Report of the National Workshop on Sustainable Management of NTFP

Date: 18th- 19th January 2008
Venue: TFRI, Jabalpur

Organised by
Regional Centre for Development Cooperation (RCDC), Bhubaneswar
&
Tropical Forest Research Institute (TFRI), Jabalpur

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Background

The importance of Non Timber Forest Produces (NTFPs), including medicinal plants, in sustaining rural livelihoods, contributing to rural poverty alleviation, biodiversity conservation and facilitating rural economic growth is well known. More than 50 million tribal people in India depend on NTFP for food, shelter, medicine, cash income etc. The resource sustains millions by providing an alternate source of food and income when agriculture ceases to be reliable. Studies conducted in Bihar, Madhya Pradesh, Orissa, and Andhra Pradesh show that the contribution of NTFPs to total household income range from 10– 55% and about 80% of forest dwellers depend on forests for 25 to 50% of their food requirements. Till recently, NTFP trade was under complete state monopoly with private business houses, which were granted leases on a long-term basis, calling all the shots. Needless to say, this system was highly exploitative. With PESA, ownership over minor forest produces were bestowed upon Gram Panchayats ending state monopoly and procurement and trade was deregulated - though it has been operationalised only in Orissa. With such far-reaching reforms in the procurement and trade scenario, the NTFP market gradually opened up and the number of players also increased. Naturally, the prices of NTFPs too registered a hike at many places.

With laws and policies opening up many opportunities for the commercial sector, there has been rapid growth in the demand for herbal products in recent years. This, in turn, has led to a quantum jump in the volume of trade of medicinal plants within and outside the country. In India, trade in medicinal plants is estimated to be approximately US $1 billion per year. As per World Bank statistics, the size of the herbal market in India is of the order of Rs. 5000 crore. With such exponential growth of the Herbal/Medicinal Plant sector in both the domestic as well as export market, focus on sustainable harvesting is going to be extremely crucial. If it continues to grow at such a fast pace, one can very well imagine the state of our forests in the next couple of decades.

It is only natural that the constantly growing market demand and increasing marketisation would encourage destructive harvesting practices. As per a study, 70% of the medicinal plant collections involve destructive harvesting practices, leading to useful plant species becoming endangered or threatened (report of the task force on conservation and sustainable use of medicinal plants, Planning Commission, 2000). Unfortunately, neither the Panchayat, the new owner of the resource nor the Forest Department (as in the case of Orissa) is showing any interest in extending conservation and regulatory services. For the last 7 crop years, no records of harvesting are available either with the Forest Department or with the Panchayats. There is no governance mechanism to ensure that harvesting is not unsustainable. Besides, there are hundreds of species not defined or classified by the Forest department as NTFP that are being harvested without any harvesting standards or benchmarks and that to without the knowledge of the Forest Department.

The biggest challenge for researchers and policy makers, therefore, is how would the forest meet the global requirement at a time when there is steady decrease of resources? They would have to grapple with the question of how to address the problem – whether by putting in place a stringent regulatory mechanism for harvesting or by developing and universalizing standards and protocols – for quite some time. The issue of sustainable harvesting of NTFP has become such a major concern that premium forestry institutions like the International Tropical Timber Institution (ITTO) seriously considered a re-look at its name and broaden the focus to forest rather than just timber.

Though efforts have already been initiated by research institutions for developing options and indicators for sustainable management of forest and NTFP, there has hardly been any effort at sharing

and working closely for some standardization. Independent researches are being carried out both by the Government and the non-government sector, but convergence between them remains a far cry.

The workshop

The two-day workshop was organized with the joint endeavor of Regional Centre for Development Cooperation, (**RCDC**), Bhubaneswar in collaboration with Tropical Forest Research Institute (**TFRI**), Jabalpur at TFRI campus Jabalpur. The objectives of the workshop are:

1. To identify issues relate to sustainable management of forest and NTFPs in different states and takes stock of initiatives taken to address these issues by the forest department, researchers, NGOs etc.
2. To identify and develop models of crosscutting, especially in the context of primary stakeholders, i.e. forest protecting communities and primary NTFP collectors.
3. To develop a uniform approach for planning on sustainable forest management with the roles of various stakeholders clearly defined.

Major Areas under discussion:

Current harvesting practices of NTFP

- Increased commercial utilization & illegal extractions of NTFP forest resources, local users communities are encouraged to overexploit forest products.
- Ignoring the traditional practices of sustainable harvesting of utilizable resources from natural forests.
- Participatory approach involving local forest dependent user communities seems to be an inevitable tool for sustainable management and *in-situ* conservation of valuable indigenous forest resources.
- Current harvesting strategies and techniques used by the collectors focus on maximizing the short term economic returns by adopting destructive methods of extraction have negative impacts on population.
- Unsustainable harvesting and collection of NTFPs has reduced their availability in the natural forest, which is threatening the livelihood of the tribal collectors.

Conservation of NTFP:

- NTFP estimation is essential for the complete inventorization. This illegal extraction may be estimated through the application of Randomized Response Technique, which is generally used for estimation of sensitive parameters. The application statistical techniques at regional level may provide the complete picture of the both i.e. single resource inventory and single purpose, multiple resource inventory of NWFPs resources available and hence aid for proper management and conservation of these resources.
- JFM programme can also play a vital role in the field of production and *in situ* conservation of medicinal and aromatic plants.
- Community participation in resource management and environmental conservation has been widely advocated in the recent past for long-term sustainability along with lower cost of the activities, higher technical efficiencies of resource use.
- Conservation of commercially important forest resources in state owned natural tropical forests are a challenging task because these forests constitute common property resource and local people have the right of free access for collection of NTFPs.

- It is need of the day to document indigenous knowledge of tribes.
- Set up a plan for conservation of medicinal plants through cultivation and coordination in between tribal people and corporate sector for benefit sharing.
- Involvement of various departments for conserving the NTFP species in their natural habitats and rehabilitating the endangered had already depleted NTFP species population.

Current Research

- Methodology for assessment of Non Timber Forest Produce & Quality of Forests.
- Data sheets & equipments used for the survey.
- Forest Conservation through Resource Assessment & Monitoring, Augmentation of Forest.
- Information & Resource Material Development.
- Seedling density against grazing pressure, forest fire, Biotic pressure, etc.

Issues and interventions on sustainable harvesting of NTFP

- Lack of market related vision, near total absence of innovation and institutional distractions coupled with monetary constraints have hampered its performance parameters.
- Shrinking resources base in the face of ever escalating demand and destructive and exploitative practices are the main concerns in the current scenario of NTFP management.
- Impacts of cross sectoral policies and issues, like high performance in tourism sector, changing trends in health care etc., can be tackled only by quality production at economically viable margins, for which developing cost effective farming techniques like suitable/novel models of cash crops – medicinal plants intercropping and prudent technological innovations such as precision farming are crucial.
- Joint ventures and public–private collaborative ventures hold promise for future.
- Lack of focused attention and concerted efforts of researchers and scientific community.

Sustainable management practices, models and protocols

- Transfer of technologies for economic important medicinal plants for Medicinal & Aromatic based agro forestry models.
- Motivation and Community organization activities.
- Maintenance of records and documents.
- Control resource management techniques.
- Control resources economically.
- Addresses public concerns on environment.
- Improve livelihood opportunities.
- Maintenance of sustainable ecosystem

Inaugural Session
Day: 1 , Date: 18.01.08

The workshop was inaugurated by Mr. R. C. Sharma, Retired PCCF, Chhattisgarh; Mr. A.A Ansari, IFS, Additional MD, MPMFP Federation, Bhopal, M.P; Dr. A.K. Mandal, Director, TFRI, Jabalpur; MP; Dr. R.L Srivastava, Director, AFRI, Jodhpur; & Mr. Sanjoy Pattnaik, RCDC, Bhubaneswar. Mr. A.K. Mandal, TFRI formally welcomed all the participants.

Inaugural Address

Mr. A.K. Mandal in his deliberation focused on the importance of NTFP. The cultivation of NTFP to some extend is necessary as well as over exploitation has to be stopped. A consciousness needs to be developed that the depletion of forest produces is leading to destruction of wildlife habitat as well as humans. NTFP includes many things found in the forest from roots to leaves having different values for which the NTFPs are valued, for this reason everybody exploit the forest produce found naturally. During the process probably as on today no rules are followed and no guidelines prescribed for extraction of NTFPs from the forest. Since the cultivable land in any country is limited, it's not viable to increase the cultivable area to a greater extent, therefore in coming year's dependency on NTFP & forest will be high. So long we depend upon the forest we have to consider the issue of sustainability of the forest. This issue has got recognition and there is awareness among different Government organizations including Forest Department, private organizations, to cultivate different important & selected NTFPs outside the forest areas.

He concluded his inaugural address by requesting the participants to discuss in detail about the issues of sustainability & the threshold limit of harvesting, so all the species sustain on their own inside the forest and at the same time providing benefit, not only harvesting, there can be different parameters of harvesting: time of harvesting, point of harvesting and many other things.

Mr.Sanjoy Pattnaik, RCDC, Bhubaneswar; He shared the objective and purpose of the two days workshop. His deliberations stress on the huge dependence on forest produces at two different levels:

1. **Subsistence level at the forest dependant tribals & other forest dwellers.**
2. **The Commercial level like industries**

The figure shows by different source, about 50 million people are dependant on forest .The Market for medicinal plants is about US$ 60 billion, which is increasing at the rate of 7% annually by EXIM Bank. According to World Health Organization (WHO) the demand for medicinal plants is expected to increase up to more than US $5 trillion by 2050. World Bank - Herbal market in India is of the order of Rs 5000 crore. In India, trade in medicinal plants is estimated to be approximately US $1 billion per year. There is no conclusive study probably done on this regards, this are

speculations made, base on other related studies, the above speculation clears indicates the heavy dependence and demand of forest resources apart from subsistence level.

He shared some issue in the deregulated forest Governance Mechanism like PESA & Forest Right Act, 2006. In Orissa, there is little bit confusion as to what was actually deregulated whether it was conservation Governance that was deregulated or it was Trade, which was deregulated. If Panchyats were given the responsibilities & ownership of supervising the trade MFPs at this point of time are they able to ensure sustainable harvesting & if they are not then who are in charge of this species. In this context he raised a question that ***who is going to control the big players?*** Who are presently operating, looking at the demand and the amount of resources that exist? ***How to control? How the global requirements can meet by steady decreasing resources?*** At present there is no ready made answer, but the fact is bothering to the individuals working in forestry. There still debate on whether it is Demand ***or the Deregulated Governance*** serving or even both. Another factor may be **lack of knowledge** as pointed out by various speakers at some point of time**: *don't know how to harvest? It is true that there is some amount of knowledge which exists but that is enough that is big question?*** Again lack of stringent laboratory mechanism and defined standards of harvesting make the issues more vulnerable.

It is difficult and confusing to define; how to manage/control/regulate demand, what does that stringent mechanism will be what we are talking about, we have every thing in place, we have Forest department operating, we have very stringent rules but what else required? One crucial issue which is probably will be discuss in the days to come is **creation & dissemination of knowledge & practices,** which is extremely important to establish a two way communication between the researcher, technical experts and people working in the field, who can actually educate the people harvesting forest resources, whether it is a big players or a tribal or the forest dependant community.

This is also important that there have been independent efforts, independent researches going by different place by FD, NGO, technical institution, experts & researchers but have been mostly sporadic and that have been mostly to large extent stopped by with writing papers; Limited dissemination is the issue. Lack of conversion and central agencies to move the process further. This effort is basically to bring the varying expertise of the foresters, researcher, NGOs, grass root workers, technical institutions to discuss what exactly mean by sustainable forest & NTFP management. How it can actually be disseminated? How a standardized procedure if there is a need can be developed? At the end he focused on the point; **educating on harvesting limits**.

A. Ansari, Additional MD, MPMFP Federation, Bhopal, Madhya Pradesh

NTFP is not only important for the rural tribal communities or the population living inside & outside of the forest for their livelihood, health & food security but also important for the biodiversity conversation. It is necessary not only in our country but for the whole mankind the conservation of NTFP. The thought was raised in last 10 years every time at different levels. With this conception different type of deliberation was organized. He emphasize on the objective of the workshop. The important issues are also highlighted in RCDC brochure. He believed that the gathering would briefly deliberate the issues related to NTFP like:

- Forest conservation
- Sustainable forest Management
- Non-destructive Harvesting.
- Administration.
- Regulation

He concluded his inaugural address by requesting the participant to develop effective methods, which will be beneficial to the society as a whole.

R.C. Sharma, Retired PCCF, Chattisgarh

He narrates about the changing definition of forest produces in different period and by different names (MFP, NWFP, and NTFP) in India. In current India Juridical Prudence, PESA, even in Tribal Right 2007 the forest resources are named as MFPs. Despite of this confusion he tried to focus on the fact that NTFP, MFP or NWFP is going to become the main stay for the Forest Administration in 21st century. The sustainability of the forest in 21st century will depend upon a great extend the way we manage our NTFP resources, quoting an example he try to put attention on the importance of forest produce in the human life. NTFP from the day one either in form of laves or bark, flower, fruit or even the root it starts giving annual yield, that is why the annual occurrence and direct relevance of the NTFP with the human life became more important, which was recognized by Millennium Development Goals (MDG) that MFP & NTFP can play an important role.

