity lying at the juncture of the big-geographic provinces of Afro-Eurasia and the Orient. Because of the country's diversified climatic and physiographic factors, India is blessed with all types of vegetation: tropical, subtropical, temperate, and alpine. Due to its wide-ranging environmental regimes and diverse biological communities, the country is one of the world's top 12 "megadiversity" nations of the nearly 425 families of flowering plants in the world, 328 families with 21,000 species occur in India. From this varied emporium, non-wood forest products (NWFP's) are derived from over 3,000 species. For convenience, these products are classified as: (i) leaves; (ii) bamboos; (iii) gums, resins and oleoresins; (iv) oil seeds; (v) essential oils, including oil-yielding grasses; (vi) fibers and flosses; (vii) grasses other than oil-yielding grasses; (viii) tans and dyes; (ix) drugs and spices; (x) animal products; and (xi) edible products. (Tewari, 1981; Verma, 1988.) The royalties realized through the sale of NWFP's exceeded Rs1000 million in 1985-86 and have gone up since. The value of NWFP's is seriously under estimated in official records. It is estimated that 60 percent of all NWFP's are consumed locally and are not accounted for in the calculation of revenues. There are also many products which are not extracted fully or which

go to waste because of insufficient knowledge of their use or because they occur in inaccessible locations. On an average, over 40 percent of state forest revenues and 75% of net forest income comes from NWFP.

SOME FACTS AND FIGURES ABOUT NWFP IN INDIA

There are over 3000 species of NWFP in India, which are integral components of local economy and culture.

There are approximately 500 million people living in an around the forests whose survival can be said to be dependent on supplementary income from NWFP. Seventeen percent landless depend on daily wage related to collection of NWFP over 50 percent of the revenue earned by forest department come from NWFP. Its growth is generally 40 percent higher than timber. At national level over 50 percent of forest revenue and 70 percent of forest export revenue comes from NWFP mostly from unprocessed or raw material. On an average, over 40 percent of state forest revenues and 75% of net forest income comes from NWFP.Small scale forest based enterprises many of which rely on NWFP, provide upto 50 percent of the income for about 25 percent of India's rural labour force. Sixty percent of the NWFP collected are consumed as food or as adietary supplement by forest dwellers. They serve as crucial element in the livelihood system of forest dwellers. The percentage of income realized through sale of NWFP varies from state to state and is estimated to range from 5.4 percent to 55 percent.

Women's employments in forest based enterprises is estimated to be approximately 571.533 million days annually of which 90 percent is in small scale enterprises using NWFP.

The two main cash earners among NWFP, Sal (*Shorea robusta*) seeds and tendch (*Diospyros melanoxyion*) leaves are harvested annually by 6,00,000 women and children.

NON-WOOD FOREST PRODUCTS OF J&K

The Kashmir Himalayas, with its varied geographical and ecological niches, is a great reservoir of biological heritage. A wide range of bio-diversities exists in its sub-tropical temperate, temperate, alpine and cold desert regions. About 36/5% of the taxa of the state is endemic to the region, which is of great significant for the relatively younger mountain system. These Taxa include a variety of non-timber forest products of high economic, medicinal and ecological value, also called as "Minor Forest Produce". About 375 plant species belonging 209 families have been reported to be of high medicinal value from region of J&K due to general devastation of forests in the state, the habitual for the medicinal herbs has been

degraded resulting in their low production as also the extinction of some of the species. Additionally, with the increase in demand for these medicinal herbs in the national and international markets, there has been an uninterrupted exploitation of these resources, particularly, through illegal channels. Unfortunately, not much effort has been made to propagate NTFP, as the attention has been given to the timber products. It is, therefore, necessary to have a well planned, long term strategy for development of NTFP so that this heritage is not only conserved in perpetuity but also exploited through judicious management.

It is the alpine and high temperate forest region an Chenab and Kashmir, which is comparatively rich in minor forest produce. The entire area needs to be protected against biotic interference in order to promote the growth of MFPS. These forests are very extensive, covering approximately 9000 sq. kms. Some important areas are: Tangmarg, Yusmarg, Yarikah, Manasbal in Kashmir, Sasnasar, Marwah, Billawar, Rajouri in Jammu region. In Ladakh, the entire areas are rich in MFPs. The main area of attention would be to crate greater resources of MFPs through massive plantation, depending on the demand of a particular MFP. On an average, the annual outturn of MFPs in the state has been of the order of 1.20 lakh qtls. The outturn figure of 1.20 lakh qtls is only a fraction of total demand of these MFPs.

