

## **NTFPS: An alternative to forest logging in Minadam and Sultanar Valley Swat**

Non Timber Forest Products: An alternative to forest logging in Minadam and Sultanar Valley Swat

Abdul Latif, Z.K.Shinwari, J. Hussain and S. Murtaza

Kohat University of Science & Technology, Kohat Pakistan, email: latifepm78@yahoo.co.uk

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## Abstract

Forest associated communities collect non-timber forest product as alternate sources of income. In Miandam and Sulatanr valleys of District Swat, the use of non-timber forest product (NTFPs) as marginal sources of income is a common practice. Medicinal plants like *Aconitum violaceum*, *Adiantum* spp., *Paeonia emodi*, *Podophyllum emodii* and *Valeriana jatamansui* etc. are collected for earning benefits. Beside medicinal plants, mushrooms, wild fruits, vegetables, thatching plants etc are collected and sold for marginal earnings by the communities. During summer these products provides 70% of income to the marginal communities beside agriculture. In winter seasons when NTFPs are not available for collection, the poor communities satisfy their economic needs through the sale of timber and fuel wood. The cultivation, commercialization and value addition of the selected NTFPs for conservation of plant resources and improved livelihood of the communities, as substitute of logging in both the valleys is evaluated and presented here.

Key words: NTFPs, Alternative source for income, forest logging, Miandam and Sulatanr Valleys

## Introduction

With the quantum rise in population, forest cover and natural resources have been depleted. Over exploitation of timber compelled the policy makers to impose ban or restrict timber harvesting. Minor produce or Non-Timber Forest Products (NTFPs) has been globally considered as an alternative source of earnings from the forests. Forests and its products satisfy both the domestic and commercial needs forest associated communities. These forest resources are under severe threat of logging and depletion. Pakistan has 3% annual rate of deforestation with 23 years half-life. Miandam Valley is situated on northeastern side of Siadu Sharif, the capital city of Swat Valley. It is located at 350.02' N and 720, 33' E (Rehman, 2000). Miandam Valley comprised of Barhampatai, Saney, Khairabad, Miandam and Jukhtai villages. A single perennial stream, the Miandam Khawar, drains the whole valley. Total area of the valley is 17166 acres with a population of 20529 individuals. Sulatanr Valley is located in the Northwestern territory of Swat Valley, stretches over an area of about 50km<sup>2</sup>, located at 35o 06' to 35o 20' N and 72o 30' to 72o 40' E on the globe (Ahmad, 1997; Adnan, 2003). Elevation of the area varies from 1800m to 4100m, from sea level, giving rise to diverse vegetation setup and good climatic condition in summer. Total population of the area is 17981 (Anonymous, 1998).The study areas lies in Sino-Japanese (Ahmad and Sirajuddin, 1996) has established the moist temperate forest (Champion et al., 1965; Beg and Khan 1974) extending to sub alpine and alpine areas. Various products like honey, morels, and handicrafts extracted by the local people are excluded in the present study.

## Materials and Methods


For primary data collection, personal observation, organized survey and community meetings were undertaken. For survey, questionnaire was used to get baseline information. Three questionnaires were developed for local community, collectors/producers and traders. Stratified sampling technique was used for analyzing the area in terms of NTFPs. Random sampling techniques were used to interview the target groups. Nearly 10% of the selected population was the sample size for data collection. Secondary data was collected from various libraries and departments. The data collected was analyzed statistically. New techniques like willingness to pay and preference ranking of specific species/products were used to present the data.

## Results and Discussion

### 1. Forest Logging

Timber is of main concern in both the valleys. Miandam's total area comprised of 60% of forest. In Sulatanr Valley, only Sulatanr village has thick forest protected by community; while in other villages of the valley it is under sever threats. The density of forest has been decreased up to 90%. 9-12 trees are cut down per day in Miandam Valley. The forest dwellers of valleys prefer

following timber species.