He tries to focus on the issues like, the time sensitivity, innovation of management techniques, and the environment technology, administration mechanism that is needed for the management of NTFP. He stressed on the point: Sustainability is not only ecological it has some other dimensions. Each dimension is closely related to each other and the combination of dimension leads to sustainable management. The three dimensions are:

- ***Ecological Sustainability***
- ***The Social Sustainability***
- ***The Economical Sustainability***

Unless above 3 aspects are not taken into consideration, developing an effective sustainable management system will be far away. Conducting enormous research on ecological aspect neglecting the social aspect and economic aspects, result will only confined to be published on some research papers or in some journals, it will not be able to transplant in fields. He focused on issues requested by Mr. Sanjoy the Governance part. Recognize the importance of NTFP in the overall livelihood security mechanism of the dependant people PESA tried to give the ownership, in fact it was not the ownership it was an endowment of ownership, lot of confusion prevails for 10 years and that's why implementation of PESA has been quite uneven in different parts of the country. The act has been interpreted differently by different state. In this process some of the important species are not recognized as MFP. Some of the states developed some mechanism, to pass it to the cooperatives & some states give it to Gram Panchayats or Gram Shabhs but the facts remains that different innovation mechanism had been developed across the country to implement PESA but the result are not so encouraging. Even in the Tribal Act 2007 has given ownership, whether it is endowment of ownership or ownership management etc but again things are not clear because MFP consist of large basket of different activities from large flora & fauna .In Africa food requirements downs from the beast meat, but in India meat or the wild life will not consider as MFP on point of our socio cultural & traditional aspects. So that's why within our overall socio-cultural aspects, our norms & the traditions you have to find out a way to manage the valuable recourses. He narrate some examples from his experiences that how the traditional & cultural values are closely associate with the society.Working out a formula of MFP management which doesn't fit into the skin of the things of social, cultural, traditional values, beliefs of the peoples, chances are it may not succeed. That's we have to develop a model to bring solution to this complicated problems within the overall matrix of values, culture and tradition.

Focusing on the governance part of NTFP he argued: The country governed by the public trust doctrine; means the state is the trustee of all natural resources, simple passing the buck to the Panchayat or the Gram Shabha and Cooperatives doesn't mean that the state has given responsibility of managing, maintaining & protecting those natural resources. That is why we have to evolve the framework where all those management aspects are given but sustainability, conservation, maintains; developmental aspect are maintained within the Government organization. The country can't give up their responsibility in managing & protecting the resources, because they are essential for the socio economic

development of the country. He concluded his inaugural address expecting to fine out solutions to those complicated issues.

The opening session ended with vote of thanks, given by Mr. A.K.Pandey, TFRI, Jabalpur

Business Session I: Conservation and Sustainable Harvesting Issues in the Current NTFP Management Practices – Presentation from the State Forest Department

Chairman: Sri RC Sharma, Retd. PCCF, Chhatisgarh.
Co-chairman: Dr.PC Kotwal, IIFM, and Bhopal

1. ***Management of NTFP in Madhya Pradesh by Sri A.A. Ansari, IFS, Add. MD, MFP Fed. Bhopal,***
To look after the issue in NTFP management in 1984 MP MFP federation formed. From the beginning it operated in certain division in collaboration with MARFED and at ground level LAMP & FAX. During 1984 to 88 activities of Federation confined to a few districts. Major changes in the system came in 1988 when cooperation societies at grass root level were formed, Primary cooperatives, the members are primary collectors .At present the number of primary society is 1066 and 60 district union. Above that at forest division level there is district unions, and at apex level there is apex federation situated at Bhopal. Regarding sharing the benefit only one percent commission is given to the MFP Federation, the apex body and district unions and rest are goes to the primary societies. He described about the three tier cooperative structure of the MP MFP Federation.

As we know the 73rd Constitutional Amendment came into existence and transfer right to the local community in schedule areas only but MP Government keeping the sprit of the Amendment promulgated that the all right over NTFP in all area weather in schedule are or not, from the NTFP trade the benefit sharing and the net profit from the Tendu Patta and other commodities 50% (60%Since 2004) is given in cash to the Primary Collectors or societies & 20% for the development of NTFP and regeneration of Forests. Balance for Village infrastructure development/ Cash Payment. There is provision for providing loan to the primary societies to do trade & collection of different NTFP. Tendu Patta is most important NTFP of MP. The state holds 25% of the total production of Tendu Patta in the country. There are 20000 collection centers.

Regarding non-nationalized NTFP there is free collection & trade usually by the local communities collect and sale in Haat Bazar without any government control, no transit permit required for transport .MFP Co-op Societies encouraged to take up collection & trade Federation provides soft loan [4% interest] to Societies along with training for non-destructive harvesting.

Arrangement are made for Conservation and Development of Medicinal Plants by forming task force in rural & tribal areas, 52 medicinal plants are identified by taskforce for cultivation. Efforts are made for in-situ Conservation & ex-situ Development & Value addition activities are carried out for creating additional employment opportunities.

MP Govt. adopt strategy making 5 years plan for MAP development .The emphasis were given on different activities regarding identifying the issues, conversation of MAP s in forest, increase cultivation of Medicinal Plants out side forest, processing, value addition, analyzing the chemical component of different Maps, generating man days and additional direct/indirect employment & documenting the ITK from local healer & traditional practitioner. There is a committee at different level for reviewing & monitoring the process, at State Level Co-ordination Committee under Chairmanship of Chief Secretary,

State Level Executive Committee under Chairmanship of PCCF MP and at District Level Executive Committee, Under Chairmanship of District Collector

He focused on the People's Protected Areas (PPA) which is similar to the IUCN Category VI. Category VI sites are those which contain predominantly unmodified natural systems, under management to ensure the long term protection and maintenance of biological diversity, whilst providing at the same time a sustainable flow of natural products and services to meet local community needs. PPA focuses on biodiversity conservation. PPA target to attain :

- Economic Sustainability through rural income generation by building capacity, value addition, providing better market, forward & backward linkages & credit facilities.
- Ecological sustainability through meaningful participation of the people.
- Socio-Cultural sustainability through improvement in social status & income, awareness about education & health & conservation of traditional knowledge.
- Other activities through PPA conducting studies /consultancies on resources assessment, marketing. Development of cottage industries. Providing training to the staff etc.

There is provision for monitoring the PPA area at an interval of 2 years. SFRI Jabalpur conducting Monitoring & survey of the PPA areas. He shared results of the survey: There is a more or less increase of habitant in different division.

MFP Federation Acting as State Medicinal Plant Board under National Medicinal Plants Board, GOI, and more that 11 hundreds project has been sanctioned evolving an amount of subsidy of 25 Crores. He shared about the plant species suitable for commercial cultivation –MFP federation has taken some initiative of building of godowns. One MFP processing & research center has been established in Bhopal funded by MP Mandi Board.

In order to encourage the farmer to cultivate the Medicinal and Aromatic Plants, the cultivators who are doing cultivation of medicinal plants for the last three years the following awards have been instituted since the year 2004:

- Van Aushadhi Krishi Bhushan Rs. 25,000
- Van Aushadhi Krishi Ratan Rs. 15,000
- Van Aushadhi Krishi Pandit Rs. 10,000

He concluded his presentation by simply conservation and development was not sufficient for to address the whole problem of NTFP management there should be some forward & backward linkages & MFP federation has taken some initiatives like building of godows, processing centers, marketing the herbal products, getting license for the products, etc.

MFP processing & research centre has been established at Bhopal, funded by MP Mandi Board 4000 Crores. MFP providing different types of training.At present MFP federation is producing 150 items. Regarding legal framework of in situ conservation & protection in MP under rules of section 147 of Indian forest act the rule has been made a provision, that the DFO has given power to declared close areas for the species, certain species in certain area are endanger that can be taken care of by this rule .

2. Issues and challenges related to sustainable management of NTFPs in Kerala and developing a future plan of action By K.A. Mohammed Noushad, IFS, Conservator of Forests, Kerala.

He shared the issue about the shrinking resource base & escalating demand in Kelara. The main concern was to ensure sufficiency in resources base, reduce destructive & exploitative harvesting practices. There is some type of societal & class exploitation though Kerela. Although, Kerala is highly literate

state to ensure sustenance and maintain equity on NTFP. He describes the issues & challenges on NTFP. The main issues in management of NTFP are:

1. Excessive and destructive extraction
2. Monetary considerations
3. Absence of hedging
4. Proficiency of intermediaries
5. Non-versatile management approach
6. 'Nil' sense of belonging
7. Institutional constraints
8. Lack of long term vision and innovation
9. Absence of enrichment activities
10. Step motherly treatment
11. Cross- sectoral policy impacts

The traditional knowledge is fading up due to generation gap traping that knowledge is very crucial as well as important. The Cross- sectoral policy impacts of high performance in tourism sector and green health movement. Kerala is targeting one-lakh medical tourists by 2010 and the Government aims to make the state one among the top five global players in medical tourism as part of its Vision 2010. There were about 15,000 medical tourist arrivals in Kerala during 2005-06, which increase around 25-30%of state income over previous year and 90% of tourists preferred Ayurvedic for treatment. In the coming years there is going to be an exponential growth in this segment. More the number of tourists, more mushrooming of treatment centres and consequent demand on herbal sources. Any decline in quality would entail reduced tourist arrival, resulting in huge dent in the tourist revenue, which is going to be the mainstay industry of Kerala in the coming decades. He suggested remedies to these problems:

1. While *in situ* conservation forms the best and cost effective method for protecting biological and genetic diversity, this can adequately be complemented by *ex-situ* methods through cultivation.

2. While natural ecosystems such as forests, wetlands and grasslands can be protected by legislation, many other medicinal plant habitats such as marginal, remote, wastelands, roadsides, or even gardens and hedges cannot. An education program developed in collaboration with local collectors, dispensaries and beneficiaries should be a priority.

2. Even the most progressive farmers are reluctant to take up farming of NTFPs due to lack of assured market and fair returns. They apprehend that in a glut market, fair price would be the first casualty, often citing the bad experience with cocoa earlier and vanilla recently. Only initiative by industries and guaranteed buy back arrangements will evolve and rally into collective or co-operative farming by '*the reluctant by experience*' farming community.

3. Tree crops with long gestation period and uncertain prospects of yield, considering the time lag between investment and returns is a hard nut to sell with farmers of Kerala, whether marginal or big. In a highly populous and land-scarce state, acquiring large tract of land by private entrepreneurs is next to impossible and not cost-efficient considering the prohibitive cost of land.

What will be the pragmatic way ahead (A pragmatist's future vision)

- This is the age of Joint ventures/public-private collaborative ventures
- Application of frontier technologies

The looming gloom

- The scenario in Kerala is unique, complex and intriguing - all at once. There is mounting demand for natural health care products from abroad and cash-rich corporate world; yet the farmers are reluctant to take up farming of medicinal plants despite conducive natural conditions, nursing wounds of the past and gazing at the unsure price movements and unpredictable market behavior. In the prospective event/scenario of scarcity, spurious products would invade the market, denting on the quality of services, in turn adversely impacting on our current rating as the most favoured global medical tourism destination.
- **What should be the future strategy? Where lies the remedy?** In Kerala has 485660 ha. (2004-05) under rubber cultivation, which is 83.15% of the gross area under this crop in India. The total number of trees/ha is 420-500. The website of Rubber Board reads "some shade tolerant medicinal plants like *Strobilanthus haemianus, Adathoda vasica* and *Plumbago rosea* are found to perform well as intercrops in rubber plantation. But the marketability should be ascertained before going for large scale cultivation". "Intercrops should be planted at least 1.5m away from the plant base. Intercrops should be separately nursed and adequately manure".
- The farmer should be able to produce medicinal plants at no extra cost or very marginal investment concurrent with other cash/main crops (yield from every yard), such that the returns are 'incidental' and complement the returns from the preferred crop.
- We have **dispersed and unabridged islands** of traditional knowledge and scientific expertise of modern times. There has to be a convergence of know-how and do-how.
- Silvicultural engineering of medicinal plants and cash crops and frontier technological innovations like precision farming hold the key for the future.
- Focused attention and concerted efforts of researchers and scientific community is the need of the hour.

Future plan of action:
Developing integrated/ comprehensive database is an essential prelude to future management of NTFPs. The future plan of action has to be formulated bench marking on the following critical parameters and current realities.

a. Total inventorisation and need assessment;
b. Quota to be set apart for local Populace
c. Mechanism for continuous data generation
d. Prospective input requirement for upkeep and improvements
e. Dynamic externalities of supply and demand
f. Fast changing domestic consumption pattern
g. Cross sectoral linkages
h. Value addition; novel derivatives; bio prospecting
i. Promotion outside Reserve Forest.
j. Scope for JVs (private - public participation)
k. Compatible legal framework; conducive mercantile policy reforms
l. Non-conflicting legislations
m. Changing global scenario; new horizons of market.

4. ***Contemporary Analysis of Non Timber Forest Products Management Issues in Gujurat State BY R D Kamboj, IFS, General Manager, GSFDC, Baroda, Gujarat***

He started his presentation by giving a brief view of NTFP in the state of Gujarat and the initiatives undertaken by GSFDC in proper management & trading of the forest produce in the state to provide maximum benefit to the gathers.

Non timber Forest Produces have attracted considerable global interest in recent times due to its contribution to food security, income and employment generation for the forest dwellers, providing opportunities for forest based enterprises, potential for export market and support to biodiversity conservation. In Gujarat state NTFP are mainly collected, processed and marketed by GSFDC, since 30 years. Gujurat has a total forest area of 19,113 sq.kms, which is about 9.75% of the geographical area of the state. Forest in Gujarat is primarily concentrated in the eastern border that is about 12 districts starting from Banaskantha to the Dangs region some exclusive forest an area lays in Jhunagarh district. About 80% of the total population lives in the eastern belt. As per the study by AC Nielson ORG Marg Ltd (2005), contribution of the minor forest produce (MFP) to the family income varies fro 16% to 44% in Gujarat state. The availability of major NFTP in the state is KL, Mahua flowers/seeds, different types of gums etc. He emphasizes on the role of GSFDC in collection & marketing of NTFPs and the main objectives of the cooperation are:

- To undertake commercially viable and ecologically sustainable forest based enterprise.
- To eliminate exploitation from private traders of forest dwellers in general and the tribal in particular, who derive sustenance through collection of minor & other forest produce?
- To maximize benefit percolation from such trade to the tribal.

The cooperation procures around 100 different types of forest produces in order to provide income & employment to the rural poor particularly to the tribal. GSFDC enjoys exclusive rights for procurement, transport, storage and marketing over 13 nationalized NTFPs like mahua, KL etc where as Non-nationalized items are procure by different private traders or agents.