Extensive plantation of important and marketable MFPs should be undertaken within forest areas and other wasteland on degraded forest sites. It is proposed to take up the following MFPs in the first phase.

Diascorea spp., Rauwolfia *serpentina*, *Digialis purpurea*, *Aconitum* spp., *Voila* spp., *Berberis aristats*, *Atropa*, *belladonna*, *Artemesia* spp., *Punica granatum*, *Pyrethrum* spp., *Podophyllum* spp., *Ephedra* spp., *Aegle marmelos*, *Pohu* spp., *Bunium persicum*, *Phyllanthus emblica Tamarind Crocus sativa*, *Dendrocalamas strictus*, *Arundneria falcate*, *Terminalia bellerica*.

Table-1 Out Turn of NTFP in J&K (value Rs in Lacs)

S. No	N.T.F. P (value) Rs. in lakhs)	S. No	Year	N.T.F. P (value) Rs. in lakhs)
1	10.45	9	1995-96	1650.00
2	19.37	10	1999-00	1908.59
3	28.36	11	2000-01	2944.52
4	22.93	12	2001-02	2384.37
5	432.28	13	2002-03	1943.41
6	1524.32	14	2003-04	2151.64
7	1174.01	15	2004-05	1061.08
8	835.81	16	2005-06	1893.03

Table-2 Out turn of important NWFP in J&K

S. No	Name of NTFF	Unit	2001-02	2002-03	2003-2004	2005-2006
1	Rasin	M. Tonnes	10694.00	10783.00	10284.00	6748.24
2	Anardana	Qtls	3042.00	1399.00	2377.00	1511.81
3	Artimsia	Qtls	0.00	328.00	470.00	-
4	Bunafsha	Qtls	721.00	367.00	329.00	-
5	Guchies	Qtls	172.00	389.00	139.00	51.70
6	Dhoop	Qtls	2103.00	1264.00	482.00	-
7	Discorea	Qtls	2504.00	3551.00	1654.00	-
8	Rasount	Qtls	1044.00	0.00	555.00	-
9	Baladona roots	Qtls	0.00	504.00	133.00	-
10	Kour	Qtls	51.00	388.00	208.00	-
11	Kiker sighi	Qtls	435.00	151.00	173.00	-
12	Murhk bala	Qtls	467.00	219.00	158.00	-
13	Brahmbooti	Qtls	344.00	490.00	349.00	-
14	Kath	Qtls	-	485.00	130.00	-
15	Valerian roots	Qtls	-	810.00	203.00	-
16	Hariculam	Qtls	-	323.00	24.00	-
17	Surangjan	Qtls	-	54.00	0.00	-
18	Basin	Qtls	-	50.00	0.00	-
19	Aftinoon	Qtls	-	137.00	0.00	-
20	Revand	Qtls	-	498.00	529.00	-
21	Buch	Qtls	-	0.00	75.00	-
22	Althine	Qtls	-	0.00	477.00	-
23	Others	Qtls	-	100.00	129.00	77.53

Table-3 Export of some important Non-Timber Forest of J&K

S. No	Name of NTFF	Units	2004-05	2005-06
1	Anardana	Qtls.	2120.00	980.00
2	Bunafsha	"	3.40	-
3	Brahmbooti	"	74.00	-
4	Discorea	Lakh Nos.	626.00	-
5	Kath	Lakh litrs	2123.00	-
6	Dhoop	Qtls.	233.00	8.85
7	Rasount	Qtls.	137.00	54.00
8	Resin	Qtls.	90.00	162.00
	Tamber	000'Cums	4.87	-
10	Circket bats	Lac Nos	5.75	-
11	Tarpene oils	Ltr	997594.00	598097.00
12	Kour	Qtls.	0.00	-
13	Rosin	Qtls.	42408.00	83504.00
14	Deodar oil	Ltr	3397.00	-
15	Kikarosighi	Qtls.	276.00	-
16	Aftinoon	Qtls.	38.00	-
17	Revand	Qtls.	108.00	-
18	Vilveriagrass	Qtls.	3.00	-
19	Beloodoona	Qtls.	15.00	-
20	Chillian oil	Ltr	760.00	-
21	Rosin oil	Ltr	44800.00	-
22	Pine oil	Ltr	122766.00	-
23	Guichian	Qtls.	6754.00	-
24	Velerina roots	Qtls.	3.00	-
25	Semifinished crafts	Nos	112264.00	-
26	Walnut gunbutts	Pcs	3264.00	10086.00
27	Others	Qtls.	3069.00	8.00