<i>Abies pindrow</i>	1	<i>Level of Preferences</i> 
<i>Pinus wallichiana</i>	2	
<i>Picea smithiana</i>	3	
<i>Taxus bacata</i>	4	
<i>Juglans regia</i> (Walnuts)	5	

**Key:** 5-Very low, 4-Low, 3-Nomal, 2-Good, 1-Very good

Timber is sold in main markets like Mandal Dag, Gawalerie, Miandam and Fatihpur in the valleys. According to respondents, in summer only 5% of people are involved in timber trade while in winter 25% of local people are involved, except from Sulatanr Village, where commercial exploitation is completely banned. People involved in the timber cutting are mostly from communities. Shepherds are involved in timber cutting only on wages. Increasing population and lack of alternative livelihood opportunities has led to the accelerated deforestation.

NTFPs of Miandam and Sulatanr Valleys

## 2. Medicinal Plants of the Valleys

Various medicinal plants, which are commonly used locally and are commercially important, are listed in Table 1.

Table 1. Important Medicinal Plant of the Valleys

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S. #	Botanical name	Local name	Part used	Uses For/As	Usage trends	Market Price /kg
1	<i>Aconitum violaceum</i>	Zaharmora	Rhizome	Rheumatism and arthritis.	M	Rs. 135
2	<i>Acorus calamus</i>	Sakha Waja	Rhizome	Cough, remedy for flatulence, colic and diarrhea and also against snake bites	M	Rs. 130
3	<i>Adiantum venustum</i>	Sumbal	Leaves	Sexual disability, fever, backache and used as blood purifier	N	Rs. 32
4	<i>Aesculus indica</i>	Jawaz	Fruit, oil	Fruits are used as anathematic and given to horses in colic.	M	Rs. 20
5	<i>Ajuga bracteosa</i>	Boti	Whole plant	Throat sore treatment and purifying blood, used in epilepsy act as coolant	N	Rs. 50
6	<i>Artimisia brevifolia</i>	Terkha	Shoots	Antispasmodic and stomach-ache	M	Rs. 20
7	<i>Arisaema flavum</i>	Marjarey	Rhizome	-	N	Rs. 45

8	<i>Atropa acuminata</i>	Bargak	plant	Pains and rheumatism as poultice	L	
9	<i>Berberis lycium</i>	Kowarey	-	Jaundice, sore mouth stomach problems	M	Rs. 65
10	<i>Bergenia ciliata</i>	Gat Panra	Rhizome	Used as anti-diabetics and expectorant	L	Rs. 80
11	<i>Bistorta amplexicaulis</i>	Tarwa Panara	Rhizome	Rheumatism and gout	N	Rs. 15
12	<i>Caltha alba</i>	Makan Path	Floral shoot	Laxative	N	Rs. 12 (fresh)
13	<i>Corydalis stewartii</i>	Mamera	Floral shoot	Eye drops for curing eye diseases	L	
14	<i>Dioscorea deltoidea</i>	Qanris	Rhizome	Used for treatment of jaundice and ulcers	N	Rs. 80
15	<i>Dryopteris jaxtaposta</i>	Kowanje	Whole Frond	Enhance digestion	M	Rs. 20
16	<i>Feoniculum vulgare</i>	Kaga Velaney	Fruit	Used for curing urinary, dried fruits are used as carminative and laxative	M	Rs. 175
17	<i>Fumaria indica</i>	Papra	Whole plant	Used for jaundice, also used as blood purifier and coolant	N	Rs. 22
18	<i>Hedera nepalensis</i>	Prewatei		Anti-diabetics, blood purifier	N	Rs. 40
19	<i>Hypericum perforatum</i>	Shin chey	Stem and leaves	Used as diuretic and its tea is stimulant and analgesic	M	Rs. 90
20	<i>Indigofera heterantha</i>	Ghoreje	Root, leaves	For scabies, leaves are used for stomach problems	N	Rs. 20
21	<i>Isodon rugosus</i>	Spirkey	Stem and leaves	Remedy for toothache	M	Rs. 40
22	<i>Juglans regia</i>	Ghuz	Fruit, bark	General body tonic, bark is used for cleaning teethes and antiseptic	M	Rs. 45
23	<i>Mentha longifolia</i>	Velaney	Shoots	Used in diarrhea in children and prevention of vomiting. Also used in dyspepsia	M	Rs. 30