The GSFDC ltd realized the collection rate, collected quantity and sales value of important NTFPs during last 4/5 years. The figure shows the major (80%) income comes from Tendu leaves / Kendu leaves around 5 t 6 Crore and followed by Mahua flowers /seed among nationalized items. The major chunk of collection comes from honey around 1 crore followed by wax.

The fixations of procurement prices for various NTFPs are fixed every year taking into account the labour, time taken, and the quality of produce and prevailing market price etc. The collection rates for nationalizes NTFPs are fixed by Government, recommendations by Statutory Advisory Committee and technical committee every year before the commencement of collection season. Procurement price for various NTFP have increases progressively, depending upon the market conditions, demand and supply, prize realized in previous years sales.

Regarding nationalized NTFPs, Corporation enjoys the procurement rights. Corporation is bound to purchase all the items what ever comes to the center provided ensuring quality of the product. It is incumbent on GSFDC to undertake trade in Nationalized NTFPs to remove the middleman in their dealing with local people. GSFDC has been providing them remunerative collection rates for such produces and also giving adequate publicities in the forest area. Trading through GSFDC has benefited forest dependent communities in generating more man-days in the state. During last 5 years around 6 crores rupees paid towards the collection charges.

Transit permits are necessary for trade of various NTFPs. In case of nationalize NTFP the transit permits are issued by GSFDC through the staffs located in different division. In this way NTFP trade in Gujarat is being regulate by GSFDC to control illicit activates. Regarding Value addition to NTFPs GSFDC ltd has also established a small unit which manufacturing about 27 various Ayurvedic preparation and herbal remedies under the brand name "DHANVANTARI" and market different items. The Cooperation has recently installed the Automatic Honey processing & bottling plant for obtaining quality honey. The small unit slowly becoming successful to enhance the value addition, annually around 1.2 Crore-business. The Honey has been transport to the neighboring states.

The extraction of NTFP is moving towards unsustainable limits incase of many of the NTFPs due to the shrinkage & degradation of the forest areas, increase commercialization /rise in demand, improper and unsustainable extraction practices. In Gujarat many items are on the verge of economic extinction. For example, Salai Gum, Mahua, Kadaya Gum. For getting NTFP on sustained basis, it is necessary to develop them beside their exploitation and trade. He emphasized on the concept of rest period, must be implemented along with rotation of NTFPs, yielding gum, resin to the endangered species, for example: Kadaya gum (Sterculia Urens) are not extracted since 4/5 years in Gujarat.

5. Conservation Priorities of threatened NTFP in Vindhyan Region By PC Dubey, IFS, CF, Rewa, MP

He shared study findings of Vindhya region. The total Geographical Area 38,370 $km^{2.}$ Total Forest area 13,293.65 $km^{2.}$ Reserve Forest Area 67, 96.96 $km^{2.}$ Protected Area 5,550.67 km^2 Unclassified Forest Area 1.88 $km^{2.}$ Total Forest Cover 10,754 km^2 (28.52 %). Very Dense 893 $km^{2.}$ Moderately Dence 5,869 $km^{2.}$ Open Forest 3,992 km^2

The Objectives of the study are to Study Present Status as per IUCN, Study Regional Distribution, Documentation of Traditional Knowledge, Causes of Threat's, Conservation Issues & Measures, Plant Identification, Identification of Rich Biodiversity Area's & Sacred Groves, Conservation Priorities. They have studied about 842 NTFP species in the area and found 268 species are valuable from the local point of view from their traditional knowledge & uses. The Methodology adopted for the study included:

1- Local People's Perceptions: the people's voice is the main objective of the study. The study was carried out by involving Forest Dwellers, Trible People, Cattle Grazier, Local Healers, Forest Staff, Peoples Representative, Sammelan, Workshop, Exhibition, Individual contact and Village visit.
2- Survey & Visits i.e. Field Visits, Quadrat Survey, of the 30000 hector area
3- Experts Opinion: Contact with Universities, College & Other Important Institution
4- Study of documents includes Working Plan, Research Work/Paper and IUCN/BSI Reports
5- Trade & Market Survey
6- Role of Media
7- Publication/Reporting

The species are identified by assessment of the present status considering the people's perception. The indicators are extinct from the wild, critically endanger, endanger, vulnerable, near threaten, least concern, data insufficiency, no evaluated. It was finding that nine species are extinct from the vindhyan in area last 50 years. , Critically endanger are 84, vulnerable are 180 and four herbs are totally extinct.

He narrated the conservation measures of the species.

- CR, EN, VUL, Species which are at the verge of their respective population reduction limits should be protected for exploitation for 10, 5, 3 years respectively.
- Suitable habitat should be located for In-situ & Ex-situ activities.
- Causes of threat must be removed.
- Other CR, EN, VUL, Species should be protected in their wild habitat & Species recovery programme should be taken up with local people.
- Local People should be made aware of Threatened Species.
- Conservation centre at village level.
- Plantation of threatened species in school, colleges, Universities, Canal side, Govt. Premises, Road Side etc

- Tree arboretum, medicinal park, Eco Park, Ethno Park at district level.
- Herbarium center at district level.
- Protection of eco tone, edge area, wetland, pristine forest area.
- Identification of rich biodiversity area & their conservation.
- Involvement of local healers, vaidya, knowledgeable, persons in conservation programmes like seed dispersal, planting, and awareness campaign.
- Employing local people in conservation activities.
- Value addition of forest produce & marketing facilities.
- Extensive awareness programmes in schools & colleges.
- Ownership to traditional healers for collection of medicinal plants and their parts.
- Removal of invasive species.
- Extensive moisture & soil conservation. Locate water sources and protect them.
- Protection of natural water flows.
- Strict control over fire and grazing beyond carrying capacity.
- Restoration & Rehabilitation of degraded forest.
- Up stream & down stream watershed management.
- Multistory & Multiple species in plantation activities, preference to keystone and flagship species.
- Protection of sacred groves.
- Traditional knowledge documentation and use this knowledge in forest management.
- Raising of threatened NTFP plants through Biotechnology

5. ***Legal Issues in strengthening of JFM, vis-à-vis PESA act 1997 and MTEC (IMPROVEMENT) Act 1976 By M SRINIVASA RAO, DY C F, Pandharkawda Forest Division, Pandharkawda, Maharastra***

He highlighted that Madhya Pradesh accounts for the largest forest cover of the country i.e. 20.68% followed by Arunachal Pradesh (10.80%), Orissa (7.38%), Maharashtra (7.32%) and Andhra Pradesh (6.94%). The seven North-Eastern states together comprise 25.70% of the total forest cover." National Forest Policies of 1894, 1952 and 1988 have shown clear shift from thrust on agriculture to bringing the one third of geographical area of the country under forest and tree cover adopting people centered approach.

Unlike the previous forest policies that privileged revenue and commercial interests, the NFP was strikingly different. Section 4.6 of the policy highlighted the symbiotic relationship between tribals and forests and the need to involve tribal communities in the management of forests. It also emphasized that domestic requirements of firewood, fodder and minor forest produce should be the first priority of forest management, not commercial or industrial needs. In that sense, it signaled a definite change of approach and was an indication of what was to possibly come. JFM, The decentralized and people oriented forest management approach is being implemented through constitution of 63,000 Forest Protection Committees (FPCs)/Village Forest Committees (VFCs) covering an area of 14 Mha. The Scheduled Area notified by the Government of India consists of 5809 villages and 16 towns in 12 districts covering an area of 46,531 sq. Kms, which is about 15.1% of the area of the State. These districts are Thane, Pune, Nashik, Dhule, Nandurbar, Jalgaon, Ahmednagar, Nanded, Amravati, Yeotmal, Gadchiroli and Chandrapur.

The Tribal Sub-Plan (TSP**)** area covers the scheduled area. The State Government felt that 773 villages in the districts of Raigad, Bhandara, Gondia, Chandrapur, Yeotmal and Pune also deserved to be extended the benefits of TSP, called the Additional Tribal Sub Plan area. The population of scheduled tribes in Maharashtra as per the 1991 census was 73.18 lakh (Maharashtra has the second highest tribal population in the country, next to Madhya Pradesh having a population of 154 lakh). There are 47

scheduled tribes in the State. 49.0 % of the tribals live in scheduled areas (main TSP area), 2.6% in ATSP areas, 6.8% in MADA and Mini-MADA pockets**.** The remaining 41.6% of the tribals live outside all these areas i.e. 12 Districts, 5809 villages (15.1% of total area), 46531 Sq Kms and 73.18 lakhs (2001).

He explained the 73rd Constitutional Amendment Act, which came into force on 24t April 1993, is a significant milestone in local self-governance. The Act conferred constitutional status to *Panchayats* and introduced a three-tier panchayati raj system. The Act, however, could not be extended to Scheduled Areas, as local self- governance in tribal areas has to be in consonance with tribal needs, customs, traditions etc. as per the Constitution. (b) The Bombay village Panchayat Act, 1958. (c) The Maharashtra Transfer of Ownership of Minor Forest Produce in the Scheduled Areas and the Maharashtra Minor Forest Produce (Regulation of Trade) (Amendment) Act, 1997. [Maharashtra Act 45 of 199.
He concluded his presentation with the individuals should be permitted to collect NTFP for bonafide purpose. The authorization by Gram Panchayat regarding NTFP collection should be on annual basis and not 10 years. In addition to JFM committees, the Self Help Groups (SHG) in the villages should be authorized for NTFP collection. A NTFP federation for purchase of the notified NTFP in the schedule areas instead of MSTDC. Amendment to be made in MTEC (Improvement) Act. The act authorizes only those agents appointed as per the law. Rate fixation in case of 33 minor forest produce to be done by Forest Officer

6. NWFP Management practices and Its Sustainability, By V. Srinivas Rao, Conservator of Forests, Kanker, Chhattisgarh State

He elaborated the state Forest Policy envisages that the Minor Forest Produce (MFP) including medicinal plants should be conserved developed and the non-destructive harvesting methods evolved as they provide sustenance to the tribal population. The state should promote processing and value addition of the same, at the local level rather than exporting MFP in raw form.

He shared the objectives of NWFP Management practices and its sustainability.

- Conservation & development of NWFP
- Sustainable harvesting through non destructive practices
- Promotion of NWFP based livelihood activities
- To ensure remunerative prices to NWFP collectors
- To generate additional income through value addition of NWFP

He explained the Strategy for NWFP Management practices and its sustainability i.e. (a) Identification of NWFP rich areas, (b) Prioritization of species for conservation and sustainable harvesting, (c) In Situ conservation to increase productivity and diversity, (d) Determination of sustainable yield & methodologies, (e Standardization of processing techniques for target NWFP (f) Establishment of NWFP based micro enterprises, (g) Ensure reliable marketing system, (h) Peoples participation and capacity building to ensure, (i) Sustainable livelihood (j) favorable policy framework

In situ measures includes Resource Inventory, Conservation of NWFP rich areas, thinning and cultural operations in favour of NWFP species, Soil moisture conservation, assisted natural regeneration, Special treatment for endangered species and Adoption of non-destructive harvesting practices.

Resource Inventory includes Identification of the species and preparation of inventory of both wood and non wood forest produce, to identify the target species for conservation and sustainable harvesting and estimate their growing stock and sustainable yield, accordingly a state wide NWFP resource survey is conducted in year 2007 and the information system will be made available in 2008.

Ex-situ measures includes Promotion of NWFP based livelihood activities by Processing of NWFP, Promotion of traditional knowledge on NWFP, Capacity Building and Marketing of NWFP (Raw and processed) through NWFP based micro enterprises

Components of Micro enterprise includes Prioritization of main NWFP, Identification of Project area, Selection of beneficiaries – SHG's, Project formulation, Training of beneficiaries, Provision of financial resources, Implementation, Marketing, Technical support and Monitoring.

Methodology for NWFP Collection includes Identification of collection zones, Training of SHG's,Non destructive harvesting and storage practices for 50 species are standardized, Fixation of procurement price for 52 NWFP, Procurement of NWFP by Village level SHG's and resale the same to Haat bazar level SHG, Haat bazar level SHG's are incharge of temporary storage will resale the same at NWFP mart at a predetermined rate, The SHG's are entitled to get commission over collection price & transportation charges, NWFP marts situated at forest circle level will sale the produce at a fixed rate or through tenders. 32 retail out lets of Sanjivini". 9030 PC involved in different capacity building activity.

He concluded his presentation with question mark, how the sustainability is ensured?

- National level policy on NWFP
- In situ and Ex situ conservation of NWFP
- Establishment of NWFP based Micro enterprises
- Procurement and marketing support on the pattern of agri produce.
- R & D support for processing technology, harvesting techniques
- High inputs for capacity building of NWFP collectors
- Adoption of National Transit Pass System
- National inventory and trade report generation on NWFP

Open House Discussion

Q1: In Gujurat & Chattisgarh they have developed mechanism for price fixation. If price is fixed for NTFP, then the private traders will go for better quality of NTFP and all the Kachha part government have to handle with lower prices. So whether Gujarat and Chhatisgarh are facing such problems after adopting such policies of price fixation of NTFPs & how many months you have been through with this experience.

Ans 1: As far as Chattisgarh is concern, every week fixes the prices for NTFP depending on the market scenario but rates fixed once in a year is dangerous.

Q2: Gujurat forest development cooperation is doing good work. Does Gujarat believe in PPP?

Ans 2: The name was changed; earlier it was FPC converted into JFM. Now it is CFM but the motto is how we can go nearer to the people. Narrated an examples Robert chambers define earlier it was RRA then it becomes PLA. So it is only terminology. The works and the ideology remains the same.