Nearly 572 plants have been reported to be medicinal by the survey units of Jammu and Kashmir. Out of these plants 132 have been exclusively used in Unani System of Medicines. Rest are used in other systems of medicines including Ayurveda, Sidha, Swarigpa. Some of the important medicinal plants have more export potential. Medicinal plants have been discussed in detail in some of the medicinal lants are as und

Table-4: Important medicinal plants of J&K

Scientific Name	Local Name	Part of the plant being used	Constituents	use	Occurrence
Crataegus oxyacantha	Reng	Fruit	Colchines	Nervine tonic, cardiac stumulant	Upper reaches of southern Kashmir
Pyrus cydonia	Bamchoonth	Fruits and seeds	-	Demulcent	Kashmir valley
Prunus armeniaca	Cheer	Fruit, Kernal	Dry fruit,Oil	Rheumatic	Leh and Kashmir valley
Aconitum leterophyllum	Patis/ Nar Mada	Root	Atisine	Febrifuge, bitter tonic	Anantnag Doda Kashtiward
Colchicum luteum	Suranjan	Bulb	Colchicines	Anti-gout	Kashtiward
Viola adorata	Bunafsha	Leaf/ flower	-	Anti-pyretic Expectoramt	Kashtiward, Shopain, Doda
Peganum karmala	Isband	Seeds	-	Rheumatism and colds, to avert evil eye	Kashmir Valley
Punica granatum	Anar	Seeds	-	Cardiac stumulant	Throughout Kashmir valley
Ficus spp.	Anjir	Fruit	-	Nervine tonic	Kashmir valley
Emblica officinalis	Aamala	Fruit	-	Tonic	Jammu, Doda
Saussurca lappa	Kut	Root	-	Anti-rehumatic, Perfumery, Insect repellent	Shopian, Anantnagh, Kashtiward,
Anagllis arvensis	Chari-tar	Herb	-	Riscicidal	Kashtiward, Doda
Dioscorea deltoides	Krits	Root	-	Diuretic dose (1gm) Poison in large dose	Shopian, Anantnagh, Kashtiward,
Cassia fistula	Faloos	Pod	-	Luxative	Jammu, Udhampur
Syllibum merinium	Chari Tamul	Seed	-	Liver Tonic	Kashmir Valley
Picrorhiza kurroa	Chobi -kor	Root	Kuthein	Stomachic, Liver protectent	Doda, Kashtiward

OTHER MINOR FOREST PRODUCE

Wild Apricot (Prunus armeniaca)

The plant is distributed through out the Kashmir, Ladakh and Chenab Valleys in the state of J & K. In India it is also found growing in Uttranchal, Himachal and some North East states. It is a moderate sized deciduous tree with spreading crown, Height of the tree is around 10m. Tree is drought resistant. Flowers are bisexual, pinkish or white pinkish in colour. Fruit is drupe, velvety when young, but nearly smooth at maturity, round to oblong with a diameter of 25 to 26 cm and weighs about 12.6 gm. Apricot fruits are rich source of vitamins (A,B, B2, C) and micronutrients (Ca, P, Fe & K) and are taken fresh or canned. Kernels of Wild apricot are some what bitter in taste but yield about 50-55% of edible oil which is rich in oleic acid and linoleic acid. Refined oil is some what yellow in colour.

Morels (*Morchella esculenta*) an edible fungi locally known as "Guchies" is the specialty of Kashmir forests. It is taken both as fresh and dried high valued delicacy. It costs Rs. 1000/kg (Fresh) to Rs. 4000/kg (Dried). It is still collected from the forests. Attempts to cultivate have not succeeded so far.

Sea Buckthorn (Hippophae rhaminoides) or Leh Beri

The plant is distributed in wild, over four of the five valleys of Ladakh viz Nubra, Indus, Suru and Zanaskar. Besides Ladakh, it is also found in Lahaul Spiti, Kinnaur and Chamba in Himachal, Kumaun and Gharwal belts of Uttranchal and Sikkim. It is a dwarf and tall, branched thorny shrub and is dioceous. The fruits are small, round to oval in shape with a diameter of 6mm yellow to orange to scarlet in colour and sour to highly acidic in taste. Fruits are a rich source of vitamins having vitamin C, E, A, B1, B2 and organic acids. It also contains lysine and microelements such as iron, cobolt, selenium, molybdenum etc. Oil content in sea buckthorn seeds varies from 10-20%, while fruit pulp contains 2-4%. Sea buckthorn leaves are nutritive fodder for cattle and sheep/ goats as they are a rich source of protein (18-22%), fat (4-5%) and other micronutrients for the animals. The value added product of sea buckthorn is sold in market claiming to have anti aging and rejuvenating effect, although the claim has yet to be proved.