24	<i>Mentha spicata</i>	Podina	Leaves and stem	Used as carminative and refrigerant also used as Carminative	M	Rs. 25
25	<i>Paeonia emodi</i>	Mamekh	Rhizome	Backache and general weakness	M	Rs. 20-25
26	<i>Primula denticulate</i>	Mamera	Flower,	Eye irritant	M	Rs. 60
27	<i>Podophyllum emodii</i>	Kakora	Rhizome	Used to control jaundice and other liver disease	N	Rs. 165
28	<i>Polygonatum verticilatum</i>	Noor-e-alam	Rhizome	Used for treatment of joint pain	N	Rs. 120-130
29	<i>Rheum australe</i>	Chotial	Roots, Rhizome leaves	Purgative, astringent, alexiterix, emmenagogue, diuretic and act as blood purifier	N	Rs. 60
30	<i>Skimmia laureola</i>	Nazar Panra	Leaves	Tea made from the leaves as used for dyspepsia, smoke is considered as antiseptic	M	Rs. 32
31	<i>Solanum nigrum</i>	Kamachoo	Leaves and fruit	Treat eczema, fruits edible and are used in fever	N	Rs. 12
32	<i>Taxus buccata</i>	Banerya	Bark	Emmenagogue and antispasmodic	M	Rs. 60
33	<i>Valeriana jatamansi</i>	Mushk-e-Bala	Rhizome	Unknown local uses	M	Rs. 90
34	<i>Viola odorata</i>	Banafsha	Flower	Used for throat sore and carminative agent	M	Rs. 230 (dried)

**Key: L-Less, N-Normal, M-More**

3. Wild Fruits

Various wild fruits like *Viburnum grandiflorum*, *Morus alba*, *Ficus palmata*, *Diospyros lotus*, *Diospyros kaki*, *Juglans regia*, *Prunus persica*, *Viburnum grandiflorum*, *Quercus dilatata*, *Zizyphus vulgaris* and *Fragaria vesca*. Some of the species are domesticated for commercial purposes like *Diospyros lotus* and *Z. vulgaris* but it is on very small scale. These fruits contribute a lot to the economy of local communities.

4. Wild Vegetables

Communities use wild vegetables like *Atropa acuminata*, *Allium cepa*, *Urtica dioica*, *Solanum nigrum*, *Dryopteris* spp., *Berberis lyceum*, *Caltha alba*, *Medicago* spp., *Allium sativum*, *Malva officinalis*, and *Rumex dentatus* etc. Women and girls mainly collect and cook these vegetables. All the vegetables are used for domestic purposes. Recently, *Catha alba*, and *Dryopteris* spp. are collected for market selling.

5. Condiments

Five species *Bunium persicum*, *Mentha spicata*, *Carum carvi*, *Rosa webbiana*, *[[i=]]Feoniculum*

vulgare are common condiments of the area. Availability of some of the species like *Bunium persicum* and *Carum carvi* is diminished during the recent years.

#### 6. Gums and Resin

In past the resin taping was more common but due to ban by forest department people are presently not using it. Although, some of people are involved in gum extraction but they use gum only for domestic purposes. Torchwood is however extracted in huge amount.

#### 7. Walnut Bark

Though after the ban by forest department in 1992, the walnut bark is not commercially traded. Its illegal extraction and smuggling has, however, caused decrease in availability of walnuts population in the valley. Locally the bark and leaves are used for tooth cleaning.