Business Session II: Current Research on Sustainable Management of NTFP

Chairman: Sri A.A.Ansari, add. MD, MP MFP Fed, Bhopal.Chatisgarh**.**
Co-Chairman: Sri.R.D Kamboj, Gujurat Forest Development Corporation

1.Extent of regeneration of Asparagus Rracemosus and Celastrus paniculata at different level of harvesting under natural field condition in PPAs of Chhattishgarh by S.P.Tripathi, S.D.Sonkar and N.P.S. Nain

He explained the Extent of regeneration of *Asparagus racemosus* and *Celastrus paniculata* at different level of harvesting under natural field condition in PPAs of Chhatisgarh. *Asparagus racemosus* Willd. Belongs to the family Liliaceae and commonly known as satawari, satmuli, norbodh etc. and found at low altitudes throughout India. It is a rich source of satawari, a glycoside sarsasapogenin with two rhamnose and one glucose residue, which is isolated from the roots. The dry roots of the plants are used as drug (Karinch, 1978). The roots are said to be tonic and diuretic (Tiwari and Pandey, 1993) and as galactagoue (Narendranath *et al*., 1993). The drug has ulcer-healing affect probably viz strengthening the mucosal resistance or cyto protection (Singh and Singh, 1986). It has also been identified as one of the drugs to control the symptoms of AIDS (Trivedi and Upadhyay, 1993).

He shared the genesis of problem i.e. due to its medicinal importance, its demands is increasing day by day. Most of the requirement of the industry is met through collections from forests. The people living in an around the forest collect the roots of the species without giving any thought for the future of the species, resulting the population of the species is depleting from natural forest. Therefore, the need of sustainable harvesting of the species is realized. The present study would be helpful in standardizing methods and time for sustainable harvesting of Satawari.

He shared the conclusion of the study. The extent of regeneration of *Asparagus racemosus* at different level of harvesting i.e. 100% harvesting of roots without disturbing parent disc, 20%, 40%, 60%, 80% harvesting of roots under natural field condition in PPAs of Matchot Forest Range, Baster Forest Division (Chhattishgarh) was studied. Three years continuous observation recorded (Dec.2005;

Dec.2006; Dec.2007) on regeneration indicates that up to 60% harvesting of Asparagus *racemosus* is found to be sustainable. As the harvesting level is decreasing extent of regeneration increasing.

Recommendation

1. Up to 60% harvesting can be done.
2. Age of the 40% left over plant should be more than 8 months.
3. Plants below the age of 8 months should be avoided for harvesting.
4. Plants more than 20 months old should be maintained for regeneration purposes.
5. In older plants (more than 20 months old), about 10%-decayed roots were observed.
6. Sustainability criteria can only be maintained under control condition (full protection).

2. Sustainable harvesting of NTFPs: through determination of Sustainable harvesting limits with users' community participation in natural tropical forests of Madhya Pradesh by R.K. Pandey and Satvant Kaur Saini

He described that Forestry is the second largest land use after agriculture. Over 1 billion population of the country about 300 million of the rural poor depend on forests. Nearly 500 million people rely on forest resources for their livelihood.
He explained the reason of the Threats to NTFPs i.e. Free access for collection of NTFPs (Policy), 90% NTFPs are still being extracted from natural forests, Unregulated and unscientific harvesting. Lack of monitoring and evaluation system, ignorance for conservation and sustainable management by user's communities and middlemen, no specific community management system, About 60% production of the collected NTFPs goes as unrecorded. Unrecorded removal of NTFPs from forests is neither systematic nor structured due to inadequacy in strategic planning /management interventions. No authoritative information on total resource availability on the NTFPs.

Inventory of NTFPs:

- Information should be on actual state of Occurrence and Density
- Site and species specific harvesting limit/unit area (Determination of species specific harvesting limit of NTFPs).
- There is no specific management plan for NTFPs**.**

In Madhya Pradesh More than 700 species identified as important NTFPs in natural forests. Total tribal population is 9.67 million i.e. 2.7% of the country.46 tribal groups of which 3 special primitive tribal groups. Forests are a source of livelihood and contribute more than 60% tribal annual income (Shukla & Pandey, 1993).

He explained the case study of Users community participation. Determination of Sustainable Harvesting techniques of economically important NTFPs through Community Participation in Tribal Inhabited Forests of Madhya Pradesh. Observations were made round the year to under stand habitat requirement, growth behavior, regeneration & germination potential, plant parts used and traditional harvesting/processing etc.

Regeneration Index

To determine the capacity of regeneration of selected medicinal plants after harvesting. (Annual & Biannual).

$$\text{Regeneration Index} = \frac{\text{No. of plants regenerated}}{\text{No. of plants harvested}} \times 100$$

Regeneration Index: mean of plants harvested in the previous year and the no. of plants subsequently regenerated.

Sustainable Harvesting Rate: Harvesting percentage at which maximum value of regeneration is recorded.

Priority issues

- Identification and protection of potentially rich NWFP areas in natural forests. Resource Inventory to evaluate present status/availability of NWFP's (quantitative assessment).
- Sustainable-harvesting regimes in the management plans.
- Species specific harvesting techniques in *In-situ* conditions.
- Self assessment of forest resources with users' communities' participation
- Development of *Ex-situ* cultivation of economically important NTFP species, to minimize the pressure in *In-situ* conditions.
- Storage and value addition to increase income from available forest resources.
- Marketing: To ensure sustained productivity and economic gains to stakeholders.
- Skill and capability development of users communities.
- Dev of site-specific innovative technology for conservation & sustainable development with communities' active involvement.

3. Marketing Information Service of medicinal plants in Central India By Pratibha Bhatnagar, Alok Raikwar, Naval Singh Lodhi and Aditi Mishra State Forest Research Institute, Jabalpur (M.P.)

She explained that, Marketing system and structure are disadvantageous to the collectors. Lack of reliable market information- demand- supply, prices, markets. Unsustainable harvesting and trade of MPs has affected the raw material availability. MPs traded in raw, semi processed or processed forms and through n Market Information Service.

The objectives for Medicinal Plants To set up a regional market information service on medicinal plants for domestic market and To collect market information and monitor change in demand - supply and current market trends

The Activities under MIS are assessing marketing information needs, Establishment of zone wise network of data collection centers, Data collection, Data processing, analysis, storage and reporting, Data storage and management of historical data and Dissemination through printing of MIS Newsletter – Van Dhan Vyapar.

The medicinal plants were further classified into rise, decline and stability in the prices during the period. The Rise species includes– *Dioscorea hispida, Aegle marmelos, Litsea glutinosa, Terminalia arjuna, Commiphora mukal, Semecarpus anacardium, Butea monosperma*(seed), *Madhuca latifolia, Clerodendrum serratum, Cyperus scariosus, Tamarindus indica, Plumbago zeylanica.* The Decline species includes- *Psolaria coryifolia, Emblica officinalis, Buchanania lanzan, Celestrus paniculata, Woodfordia fruticosa, Asparagus racemosus, Terminalia chebula* (Harra), *Butea monosperma* (gum), *Embelia ribes, Rauvolfia serpentina, Andrographis paniculata.*Stable- *Ceasalpinia crista, Simplocus racemosa, Cassia fistula, Solonum indicum, Hedychium spicatum, Butea monosperma*(flower*) etc.*

He explained the Achievements; (1) Market information has been maintained in MIS software in computerized format for specific medicinal species for past seven years. Market trend reports for 90 medicinal species are available for users. (2) The medicinal plants whose demand and prices are high

and increasing have been identified. This will help policy makers in taking decisions on their conservation. (3) So far 28 issues of Van Dhan Vyapar have been printed.

4. Tropical Tasar Silk: A Potential NTFP for Forest Dwellers of Central India By N. Roychoudhury and K. C. Joshi, Forest Entomology Division,Tropical Forest Research Institute, Jabalpur (M.P.)

Silk is the only natural fiber, made of proteins and considered as "gift of nature", produced by sericigenous insects. Tropical tasar silk as one of the major components of wild silks, now popularized in India as "*Vanya Silk*", is one of the most important NTFPs. Tropical tasar silk is produced in nature by caterpillars of insects, *Antheraea paphia* Linnaeus 1758 and *Antheraea mylitta* Drury 1773 (Lepidoptera: Saturniidae)(Nassig, 1991). This silkworm is commercially exploited at mass level for wild silk production in India by aboriginals residing in the central plateau mainly, Jharkhand, Bihar, Orissa, Chhattisgarh and Madhya Pradesh and extending its fringes to States like Maharashtra, Andhra Pradesh, West Bengal and Uttar Pradesh. Since time immemorial, tasar culture has been extensively practiced by the forest dwellers of central India. The polyphagous nature of the tasar silkworm is a boon to the rearers that includes mostly tribal inhabitants. This insect has a long list of 21 host plants but reared mostly on sal, *Shorea robusta* Roxb. (Family Dipterocarpaceae), arjun, *Terminalia arjuna* Bedd. And asan, *T. tomentosa* W. & A. (family Combretaceae), in the natural forests or plants systematically developed in degraded forest areas. Sal forests provide base for the collection of a large quantity of naturally grown cocoons, which are regularly collected from Sal forests of central India by tribal communities residing in close proximity to the forests.

Raily is one of the richest sericigenous eco-races of tropical tasar silkworm, found in wild in the Bastar of Chhattisgarh. It feeds on Sal (*Shorea robusta).* The cocoons of raily are robust and have a high silk content. Raily is distributed throughout the Bastar and differs in size and weight form place to place due to ecological conditions, i.e., altitude, temperature and humidity. There is a mixed population (uni, bi and multivoltine) of raily, hence tribals get opportunity to collect the cocoons throughout the year from sal forests. Nearly, 70% of the total populations are tribal in Bastar, out of which 60% of the tribals are engaged in collecting the nature grown cocoons to get additional income. The collection of cocoons is very economical for tribals since it does not need any capital investment. More than 200 lakhs raily cocoons worth of rupees one crore are collected by the tribals in a year in Bastar (Sharma and Chaturvedi, 1992).

The Appropriate knowledge about Tasar is:

- The Tasar culture, i.e. rearing of Tasar silkworm and other associated activities related to the silk production
- Its sustainable management
- Can enhance productivity and concomitant improvement in terms of quantity and quality of silk production
- Economy of forest dwellers and rural people residing in close proximity of forests.

5. Sustainable management of NTFPs Through Their Non-destructive Harvesting By Dr. A.K.Pandey Non-Wood Forest Produce Division, Tropical Forest Research Institute Jabalpur

NWFPs play major role in the rural development of the country and contribute significantly to the food security, employment generation and poverty alleviation. Many species of NWFP are being harvested indiscriminately/unsustainably and furthermore, in many cases, management practices are insufficiently known or implemented. The commercially important species under great threat.

The forests of central India are source of several valuable important NWFP like-leaves, fodder, protein, fruits and nuts, gums, Resins, Dyes, Honey, Fibre and flosses, Mushrooms and Medicinal and aromatic plants.

In India Nearly 500 million people rely on NTFPs for their sustenance and livelihood. Earnings from NWFP may vary from few Rupees to several thousand rupees. In India NTFPs provide 40 % total official forest revenue and 55% forest based employment. In Rural Madhya Pradesh India NWFP provide 40 –63% of total annual income (Tiwari and Campbell, 1996). Sustainable harvest of NTFP species is defined, as 'the level of harvest at which a species can maintain its population at natural or near-natural levels and the harvest, will not change the species composition of the community'.

Harvesting	When?	Time
	How?	Techniques
	How much?	Quantity

Many NWFP species are highly sensitive to the level of harvest and fragility of the eco-system. NWFP is a critical lifeline for poor; they go in for more and more exploitative harvest when NWFP resources become scarce. Increase in demand and scarcity of resources. This ultimately leads to destructive harvest, which may even end up in endangering the very existence of the resource.

The Weaknesses for sustainable harvesting of NTFP includes over-exploitation of natural resources from their wild habitats; inadequate information on international demand and supply; inadequate research on sustainable harvest, collection, processing and value addition; Lack of infrastructure facilities for collection, drying, storage and processing; and lack of management planning.

The harvesting techniques, time and stage of harvest play a major role in the quality, productivity and sustainability of the NTFPs. Harvesting and post-harvest treatments are linked with the processing schedule, which varies from species to species.

Amla fruits should be harvested after maturity i.e. in December- January. 10% mature fruits should be left for sustainable harvest. The germination of new seeds was observed. However, survival was depended on protection. 10% fruited mature trees can also be left for regeneration. Protection played very important role in the sustainability.

Demand for *T. arjuna* bark, both in India and abroad has been growing rapidly. Presently the bark of *T. arjuna* is being extracted through unscientific and destructive harvesting practices. This is evident by many injured trees in natural habitat. About 95 percent of the requirement is met from the wild (Anonymous, 2001).

Bark Harvesting

Two methods of bark harvesting were studied:
Method 1: Tree girth was divided into 4 equal parts and the bark was extracted from one part.
Method II: Tree girth was divided into three equal parts and the bark was extracted from one part.

Data on growth (regeneration of bark) was recorded on quarterly basis. The bark's regenerative properties were determined by the time taken to regenerate the bark.

Extraction of bark can be done after two years from the opposite size of the blaze without destroying the tree. The medium aged trees give better quality of bark. Arjuna bark should be harvested from one quarter of the trunk. Bark should be harvested during December - January. Regeneration of bark varied

from trees to trees. Trees located near water source shown faster recovery. The active ingredients were found maximum in the bark of trunk. The bark of twigs and other branches contains lower active ingredients. The bark can be harvested after two years from the same tree.

Kalmegh

Non-destructive method (Cut Method). The herb yield was more in 2nd harvest. Cumulative yield was 2.5 times more in cut method. The cut Kalmegh regenerates after favorable conditions. The quality of herb was better in cut method

***Litsea chinensis* (Maida)**, family: Lauraceae)) is a small evergreen tree.

- As medicine, root, bark, leaves, fruits and seeds of Maida are used. According to Ayurveda, roots are cooling, aphrodisiac, galactagogue and useful in treatment of biliousness, burning sensation, bronchitis, fever, leprosy etc.
- Maida bark alone or in combination is used for treatment of joint pains.
  Maida bark is being used for Agarbatti making. Due to increase in demand and the trees were damaged for the extraction of bark.