CHILGOZA (PINUS GERARDIANA)

Pinus gerardiana is an evergreen pine known as "chilgoza" or "neoza," attaining a height of 17 to 27 meters and girth of 2 to 4 meters. The species is endemic to a part of Kashmir and Himachal Pradesh in the Western Himalayan dry temperate forests. The tree flowers in May-June and female cones ripen during September-October of the following

year. Good seed years alternate with poor ones. A tree on an average yields about 7.4 kilograms of seeds. Collection is best done in September-October when the cones are still green. On heating, the cone scales open and the seeds are shaken out. Seeds are also separated by drying the green cones in the sun. Natural regeneration is limited because local inhabitants aggressively collect the cones to extract the chilgoza nuts. They are priced at approximately Rs150-200 per kilogram.

Besides plants of medicinal and aromatic value, a number of other minor forest produce are of economic value because of the insecticidal properties, source of resin, gum and tannins.

PLANTS OF INSECTICIDAL VALUE

Phyrethrum, Deris elloptica, Acorus calamus, Tephrosia sp. *Vermonia* sp. *Chenopodium ambrossoides, Azadirachta indica.*

Plants which yield tannins

Acacia Arabica, Casia fistula, Pinus roxburghii, Spirala sorbifolia, Dodonaea viscose, Emblica officinals, Terminalia chebula, Punica granatum, Geranium nepalense, G. wallichiana, Juglans regia, Berginia legulata, Polygonum amplexicaule.

PLANTS AS SOURCE RESIN GUM

Anogeissus latifolia, Moringa oleifera, Lannea cormandelica, Azadirachata indica, Acacia arabica, Albizzia procera etc.

STRATEGYFOR DEVELOPMENT OF NTFPS

Item wise resources inventory survey and formulation of projects

Conservation programme

Systematicharvesting/ collection programme

Species selection

Cultivation of NTFPs

Sustainable management

Action research on NTFP collection

Organization for procurement

Socio-economic studies

Training and awareness creation

SCOPE

The modern study of plants seems to have commenced in India during the latter part of 18th century, from the time of William Roxburgh. His field observations on the economic and medicinal values of plants as recorded in the flora of India are invaluable in pure and applied research on Indian flora even up to this day, therefore the scope of minor forest produces can be visualized in the following manner.

Integral component of local economy and culture.

It can acts as a source of livelihood for the landless people

Small scale forest based enterprises can be built up which will rely on NWFP.

Employment regeneration through NWFP

They (NWFP) save as crucial element in the livelihood system of forest dwellers. Consumption of NWFP as food or as dietary supplement by forest dwellers.

Woman employment regeneration

To enhance revenue for the state

REFERENCES

Beer, J.H. de, and Mcdermott, M.J. 1989. The economic value of non-timber forest products in Southeast Asia. Amsterdam, Netherlands Committee for IUCN.

FAO. 1993a. Breeding and improvement of medicinal and aromatic plants in Asia. Report of the Regional Expert Consultation 1-6 June 1993, RAPA Publication 1993/12. Bangkok, FAO-RAPA.

Gupta, B.N. 1994. India country report. In Non-wood forest products in Asia. RAPA Publication 1994/28. Bangkok, FAO-RAPA.

Iqbal, M. 1994. International trade in non-wood forest products in the Asia-Pacific Region. Paper presented at the Regional Expert Consultation on the Economic, Social and Cultural Dimensions of Non-Wood Forest products, 28 November to 2

December 1994. Bangkok, FAO-RAPA.

Khatri, D.B. 1994. Nepal country Shi Kunshan. 1994. China country report. In Non-wood forest products in Asia. RAPA Publication 1994/28. Bangkok, FAO/RAPA.

Tewari, D.N. 1981. State trading in forest produce in India. Jugal Kishore and Co. Dehradun.

Verma V. 1988. A text book of economic botany. Emkay Publications. Delhi.