Collection trends of various plants in Sulatanr and Miandam

The collected data revealed that 80% of the respondents adapted to plant collection as part time profession in spring, while 20% were completely dependent on collection of forest products for their income. In 80%, 55% were farmers, 20% businessmen, 20% shopkeepers and 5% were from other professions.

A collector collects 2-3 products. Average 1 trip/day in a season is made to the collection areas. Collection is done throughout the summer season but best season for collection/production for commercial purpose is March to June. Most of the produce is sold in fresh form on the local vendors in Miandam valley while mostly dry produce in Sulatanr Valley.


According to 60% respondents, trend of collection from the wild is decreasing. The decreased production is due to lesser economic value of the produce, lack of proper marketing, lesser accessibility to main markets, increase in population and lesser availability of the produce.

Products collected for commercial purposes:

Two produce are frequently collected by the collectors i.e. *Valeriana jetamansai* and *Viola odorata*, while other medicinal plants are collected and sold in small quantities. Each collector brings produce with following quantities:

- *Morchella esculenta*                      0.5-1kg in fresh form
- *Voila spp.*                                      0.5-1kg in fresh form
- *Valeriana spp.*                                100-200 g
- *Dioscorea spp.*                                300-500 g (Collected in lesser quantities)

These 3 products are main income source especially for Gujers, who are mostly involved in timber cutting. The only cost suffered by respondents is the traveling to collect the produce, previously present at the doorstep. The purchase of product depends on the market value, and demands. Preferences for other products are given in below.

Morels	1	 <i>Preference Level</i>
<i>Viola spp.</i>	2	
<i>Paeonia emodi</i>	3	
<i>Valeriana spp.</i>	4	
Fruits	5	

**Key: 5-Very low, 4-Low, 3-Normal, 2-Good, 1-Very good**

The quantity of the produce is decreasing day by day. For example, *Paeonia emodi*, *Valeriana spp.*, *Polygonatum spp.*, *Taxus baccata* and *Podophyllum spp.* etc. important species. Their level of abundance is decreasing and requires efficient product conservation strategy. The production size of various products is different. *Viola spp.* is collected more, followed by *Valeriana spp.* from the valleys. Further detail obtained from selected respondent is given in Table2.

Table 2. Production of selected NTFPs

**Table 2. Production of selected NTFPs**

Name	Quantity purchased/ collected (kg)	Value in Rs.
Morels	350	1,330,000
<i>Viola</i> spp.	1600	368,000
<i>Valeriana</i> spp.	1100	99,000
<i>Artemisia</i> spp.	300	6,000
<i>Paeonia emodi</i>	120	3,000
<i>Berberis lyceum</i>	425	27,625
Total	3,820	1,833,625

There are many products, which are used domestically and need proper evaluation. Due to lack of market value of the products, people are more converging on trade of timber & fuel wood.

#### Market Chain

The market analysis shows that economic benefits are unequally distributed. From collector level to primary/secondary middlemen more than 50% of the material or the actual constituents are wasted during collection, drying, cleaning, packing, storing and transportation. Till reaching its end user industries/Dawakhanas or exports, 10-15% is lost more in further refining. Thus out of total collection only 40% of the produce reaches to the consumers. Detail of the market chain is given below:

[IMAGE]

#### NTFPs for domestication

Hundred percent of people interviewed were willing to go for domestication of economically important species. Their opinion was if government or other agencies provides some technical and financial support it can be developed as a good income source for the area.

## Conclusions

Insight of the people, resources and analysis revealed that the local people are tremendously relying on the plant resources. The forest logging is more when there is no other livelihood opportunity. If the Non Timber Forest Products, sustainably collected and properly marketed, it will provide high profit to the forest dwellers. The people are 100% willing to domesticate the minor produce, as off-season crop. If these are cultivated on marginal lands, it will reduce forest logging.

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