***Embelia ribes* (Baividang)**

Family: Myrsinaceae has been used traditionally to help maintain a healthy skin and to support the digestive function. It is a climbing shrub and found in the forests of M.P. and Chattishgarh. It has a mild laxative activity and clinical studies have shown that extracts are effective against ascribes. It possess ant fertility effect and as an anathematic. There is urgent need to take up some more important NTFP species for the development of sustainable harvesting practices.

- Bark and leaves
- Fruits and seeds
- Gums and resins
- Rhizomes
- Medicinal and aromatic plants

Issues to be addressed

- Comprehensive assessment and evaluation of NWFP resource base
- Exploring and enhancing the potential of sharing experience and transfer of know how etc.
- Ensuring participatory management in collection and marketing
- Research on sustainable harvesting and marketing
- Identifying need for capacity building
- Sustainable and equitable utilization

Strategies

- Involvement of local peoples: Participatory approaches for inventorying the resource base, harvesting and utilization of NTFPs.
- The sustainable utilisation of NWFP requires the involvement of experts from a wide range of disciplines, including indigenous knowledge.
- Involvement of the private sector and non-governmental organisations in the harvesting, processing and value addition of NTFPs for enhancing employment and income generation to local people.
- Adaptive management practices for sustainable management of NTFPs.

- Monitoring of harvesting practices
- Development of standards for appropriate harvesting systems and techniques, reducing Environmental impacts and wastes (adaptive).
- Development of improved tools for collectors.
- Capacity building: Extension, training and education to improve forest harvesting practices, productivity and availability of NTFPs**.**

Policies

- Sustainable harvesting practices for important NTFP species
- Harvesting calendar of important NTFP species
- Species specific harvesting practices
- More R & D on sustainable harvesting

6. Development of Medicinal Plants Sector in Northeast India by B. K. Pandey, Scientist, Bio prospecting & indigenous Knowledge Div., Rain Forest Research Institute, Jorhat, Assam

India has a rich heritage of Indigenous knowledge/ traditional medicine from plants. Rich past alone is no guaranty for prosperous future. Unprecedented economic growth since the MAPs based industrial revolution has come at the huge cost of environmental degradation. Forests are degrading at an alarming rate and plants are loosing their natural habit and habitat.

The northeast region of India comprising eight states of the country covers an area of 262177 sq. km. The state of Northeast India with its rich tribal culture, bio-diversity and varied agro-climatic conditions in divergent altitudes. In the NE India the tropical, temperate, high altitudes and alpine plants can be growing. In Ayurveda about 2000 plant species are considered to have medicinal value about 71% mountainous & 29% valley. The states of Northeast India offer immense scope for the productions of various types of medicinal plants.90% herbs are collected from wild. Used in large quantity in cosmetics and other herbal formulations.

Socioeconomic Importance of medicinal plants

- India, vast number of rural population especially the forest dwellers depend on medicinal plants for subsistence, income & employment generation and cultural/spiritual needs
- Medicinal plant related activities provides employment during slack period of agricultural cycle as well as buffer against risk and household emergencies
- Collection, drying, processing and marketing have opened up new areas and opportunities for full or part-time employment of both men and women from rural and tribal communities.

The Present Global Trade of Medicinal Plants is projected Around US $ 62 Billion (WHO 2007). The demand can be meet out through grow them as single species, intercrop or multi-tier plantation. They can also be incorporated into agro forestry models

Bridging Demand – Supply Gap

- Mass production of quality planting material in the shortest period
- Medicinal plants have traditionally been collected from Forest.
- This has several limitations for meeting large-scale requirements.
- The effective solution lies with scientific methods of propagation and cultivation of promising medicinal plants.

Problems

- Ruthless exploitation of medicinal plants

- Not adopting proper conservation measure
- Technology not reached up to grass root level
- Organized market not available at local level
- Some important medicinal plants fall under threatened, rare and endangered category
- Time has now come to bring these medicinal wealth on the farmer's field and even in the homestead gardens of rural and urban areas

Medicinal plants can be preserved, multiplied and used for common human ailments. The active ingredients depend upon Medicinal plants have secondary plant metabolites of different composition are grouped as Alkaloids, Glycosides, Terpenoids, Steroids, Saponin and Essential oils etc.

The quality and quantity of active principal contents vary with different growth stages and harvesting & post harvest care. Superior clone/high yielding variety further expanded the scope of cultivation of medicinal and aromatic plants.

Requirements

- Developing the standards for quality and promoting them requires consensus and coordinated efforts.
- Most importantly it requires commitment at all stages.
- Development of Cultivation, harvesting & processing technology
- Packing up to end use
- Establishment of organized market at local level
- Training & awareness generation

Adopting Cultivation of Medicinal plants Begin with PRA & RRA, Problem ranking for need based extension, Source of unbiased, research-based information, Help with decisions making, Policy education and training, Designed education, Long-term commitment, Capacity to change and adopt medicinal plants farming,

Strategies for Conservation & Management of medicinal plants

- Micro-Level Management
- Resource Assessment
- Conservation Measures
- Scientific Collection and Processing

Transfer of technologies for economic important medicinal plants

- Cultivation of medicinal plants has gained immense importance in view of the changing scenario of economic development.
- Extension of Scientific cultivation technologies has immense potential to enhance productivity and in-situ conservation
- We have very less people who are skilled in technology
- We have even lesser people who would transform the technology in local languages
- Some how we should have more and more people, who can transmit appropriate skill to the field at local level.

7. Strategies for Sustainable Management of NTFPs and its impact on Rural Livelihood with special emphasis on women in Arid Rajasthan By Sangeeta ripathi , Rajesh Gupta and Ranjana Arya Division of Non Wood Forest Products, Arid Forest Research Institute, Jodhpur 342005

All the non-industrial products that are harvested from the forest are trees ,shrubs and other plants in the forests includes latexes and resins, gums, fruit and nuts, mushrooms, spices and oils as well as countless traditional and modern medicines. Among the most important NWFP regarding their value in international trade are medicinal plants (US$ 689.9 million), nuts (593.1), ginseng roots (389.3), cork and cork products (328.8), and essential oils (312.5) (FAO 1993). They are also called as "extractive", "secondary" and "minor" forest products.

Indian hot arid zone is spread out in 0.32 million km2 of which 0.29 million km2 are in northern-western portions of the country mainly confined to the states of Rajasthan, Gujarat and Haryana. The climate is extremely hot during summer season touching a maximum of 46o to 48o C and falls to a minimum of 0o to 3o C during winter season. Rainfall is limited and ranges from 100 to 350 mm in different parts and the decline in the rainfall pattern is from east to west. Vegetation in arid zones is very sparse with scattered thorny trees, shrubs and grasses, and is ineffective from soil and water conservation point of view. However, the state of Rajasthan is rich in biodiversity and endowed with a variety of NTFPs, which are collected, used and sold by the people living in the close vicinity of forest both in organized and unorganized way.

A large number of NTFP still do not enter the market and are locally consumed by producers/collectors and therefore, has no market price and are sold by the collectors at very low rate. For Example, In Jalore district children sells dry seeds of kumathia. @ 25/- per K.g. imilarly, Ber fruits are also sold by the local communities @ Rs. 10/- Kg. in unorganized way. In Jaiselmer district the fruits of *S. oleoides* are sold @ Rs. 4/- kg. Therefore, some market value of these products should be fixed and these values should be taken into consideration for calculating the economic value from NTFP collection.

Villagers sell the produce to the collectors at very low price or barter with the other household goods such as rice, kerosene, salt, cloth, etc. Raw NTFP are sold in the market / traders through middlemen who get relatively fare amount of the produce. Organizing community groups and facilitating the value addition and marketing of NWFPs through these can eliminate several links in the marketing chain. Fruits of some NWFPs perish soon and require immediate value addition process. The rural women should be imparted trainings of value addition techniques / food preservation such as making pickles, murabba, squash etc. through Panchayat level or some other local functionary. Self help groups in Soorvas, Gopalpura, Chadwas and Rajpura villages were constituted through Panchayats and the members were imparted 6 months training. Smt. Rami Devi and other self help group members are earning good income (Rs. 40/- per day) from the waste forest produce obtained from Taal Chhapar Sanctuary, Churu . These women for making mobile case, bowls, other utensils and ornaments now use Serkande, which were considered as waste products and used to burn by villagers. Orders from other districts are placed to “Mahila Vanya Shilp Vikas samiti” of Chadawas for various items made from non wood wastes and these items are sold in the market by RUDA for one year and after that these will be marketed by Gopalpura Panchayat.

Villagers’ information and awareness about buyers, the prevailing market price, and government rules is usually inadequate and gatherers seldom bring their produce to the town. Facilitators such as local forest department, NGO or even the village forest protection committee can play a very important role. These organizations can assist the gatherers about the market value and also help them to organize and have bargaining power.

Business Session III: Issues & Intervention on Sustainable Harvesting of NTFP

Chairman: Dr.R.L. Srivastava,Director,Afri,Jodhpur
Co-Chairman: Mr. P. Bhattacharya, Faculty, Forestry and Ecosystem Management, IIFM, Bhopal

1. Issues and intervention in Sustainable Management of NTFP in Orissa by Tamalika Chakraborty, RCDC, Bhubaneswar.

She gave the overview of the forest of Orissa. The Total forest area of the state is 48366.00 sq. km, which is 31.06 per cent of the total geographical area. (FSI report 2003). Orissa has the largest number of forest villages in the country i.e. about 29, 302. About 10 million people in different parts of Orissa are dependent on NTFP for their livelihood. More than 9550 VSS are actively involved in the protection and management of about 8430 Sq. kms of degraded forests. (Forest department, Orissa). There are about 12,000 self-initiated forest protection and management committees in the state as per estimations by NGOs. With PESA 69 MFP have been deregulated and brought under the purview of GP.

She shared some of the issues:

- High prices of certain NTFP sometimes lead to unsustainable harvesting methods such as uprooting, cutting the trees, removing the barks etc, which jeopardize the survival of the plant and its future production.
- Considerable values of those NTFP are lost because of pre mature harvesting.
- Sustainable harvesting of NTFP has not been properly understood.
- No control of GP over the resources in its territory.
- No governance mechanism to ensure harvesting of NTFP is not sustainable.

The reasons for interventions in sustainable management of NTFP are (1) to demystify the concept of scientific forestry. (2) To develop simple tools and techniques for the forest dependent poor for sustainable management of NTFP. (3) To document the traditional management practices of the forest dwelling communities on NTFP and to incorporate those knowledge in modern system.

The Processes involved for sustainable management of NTFP are discussion, meeting and training for capacity building of community and their institutions, NGOs, CBOs and FDs. Inventorying and mapping of the forest resources. Discussions, meetings with forest protecting groups to examine the level of dependency on forest. Documenting the present harvesting and management practices, ITK and conservation practices. Vegetation and regeneration survey at sample plots. Interaction with technical experts and institutions to develop tools on management practices.

The expected output will be guiding framework for forest dwelling communities that can be used as a handbook primarily for effective management of local forests integrating conservation of biodiversity and local livelihoods. It would guide the communities as regards to their role-playing and responsibility in planning and management of forests in an effective way. A model in which forest dwelling communities could plan, decide, control and manage their forest resources in a sustainable way.

2. ***NTFPs and Livelihoods Pilots for Plugging the Gaps of Orissa Forestry Sector Support Project by D.K Giri and Nivedita Giri.***

The intervention made by OFSSPC in NTFPs. In our developmental livelihood is broadly & loosely used. We are here to present our approach is based on a quantities of production, technology & market the link between the three define the viability of the approach, social mobility & institution building constitute the process. The OFSSP lunched four pilots covering different aspects of production, marketing & technology of NTFP. The first project is on enhancing livelihood & sustainable harvesting of medicinal plant, this deal with the issues of raw material & production, the second one is enhancing livelihood through processing tamarind, this introduces appropriate technology, and the third project is on creating NTFPs cooperatives for enhancing the livelihood of tamarind collectors this looks in the institution building. The fourth one is on Siali leave plate enterprises this looks marketing finally we will share a study conducted by OFSSP "Impact deregulation of NTFPs" the highlights are published with the title of a book let called "High lights of the greens".

He lists the seven dichotomies during the presentation and requested the gathering to put light on this.

- The big picture in bottom line we are talking about industrialization & livelihood, generation they would sit together. So big pictures verses bottom line.
- Supplied of raw material vs. ecological integrity, you have to maintain the biodiversity but you have to supply raw material for people for their livelihood.
- Traditional mode vs. industrialization process, which is, ruled technology verses sophisticated technology.
- Government verses civil society, when you talked about PPP it is not happening how can you bridges the gap, how can you make development by ignoring either civil society or government or market.
- Sustainable management verses Livelihood security
- Deregulation verses protection, ever one is talking deregulation once it is deregulated now you say its need protection because people are doing unscientific irresponsible harvesting, it is like giving power to Panchyat and telling them they cannot handle this power. We need to resolve we have to do deregulation empower people educate people to use the deregulated capacities

- The dichotomy verses Polices & practice, Sumakar said "An ounce of Practice is better than tones of theory or the tones of knowledge" what we say here do they reflect on the ground.

3. ***Sustainable Management of NTFP by Senthili Prasad, Keystone Foundation, the Nilgiris, Tamil Nadu -India***

He shared the studies in Nilgiries Biospheres Reserve. It is the first biosphere reserve declared in INDIA by Unisco .He shared the mission of Keystone working for .The mission is to work towards natural resources conservation & livelihoods of Indigenous Forest Communities through Eco-development initiatives. The geographical spread out of Nilgiries Biospheres Reserve is around Total geographical area – 5520 Sq km altitude ranges between 400 m to 2600 m. Around 46 Indigenous community & primitive tribe the Kurumbas, Irulas, Pathinaickans, Paniyas, Kotas, Todas, Sholegas, Malasars, Mudugas, etc. live in this region. It riches in flora, fauna and Very fragile eco-system. The areas of work are Apiculture, NTFP, Water Resources, Institution Development, Local Governance, and Enterprise Development, Marketing and Land Development.

There are six main forest types in this region that is Scrub woodland, Dry deciduous, Moist deciduous, Semi evergreen, Evergreen, Sholas & Grasslands ecotype. The land is occupied with different types forest and vegetation. The issues of the community living in the eco system:

- Indigenous people on the mainland lived a fairly undisturbed hunter-gatherer lifestyle.
- 8.3% of Adivasis – 200,000 in the NBR which is very low in comparison to the central Indian states
- Forest dependency for livelihoods is high
- Conservation policies put communities at crossroads.
- Reduced access to forests and outsider as encroachers on Adivasi lands.
- Encroachment of the non-tribal people.

He expresses his interest showing the maps, process because map shows visual kind of things which can changes people mind, it is useful when it come to certain decision making when it comes to GPS platform. The result obtains by identifying major & different types of NTFPs zones in the Niligiries districts in the forest using modern kind of instrumentation.

NTFP as a livelihoods option through Forest Conservation, Resource Assessment & Monitoring, and Augmentation Forest Resources. By doing the mapping identifying the NTFP zones and back ward linking with cultures, religious and the recourses used what kind of used its amount quantity & market values, the quantity there are using for their own consumption & marketing are done for Augmentation of forest resources.

The Value Addition for Indigenous Communities will be done through increased income & skill. The villages are taken for studies are included in GPS perimeter & through Reconnaissance Surveys it can easily pinpoint species composition in that area & types of vegetation & NTFP in the area.

There are certain problems NTFP Collection

- Destructive harvesting methods used to collect NTFPs.
- Over harvesting due to contractors hiring people from outside to collect NTFPs.
- Fruiting & other regeneration pattern change due to unsustainable harvest practices.
- Lack of incentives – Unsustainable harvesting

The study was carried out in two Taluks Kottagiri & Coonoor districts of Nilgiris this are the ancestral domains of the tribal groups for centuries there are accessing this forest for substance. So it has got so

importance from the culturally & traditionally. Unless we understand the stake of a simple plant they cant understand the ecology of that plant or the bearing capacity of the forest to sustain that kind of specie in the forest, then it is very difficult thing to have long term planning for the feature option, this is very important. He highlights the species facing pressure.

He explained the ecological status of *Phyllanthus Emblica.* He explained the Density of Phyllanthus spp. on types of Vegetation and Elevation, Harvest methods cited of phyllanthus in plots, Seedling density against grazing pressure, Seedling density verses Fire occurrence, No. of Collectors verses Fire Incidences, Grazing pressures along Kotagiri slopes with no. of cattle and families, Biotic Pressures in the regions – Kotagiri Slopes, and Extent of Land holdings verses pressure on forests.

NTFP - Village Value Addition Units are Candle making, balm making, drying and packing of NTFPs. Processing organic farm produce, coffee, pepper, silk cotton, green pepper and Training center for Adivasi groups in the NBR region

He concluded his presentation with the enterprise development and he explained the economic viability of the produces, chain of green shops promoted by Keystone, organic and health products, expansion to other product and turn over.

Business Session IV: Sustainable management Practice, Models & protocols.
DAY :2

Chairman: Sri Vijay Bahadur, Director, SFRI, Jabalpur
Co-Chairman: Sri K.A Mohammed Noushad IFS, CF, Kerela

1. Unsustainable practices in collection and trade of medicinal plants in central India: Its causes and impact on herbal medicines by Manish Mishra and P.C. KOTWAL, INDIAN Institute of Forest Management, Bhopal (M.P.) India.

He explained the important of the medicinal plants. Medicinal plants cater nearly 80% of the raw materials used in the preparation of medicines. The effectiveness of these herbal drugs mainly depends upon the sustained availability of genuine raw materials. Medicinal plant industry faces the problem of supply of quality raw material in appropriate quantity. Adulteration and substitution of non-genuine plants is reported to be rampant for want of assured supply of genuine medicinal plants as raw material. Medicinal plants collected from the wild may be contaminated by other similar looking species or plant parts through misidentification, accidental contamination or intentional adulteration, all of which can be called as unsustainable practices.Quality Safety, efficacy, of products plays a vital role in curing diseases. It has to follow the WHO guidelines for the quality, safety and efficacy of the herbal medicine. The WHO (2003) guidelines on good agriculture and collection practices (GACP) for medicinal plants is important initiative to ensure good quality of herbal medicines and environmentally sound cultivation practices for sustainable production and utilization of medicinal plants. There are reports of patients experiencing negative health consequences caused by the use of adulterated herbal

medicines. One of the major causes of adverse effects is directly linked to the poor quality of herbal medicines, un-genuine raw medicinal plant materials. This may be due to a number of reasons such as wrong identification of plant species, use of pesticides in cultivation, improper collection, storage of medicinal plants etc. In addition to patient safety issues, there is the risk that the growing herbal market and its commercial benefits might pose threat to more useful and commercially exploited species through over-harvesting. These practices may lead to the extinction of endangered species and degradation of natural habitats.

He shared the adulterations of the medicinal plants i.e. A treatise published two centauries ago (in 1820) on adulterations in food and culinary materials is the proof for this practice as an age-old one. Adulteration in market samples is one of the common drawbacks in promotion of herbal products. It is invariably found that the Adverse Event Reports are not due to the intended herb, but rather due to the presence of an unintended herb. Medicinal plant dealers have discovered the 'Scientific' methods in adulteration of such that it is very difficult to trace these adulterations

He shared the reasons for poor quality of raw material. Recently during the survey of different areas of MP, CG it was observed that due to increasing demand of Ayurvedic medicines & related raw materials, the traders as well as Ayurvedic manufacturers are using substandard medicinal plant material (raw) to manufacture herbal medicines. There is no strict application of rules, policy, Govt. check etc., in this regard. The Ayurvedic industries are manufacturing huge quantity of medicines to meet the increasing market demand without appropriate focus on the quality. Most of the people involved in the trade are substituting costly MAPs with other similar types of plants. The process is going on since last few years. The non-effectiveness of the herbal medicines leads to negative impact on growing Ayurvedic industry brings bad name to the Ayurvedic and does not provide the needed service to the ailing persons. The faith of the consumers on Ayurvedic medicines declines due to adoption of these malpractices

Adulteration problems in central India

- Adulterators not only mix similar species but also cheap and inferior quality materials such as rotting or substandard things, which can be easily procured at cheap rates.
- The safed musli being adulterated with lesser-priced *Asparagus*, rotting Aonla powder in triphala, and so on.. as a result, the Ayurvedic medicines lose their efficacy.
- Adulteration is seriously affecting the credibility of Ayurvedic system and medicines.
- Cases of adulteration of Medicinal plants /herbal drugs with un-genuine herbal drugs indicate the need to establish good practices for collection, cultivation, storage, transport and manufacture of herbal medicines.
- In recent years, good agricultural practices have been recognized as an important tool for ensuring the safety and quality of a variety of food commodities.
- The medicinal herbs from the wilderness areas suffer on account of over harvesting, pre-mature harvesting and destructive harvesting. There is a need of clear guidelines and policy/legislation to prevent such unsustainable practices.
- Medicinal plants should be harvested during the optimal season or time period, without damaging the mother/base plant leaving about 1/3 in situ for ecosystem consumption to ensure the quality and sustainable availability of raw medicinal plants for quality herbal medicines.

Demand of organically produced medicinal plants

- Now a day there has been increasing demand of organically produced MAPs material in the International markets.
- The excess use of chemical fertilizers not only affects the quality of medicinal plants but also the alkaloids /active ingredients present in them.
- Govt. as well as big companies is encouraging cultivators for organically produced plants raw material.
- This emphasizes more collection of medicinal plants from natural forests

Measures to prevent adulteration

- The local suppliers are generally not literate about the technical knowledge of the plant and not fully aware about the spurious supply. Sometimes even scientific community and traditional physicians are also not fully aware of it.
- Therefore awareness at field level should be given to all stakeholders dealing in raw medicinal plants.
- World Health Organization (WHO), in its publication on quality standards for medicinal plant materials, recommended rejecting any batch of raw material, which has more than 5% of any other plant part of the same plant (e. g. stem in leaf drugs), even though they are derived from the authentic plant.
- The suppliers and traders should be educated about the WHO standards.
- Based on these standards, adulteration whether, intentional or unintentional, is undesirable and should be rejected.
- The statutory provisions would ensure the quality standards and violation of which leads to punishment, these are imposed by authorities and are necessary to do business.
- Detection, assessment, understanding and prevention of adverse effects or any other possible drug-related problems while a herbal drug is being used need to be monitored under pharmaco-vigilance to strengthen credibility of herbal drugs.

- In order to ensure that the processing operations such as grinding of the material did not contaminate, a limit test for foreign organic matter and Microbial limits would ensure the non-contamination of extraneous matters.

He concluded his presentation with some conclusions i.e. Results indicate that herbal drugs are adulterated both intentionally & unintentionally. Adulteration was observed in all the selected species, which have commercial value. The stakeholders resort to unsustainable practices and use adulterated raw material both intentionally as well as unintentionally. Some of them were also involved in malpractices like coloring of raw material, mixing of similar looking species as well as using infected & old raw material of same species. Adulteration was also observed in the cheap raw material like Aonla and Satawar. Immature root/tuber/fruit collection was observed in the study areas. Major reasons for adulteration are mis-identification, non-availability of plants in required quantity.

2. A model of Sustainable Harvesting of Satawar (Asparagus racemosus) and Livelihood Promotion in the Chambal Ravine of Madhya Pradesh) By P. Bhattacharya, Faculty, Forestry and Ecosystem Management,IIFM, Bhopl

He shared a study done at Seopur region at Chambal ravine; Madhya Pradesh. The study was on "A Model of Sustainable Harveting of Satwar (Asparagus Racemosus) and Livelihood Promotion in the Chambal Ravine". Chambal ravine is extending every year at a very rapid pace & Climate change adaptation for local community is a challenge, require integrated inter disciplinary approach.
He shared some issues of Chambal Revine i.e.:

- Fragile soil structure and erosion, devoid of humus layer.
- Inaccessible area – rugged terrain for reforestation activities.
- Susceptible to fungal infection, termite and pests.
- Low Rainfall, low water table (100 m).
- High Biotic pressure.
- Natural regeneration of plants is very tough.
- Strong failure history-revert back to ravine.
- Magnanimity-vastness-extending in nature.
- Socially backward community primitive tribal group (PTG)- Sahariya's, high illiteracy (70%).
- Uncultivable agriculture conditions and unemployment.
- Raising antisocial and criminal activity.

ICCF in an experimental pilot mode selected 5 villages in the Birpur Chambal area for reclamation of ravines through the support of DST. The Objectives of the Project are (1) to promote cultivation of asparagus in Chambal ravine areas involving local communities. (2) Sustainable harvesting and scientific management of naturally available asparagus in the ravine areas. (3) Value addition, income generation and development of market linkages to local tribals. (4) Institutionalizing and skill development of the local community for the sustaining future activity and livelihood generation.

Poverty Alleviation Strategy could use Biodiversity (NTFPs) as a means of Livelihood generation. The Objective of CBD is (1) Conservation of Biodiversity, (2) Sustainable use (3) Equitable sharing of benefits.

The Intervention Steps of ICCF are Involvement of Communities through PRA, House holds survey and Capacity Building, Problem Identification and Drawing of Problem Tree and survey of ravine area, Sensitizing and Motivation for Solving the Problems, Locally and supplying extension material, Creating Need Based Institution and capacity building for Implementation, Continuity in project activity with involvement of local youths.

The ICCF's Interventions in Birpur By transplantation of Satawar & Gugul efforts by the Community in the Chambal Ravines of Birpur. An effective intervention awareness generation and capacity building of the local community plays a role. Mass awareness campaign, Capacity building for sustainable harvesting to check the damages of existing vegetation, Systematic Design developed and distribution of IEC material, Hands on Traini, Combined Field Visit carried out to mobilize the mass.

He narrated certain steps for scientific harvesting. After selection of a mature *Shatawar* plant, while harvesting its roots following steps are followed:

- Cleaning around the climber.
- Soil digging.
- Selection of Tuberous root.
- Tuberous root cutting.
- Replacing the dug out soil.
- Tuberous root cutting.
- Replacing the dug out soil.

The Plantation Efforts done in selected ravines to encourage the local community (mainly Sahariya Tribes) to raise household nursery of the locally available vegetation on which people are economically

dependent and have high biotic pressure. The intention was to get community involvement. The saplings raised by the communities were planted in the ravines in these five villages and were protected by the people. Characteristic of Species is also required for the better survival of the species after plantation Species selected must be adapted to temperature, length of growing season, rainfall, humidity, photoperiod and other environmental features

The species selected were Asparagus, Guggul, Neem and fodder grass species this effort recorded a survival rate of 60-70% of the sapling. No. of Shatawar , Guggul & neem seedling planted in 2003-2006 is 13000,1500,750 respectively. Income from sale of Shatawar in 2006 (in Rs) 96060/-.Sheopur district reported highest child malnutrition death last 5 years, it is suggested that *Satawar* root has tremendous nutrition potential and it can be used in development of large scale supplementary high valued nutracuticals and need for distributed through MCH (Mother and Child Health) programme and Balwari programme for school children.

Additionally in order to secure the livelihoods ICCF facilitate communities through holistic approach providing need based micro finance and value addition facilities. The Centre also facilitates their other problems like support to schoolchildren. It strengthened the knowledge system of the tribal healers through opening formal clinic for them. Departments to come close to the people. Establishment of Micro Enterprise in Sheopur by:

- SHG Formation
- Savings and Credit Started
- Feasibility Study
- Root grinding and pulverize machine installation

At the end marketing of Final Products, the reclamation of ravine ICCF's made efforts in Chambal Area; it adopted feature strategy by partnership strength between state & local people.

He concluded his presentation with some suggestions to make more improvement in the ravine:

- A local level forest based youth entrepreneurial school must be developed on a project basis to train potential youth identified from the area on NRM base activity linked with IGA.
- Very focused reasonably big project on *Satawar* and *Guggal* based integrated project for their regeneration germ plasma conservation and should be started by involving local community need to be immediately implemented.
- For value addition, processing and product development especially at local level, need to start, raw selling to be discouraged, and Micro enterprise model to be followed for proper marketing.
- Micro credit, SHG concept needs to be promoted.
- Coordination, convergence of financial resources between all line department's forests, agriculture, Panchayat and rural development etc.
- Policy development for local area specific natural product has to be emphasized.

3. Sustainable livelihood through NTFP, Group Certification of MADP- Dhamtari Model by Sunil Mishra, DFO, Dhamatari.

Dhamtari Forest Division having 2125 Sq.Km. of forest area, 278 JFMCs, 401 Villages situated within periphery of 5 Km. 50% populations 4 (lacs) tribal population directly dependent of forests. The Rich bio-diversity of NTFP and In PPA Survey species belonging to 321 genera and 90 families.

Under IDRC Canada Project Organic Certification of MADPs started in 2004-05.Target species identified according to abundance and market demand.10 species identified - Aonla, Harra, Tikhur, Baichandi, Kalmegh, Dhawai flower, Sugandhi, Nagarmotha, Baibirang, and Satawar.

The objectives of the model are Control resource management techniques, Control resources economically, Addresses public concerns on environment, Improve livelihood opportunities and Maintenance of sustainable ecosystem.

The advantages of models are to enhancement of forest productivity, Bio-diversity, hydrological cycle, eco-system and soil fertility, Increased returns compare to uncertified forest produce, Protection of threatened and endangered species, Develops and improves producers' / collectors' image and Improvement in condition of producers' / collectors'.

Group manager is responsible for maintenance of proper records and internal documents of group scheme. Although initially there is no administrative and technical staff but there is provision for these staff. The Standards committee is a body of 6 experts, which includes a senior forest officer, an anthropologist, a Certification expert, a knowledgeable local collector and two product quality experts (traders). Dhamtari Forest Division appoints them.

The Generic Standards for sustainable collection are Identification of proper area, Study of Biotic pressure like fire, uncontrolled grazing, felling of trees, Incidents of fire, Training of collectors, Collection techniques, Collection time, Hygiene instrument qualities, Regeneration, Transportation, Legal norms, National and international parameters.

The generic standards for storage includes Requirement of GMP, Free from rats, birds and other creatures, Proper ventilation, Use of Wooden/ Bamboo platforms, Use of clean, dry, non-polluting, undamaged and disinfected bags, Proper labeling with collection date, name of collector, batch no. etc. Stacks should be 6 inches away from walls, No electrification in the Godown.

The standard quality assurance through testing includes Primary testing should be done at the location level itself for visual grading purpose. For this purpose Fair Average Quality (FAQ) norms should be considered which are given by the buyers / industries. Lab testing should be carried out in accredited laboratory based on Indian Pharmacopoeia Standard and BIS Standards etc. Lab testing for Active Ingredients (AI) or alkaloid contents should be done for certain MADP and its products.

The Sustainable harvesting Methodologies developed during the process of certification will definitely lead to the right approach for Aonla, Harra, Kalmegh, Baibirang, Tikhur, Baichandi, Satwar, Anantmool, Nagarmotha, and Dhawaiphool.

The future vision includes getting a logo for Certification, to maintain the chain of custodians such as traders, processors, retailers etc., Development of organic standards along with NTFP for agricultural crops and vegetables, Provision for Lab testing facilities and Complete control over the process of Certification.

4. NTFP Mangement: Some Issues & Challenges by C.P.Rai, R.K.Shrivastav, Dr.CHITRA SHRIVASTAV & Dr.S.C.BISWAS

He raised a very fundamental question on his presentation *what is NTFP?* & *what are to be included in NTFP?* The types of collection for NTFP are Incidental collection, Recreational collection, Ceremonial collection, Subsistence collection and commercial collection. The collectors includes the landless poor,

Forest dwellers and shifting cultivators, Small farmers, Pastoralist and herders, Old people young children and women folk**.**

Inclusion of NTFP management in working plan is crucial. Working Plan is the simplest possible statement of what is known about the working plan areas; its configuration, soil, climate, vegetation, its possibilities; what has been done in the past, what should be done in future, how it should be done and what record should be kept (Beverta2002). In M.P. various steps have been taken for inclusion in working plan. WPO are identifying the area and placed into different category. Putting temporary restriction for uncontrolled harvesting for different items for different period. eg gum (Kullu),bark(Arjun,Maida),fruits(Aonla,Char) and seeds(Sal). In some working plan provision are made to put temporary ban for extraction of threatened species. In M.P. various steps have been taken for inclusion in working plan. WPO are identifying the area and categorized into different category. In some working plan sustainable harvest practices for various species are included. Area has been identified for ex-situ conservation and in-situ conservation in some working plan.

He described what more to be done. Assessment of total yield and annual yield (like growing stock in timber production) is required. Involvement of stakeholders in NTFP management should be made mandatory. A sufficient quantity of these products is available outside the forest area. Their inclusion and assessment is required. Some time confusion occurs due to name.

He describes what we are doing i.e. regulation including extraction and in transit permit. Preference is given to subsistence oriented NTFP management.

5. ***Resource Quantification and Determination of Safe harvesting limit of NTFP's for Sustained supply and Management, By DR. Manmohan Deborial J.R.Assistant Professor (Forestry),Department of Forest Products and Utilisation, Jhalawr (Rajasthan)***

Non Timber Forest Products (NTFP) are one of the important resources of Indian forests and have major contribution to national income. The dependency of tribal on these products is unaccountable which not directly reflects in forest revenue and thus share in national GDP. The diverse use of NTFP's made them item of interest to all forest managers than the timbers. Herbal plants are major products extracted from wild as it fetches better market price. Fruits, nuts, tubers, leaves etc. collected from different plants by locals. Extraction of these NTFPs is done by unscientific methods and unregulated resulting in depletion of valuable forest resources.

Quantification and Determination of safe harvesting limit for different NTFP's in different regions will help to set guidelines for their regulated and sustained extraction. The common method adopted for this purpose is quantification of NTFP resources, their rate of extraction, and rate of replenishment. Thumb rule is that the rate of extraction or harvest to be kept below the rate of regeneration or replenishment. Harvest of roots, tubers, fruits and flowers adversely affects regeneration of the certain species. In case of medicinal orchid Safe/ optimum harvesting intensity studies showed that in *Habenaria intermedia* harvesting up to 40% and in *Microstylis wallichii* harvesting up to 60% was considered safe in view of replacement rate.

Thus, inventorisation of NTFPs in different forests and setting the maximum harvesting limits for different products can check the erosion of forest resources. Tribal cooperatives, forest corporations and other agencies engaged in NTFPs collection and marketing be trained for scientific collection and management. The concept of total bans for collection neither good for the forest dwellers nor for

scientific management. Detailed management plan for NTFPs should be prepared separately in forest working plan rather than just specifying the collection of NTFPs in present form.

He shared a study on "NTFP Resources Assessment" done at the Chakarta, Deheradun, and Uttaranchal. The presentation started with defining "NTFP/NWFP" terminology means any goods of biological origin other than timber/wood derived from forests, other wooded land and tree outside forests. (FAO, 1999). There are different classifications of NTFP at different spears: at International trade- it classified on the basis of Product type & end use. Biodiversity inventories- scientific names Ethno botanic studies- local end use Forest and Forest based assessments-plants forms and parts Wildlife ecologist- scientific name and groups Land users/ Resource managers- management characteristics

He focused on different related approaches in NTFP resources assessment

- Biodiversity inventory: A list of biological entities from a particular site or area
- Social Science techniques: For participatory approaches to gain local involvement and providing biometrically sound information about the resource- RRA, PRA, PLA
- Cultural or Anthropological approaches:
- Ethno botanical inventory: Quantitative ethno botany
- Economic methods: Marketing and adding value, BC ratio in NTFP management

The methodology adopted for NWFP inventory

The samplings were taken on the basis of population distribution or variability. There are specific feature of NTFPs that mean new method of inventory, monitoring and yield determination are required on the basis of

- Rarity
- Imperfect delectability
- Seasonality
- Mobility
- Determination of yield for non-destructive harvesting
- Development of theoretical basis for sustainable NWFP harvesting.
- Local knowledge and participatory inventory

He concluded his deliberation by giving a conclusion on this issue that NTFP resources assessment is important for Quantification, conservation and sustainable utilization. Determination of safe harvesting limit of NTFPs producing species in different forest types or ecological zones will improve their regeneration and stocking. Rational harvesting with safe harvesting intensity in natural forest to be followed for maintaining gene pools the species for future use. The species in case -In-situ conservation of *Habenaria intermedia* to be promoted in open and partial shady places with high organic matter sites on SE aspect and *Microstylis wallichii* in shady, damp organic matter rich pockets in NW aspect to be promoted. The safe harvesting limit for these species to be followed to check their extinction.

6. Shrinking of Riparian Ecosystems: Causes, Effects & Remedial Measures with respect to Medicinal Plants By Hitendra K. Ram, Minor Forest Produce Processing And Research Centre (MFP-PARC), Bhopal, Madhya Pradesh.

He started his presentation by drawing the attention another aspect of sustainable management, sustainable harvesting is not complete solution for NTFP management, we have to think about other resources management like Riparian Ecosystem. Narrow zones near water bodies connecting land and a flowing surface is known as "Riparian Zone". Plant, animal and other living creatures found along the

river margins are called as Riparian flora & fauna, together they combine to form "Riparian Ecosystem". Riparian Ecosystem harbours certain species of flora &fauna, which are characteristic of that ecosystem. Species succession largely depends on the life-history strategies and recruitment process of nature. Species, which have opportunistic traits, will be found during early stages, while species, which have less opportunistic traits, will be found at later stages.

He described the causative factors i.e Constructions and allied activities: Causes blockage of the river at many places and these results in the alteration of flow of river and serious damage to the riverbanks. Encroachment alongside the river basin: Construction of private farms, resorts and parks related with tourism and other similar activities. Quarrying and Mining: Destroys the whole riverbank thereby severely affecting the riparian zones. Tree cutting of riparian zones: Cutting of the riparian trees for agriculture, firewood, fishing and other personal purposes and also by tourists. Grazing of cattle: Riparian zones are always rich with herbs, grasses and seedlings. Cattle were freely allowed to graze in the riverbanks and sand beds. Illegal Fishing: Illegal fishing is a major issue using either long fishing nets or by poisoning the water bodies with heavy doses of pesticides. Fire: Fire damages were severely noticed in the plantation areas and especially areas near to residential zones. Tourism: Intrusion of tourists to the riparian forests and their activities like, bathing, fishing, and cooking are found to damage the riparian vegetation. Agriculture in the riparian zones: Seasonal agricultural practices of paddy, banana, and legumes are found at many sites throughout the area and in some places alongside the water body. Industrial Pollution: Discharge of several sewage effluents in river streams directly without any treatment, causing severe damage to riparian ecosystem. Global Warming: Global temperature is expected to increase by 1.1 - 6.4oC in next 50 years, threatening shift in climatic zones.

The short-term objectives are

- Securing distorted patches of riparian habitat.
- Managing the catastrophic events causing damage to habitats and the species of concern.
- Involvement of all the people those who are exploiting the system as well as people who are effected due to the distortion of such zones.
- Restoring the flora of Medicinally Important Plants.
- Avoiding the cattle grazing by fencing the riparian area.
- Shunning developmental and infrastructural activities in and around the riparian zones.
- Strict implementation of law and time-to-time monitoring and evaluation of such established and conserved zones with the help of NGOs and other governmental agencies.

The Long Term objectives are

- By awareness generation and strict implementation of law with local participation for conservation.
- Bridging the riparian patches together of the degraded riparian zones.
- Improvement and expansion of existing riparian habitat to the maximum extent by planting, protecting and maintenance of the continuity of vegetation.
- Establishing new riparian zones on government as well as private lands.
- Giving special importance to riparian ecosystem in forest working plans and also including these aspects in the training curriculum of all levels of foresters.
- Also help should be sought from allied non-forest departments concerned with the development of the area, like Panchayats, agriculture & horticulture department, etc.

He concluded his presentation with Recommendations

- To avoid the complete loss of flora some tree species like *Terminalia arjuna*, *Acacia catechu*, must be planted.

- Littoral plan for newly constructed dams.
- Riparian ecosystems are integral part of our earth; their losses will misbalance the whole biosphere. Therefore, management and restoration of riparian ecosystems should be done to restore the balance and thereby increasing the quality and stability of our earth.

7. Afforestation Activities at NTFP By Vir Kush,,Sr. Manager, NTPC, Delhi

NTPC is an integrated Power Major with presence in Thermal, Hydro, Gas, Coal Mining, Oil and Gas exploration, Power distribution and trading with plan to enter into nuclear power development. Involvement on sustainable Environmental and Social Development right from the inception of the organization. NTPC has 27 Power stations, 27904 MW installed capacity, 20.71% share of total installed capacity of the nation, 29.25% power generated and Capacity utilization (PLF) 89.43%. The social issues are addressed under CSR and NTPC Foundation. Environmental issues are addressed under EIA, EMP and Afforestation. Afforestation activities includes Planted 182 million trees, Covered about 12000 ha of land, Green cover at each station is between 19-30% of land, Developed theme parks (Harbal, Medicinal, Nakshtra vatikas, Rose etc…), Developed water bodies that attract migratory bird and some of the wild species,

The Energy plantation More than 5 lakh plantations of Pongamia and Jatropa, Installed a Demo oil extraction unit at Dadri in collaboration with IISc. Bangalore, adding few more demo plans for educating local populace on energy plantation

Presently NTFP involved in Potential, methodologies and processes for revenue generation from plantation already created at NTPC stations. Assessing Net value to existing afforestation by assessment of tree (green) cover, tree density, and tree biomass and tree productivity. Certification of Mature trees and replacement process by high Carbon Dioxide sequestration and oxygen species, Medicinal trees and plants, Bio fuel plantation. How to get the support for developing Wasteland/degraded, undulated forestland with ash and plantation thereon? To develop Afforestation Guidelines for NTPC. To initiate Study for assessing Net present value and Tangible and Intangible benefits of Green cover created. Preparing and implementing tree cover management plan.

8. Sustainable Management of Bmboo Forest in Orissa by B K Sahu, Manager (Plantation), (Forest Organisation) JK PaperLtd, Rayagada, Orissa

He shared the economic importance of bamboo. 22 Million Culms used for House structure by 5.5 Million of people in Orissa. Spread over 16 lacs Acres of Forest Land creating 55 lacs of persondays / Year. 25 lacs Person days Employment by the Paper Industries / Year and 5 lacs Artisan depend on Bamboo for their Livelihood. It helps in conservation of forest through timber substitution, as an efficient Carbon sink, soil and moisture Conservation. Through Bamboo based Agro-forestry system by maintaining the fertility of adjoining Agricultural lands, and as a direct food source (Edible bamboo). 22 Million Culms used for House structure by 5.5 Million of people in Orissa / Year
He shared the reasons for Depletion

- Shifting cultivation by Tribal Population.
- Theft of Bamboo from Forest areas.
- Forest Fire.
- Heavy grazing by large domestic cattle population.
- Gregarious flowering followed by poor germination.
- Poor investment in protection and Maintenance by sate Forest Department on Bamboo compared to Teak and other timber species.

He concluded his presentation with the recommendation

- The 1st year juvenile culm mostly used by the forest dwellers as a staple food (Known as 'Karadi') should be avoided (Mushroom cultivation).
- Rural artisans should be trained to use 3rd & 4th year culm instead of 2nd year culm.
- Policy changes and institutional mechanisms for providing rights to plant and harvest forest produce to forest dwellers/rural people.
- Viable model for Public Private Partnership (PPP) for development of degraded lands which offer tremendous opportunity for rural employment and livelihood
- Development of strong market linkages and cluster approach for sustainability of small processing units.
- Financial support and incentives for small artisans

Open Discussion

Giri : What is recreational collection and incidental collection?

Manmohan Deborial: when you visiting some area or passing through an area and collect NTFP is called incidental collection. When you are deliberating attempted to go there to know about the plant & properties and collects called recreational collection ,there are a small difference between this two.

Summing Up Future Plan of Action and Valediction

Chairman: Dr.PK Shukla, IFS, Add. PCCF, Bhopal
Co-chairman: Dr. A.K Mandal, Director, TFRI, Jabalpur

At the end of the presentations, Dr. A. K Pandey summed up the deliberations of the two- day workshop. He further spoke that the convergence of views and ideas during the workshop will be able to change certain policies and that RCDC will be able to come out with the recommendations, which can

be pursued with the government. He thanked all the participants for their brilliant presentations and all the participants for their valuable contribution during the two days. Finally he thanked RCDC for its efforts in organizing the workshop and invite participants from all over India.

Recommendations

At the end of the presentations and deliberations of the two- day workshop the following recommendations emerged, which can be pursued with the government and other, concerned.

Recommendations relating to objective no. 1

- Forest management has so far largely concentrated on timber. There is now an urgent need of mainstreaming of NTFP in sustainable forest management.
- Steps should be initiated for developing appropriate resource assessment methodologies and building up of authentic systematic and reliable database.
- There is a need for development of Community based resources assessment methodology so that the communities could be involved in assessment of the resources.
- NTFP is generally considered as open access resource. For its conservation and sustainable utilization, non-destructive harvesting regime should be developed.
- Regulatory mechanism over NTFP resources has been one of the major issues that came out very prominently during the workshop. Especially in the state of Orissa there is no regulatory mechanism to check the destructive harvesting of NTFP. Hence there is a need for modernized and harmonized regulations at the national level for better co-ordination among states and other stakeholders for improved management of NTFP.
- Forest areas rich with NTFP including medicinal plants in different agro-climatic zones need to be identified; genetic potential must be exploited in case of sustainable management of NTFP.
- In situ conservation along with enrichment plantation need to be promoted with native plants with active community participation.
- The system should also focus to promote cultivation of NTFP in revenue land in order to make facilitative and promotional mechanism.
- There is a need for development of strategies and plans for species recovery in respect of threatened species.
- Bio prospecting, cultivation of medicinal, aromatic and dye plants (MADP) should be adhered to as there is no complete knowledge of the forest resources. Furthermore, to avoid bio-piracy, bio-partnership should be focused and the benefits accrued should be passed to the local communities.
- Concerted efforts should be made to address equity-based benefit sharing mechanism.
- Focus on traditional knowledge and IPR issues like patenting should form an integral part of NTFP management.
- NTFP research focus should on the issues enumerated above.

Recommendations relating to Objective no. 2

- NTFP holds promise of significant contribution towards livelihood security in interior areas. Value addition/primary processing, certification, ecolabelling and green marketing can further augment this aspect.
- Development of micro-enterprises and other village level interventions for entrepreneurship development focusing on the enterprise governance, pricing and marketing to ensure sustainable harvesting should be one of the areas of prime concern.
- A system should be developed for registration of manufacturers, Traders and Primary Collectors at the state/district level even if they are small and marginal enterprises.
- There should be adequate penal provisions for collecting of NTFP through destructive harvesting or commencing collection before the stipulated date.
- At present there are no systematic records on quantum of NTFP harvested, process of harvesting etc neither with the Forest Department nor with the Panchayat Raj Institutions. No single body is having a clear or authentic database on it. This status needs to be improved upon.
- State maintains species-wise data for few species only; the others are clubbed as 'miscellaneous' species.. Thus, supply information of more than 800 odd species in trade is not available. Therefore, for proper record keeping, effective MIS should be developed
- Records need to be maintained in vernacular as well as in trade name; botanical names for identification of species. Some kind of photographs, color and size of the species should also be maintained.
- Proper authentication mechanism (quality and time period) for traded species should be in place.
- Since harvesting figures are usually taken to be the same as the material exported from the field units, maintenance of records of harvest from the wild should be made mandatory even if in some states where the Forest Department is not directly related with NTFP trade.
- All efforts in terms of grounding of 'Non-destructive harvest' should be made through scientific research input by prioritizing and developing appropriate harvesting protocols.
- A large-scale capacity building programme for management of NTFP should be undertaken on priority basis.

Recommendations relating to objective no. 3

- For overall coordination of issues relating to NTFP, a national body/mission should be constituted which apart from policy directions, may explore the possibility of enhancing financial resources for the development of NTFP sector including earmarking of specific funds for research.
- Various Central Ministries are now promoting schemes relating to NTFP. The proposed national body should act as a clearinghouse for the same.
- NTFP should be incorporated in forest working Plans.

- The Working Plan Code should very strongly focus on sustainable management of NTFP. Though National Medicinal Plant Board is in a process of linking NTFP with working plan, it needs to be pursued vigorously.
- 'Negative Lists' to be developed into 'Action Lists' to ensure active conservation action. System of codes used for export to be improved to include species-wise records
- Certification of NTFP should be taken up on priory basis.
- Private sector/public sector using forest resources should be motivated to invest from their profits in forest extension activities, like regeneration studies, funding research studies, etc.
- Massive awareness campaigns and capacity building activities for forest users need to be organized for sustainable harvesting of medicinal plants through active involvement of NGOs, Panchayats and other actors.
- Well-defined linkages need to be established between FD, traders, manufacturers and Ayurvedic Institutions.
- Forest training curriculums need to be revised and should also focus on sustainable management of forests and NTFP.

Annexure 1: Participant List

Sl. No	Name & Designation of the Participants	Address
1.	R.D.Kamboj	General Manager

		Gujarat State Development Cooperation, Varodara, Gujarat
2.	B.D .Das	J.K.Paper Mills, Rayagada, Orissa
3.	Pandurang Hegde	Chipko-Appiko Movement, SIRSI, Karnataka -581401
4.	K. Senthli Prasad	Keystone Federation, Nilgiri, Tamil Nadiu
5.	Vir Kush	Sr. Manager, NTPC, NFL Building Noida, Delhi
6.	Md. Gufran	Genetic Division, TFRI
7.	M. Srinivasa Rao	Deputy Conservator Of forest, Pandharkawda Forest, Maharastra
8.	K.A.Mohammad Noushad	CF, Kerala
9.	B. K Pandey	Scientist, RFRI, Jorhat, Assam
10.	Alok Yadav	Scientist-B, RFRI, Jorhat, Assam
11.	Yogeshwar Mishra	Scientist-D, TFRI, Jabalpur
12.	Dr.V. Nath	TFRI.M.P
13.	Prof. P. Bhattacharya	IIFM, Bhopal
14.	Dr. Fatima Shirin	TFRI, Jabalpur
15.	Dr. M. Kundu	TFRI, Jabalpur
16.	Rajat S.Pal	TFRI, Jabalpur
17.	Dr. (Mrs) S.K.Saini	SFRI Jabalpur
18.	Dr. (Mrs) Nivedita Giri Pradhan	OFSSP, Bhubaneswar, Orissa
19.	Dr. D.K. Giri	OFSSP, Bhubaneswar, Orissa
20.	Dr. Pratibha Bhatnagar	SFRI, Jabalpur
21.	Aditi Mishra	SFRI Jabalpur
22.	SP Tripathi	GCR, TFRI, Jabalpur
23.	Sunil Agarwal	Coordinator (F), TFRI, Jabalpur
24.	P.K Singh	Director, SIDA, Jabalpur
25.	K.C Joshi	TFRI, Jabalpur
26.	Dr. S.A. Ansari	TFRI, Jabalpur
27.	P. C Kotwal	Professor, IIFM, Bhopal
28.	Dr. P. B. Meshran	Scientist, TFRI, Jabalpur
29.	N. Roy Choudhry	Scientist-D, TFRI, Jabalpur
30.	C. K. Joshi	Scientist-D TFRI, Jabalpur
31.	P.N. Mishra	TFRI, Jabalpur
32.	S. K. Mishra	DFO, Dhamtari
33.	V. Srinivas Rao	CF, Chattisgarh
34.	Dr. P.K. Shukla	Additional. PCF (Dev) Satpura Bhawan, Bhopal, MP
35.	Vijay Bahadur	Directors SFRI Jabalpur
36.	Mrs. Jyoti Sani	Asstt. Professor Govt. M.H College of Home Sciences Jabalpur
37.	Dr. Abha Tiwari	Professor Govt. M. H. College of Home Sciences Jabalpur
38.	Mrs. Priti Neb	Consultant, Bhoj open University, Jabalpur
39.	Prof. Uma Neb	Govt. M.H. College of Home Sciences Jabalpur
40.	Bijay Ku Sahu	JK Papr Mills Ltd, Rayagada, Orissa
41.	Dr. S. C Biswas	Res. Officer, TFRI, Jabalpur
42.	Dr. Hitendra. K. Ram	MFP PARC, Bhopal
43.	PC Dubey	CF (R & E) Rewa
44.	A.K Chattopadhya	TFRI, Jabalpur

45.	Dr. R. L. Srivastava	Director, AFRI, New Pali Road Joadhpur, Rajastan
46.	Prof. Surendra Singh	Deptt Of Biological Science R.D University
47.	A.A Ansari	Addl MD, MFP Federation, Bhopal
48.	Dr.Manmohan Debriyal	Assistant Professor
49.	Smt.S.Tripathi	RO, AFRI, Jodhpur
50.	AB Tiwari	Taxonomist, Medicinal Plant, deptt of Crop & Herbal Physiology Jabalpur
51.	Prof. S. D Upadhya	Professor (Botany), JNKVU, Jabalpur
52.	Atal Srivastav	Research Associate, Jabalpur
53.	Hanumant Sable	Betul, MP
54.	Nabaghana Ojha	RCDC Bhubaneswar, Orissa
55.	Sanjoy Pattnaik	RCDC Bhubaneswar, Orissa
56.	Tamalika Charabortty	RCDC Bhubaneswar, Orissa
57.	Hemant Bag	RCDC Bhubaneswar, Orissa
58.	Amrita Rath	RCDC Bhubaneswar, Orissa
59.	S.K Thomas	TFR, Jabalpur
60.	Sonu Singh Meher	FRIHT, Bangalore
61.	Dr.N.Berry	Scientist, TFRI, Jabalpur
62.	Arvind Agrawal	Writht Town, Jabalpur
63.	Dr.Vishakha Kumbhare	CFRHRD, Chhindwara
64.	Dr.K.C Choudhry	TFRI,Jabalpur
65.	D.P Jhariya	TFR,Jabalpur
66.	Ram Nath	TFR,Jabalpur
67.	D.C Keri	TFR,Jabalpur

Annexure 2: Programme Schedule

Day 1: 18th January 2008

9.30-10.00 am	Registration	
10.00-10.45 am	Welcome Inauguration Introduction/objectives to the workshop Inaugural address by Guests Vote of Thanks	**Sri. A.K Mandal, Director, TFRI, Jabalpur** **Sri R.C.Sharma, IFS, Retd. PCCF** **Sri Sanjoy Patnaik, RCDC, Bhubaneswar** **Sri R.C.Sharma, IFS, Retd. PCCF** **Dr. A. K. Pandey, TFRI.**
10.45- 11.00 am	**Break for tea**	
11.00-12.45 pm	**Business session- I: Conservation and sustainable harvesting issues in the current NTFP management practices- Presentations from state Forest Departments** **Chairman**: Sri RC Sharma, Retd. PCCF, Chhatisgarh. **Co-chairman:** Dr.PC Kotwal, IIFM, and Bhopal	
	• Sri A. A. Ansari, IFS, Add. MD, MFP Fed. Bhopal • Sri. K. A Mohammed Noushad IFS, CF, Kerala • Sri. Ravi Dutt Kamboj, CF, Gujarat Forest Development Corporation • Sri P. C. Dubey, IFS, CF, Rewa • M. Srinivasa Rao, IFS, CF, Pandharkawada Forest Division. • Sri. Srinivas Rao, IFS, CF, Kanker, Chhattisgarh	
12.45- 1.30 pm	Open house discussion/ questions, clarifications and comments, etc	
1.30- 2.15 pm	**Lunch**	
2.15- 4.00 pm	**Business session –II: Current research on sustainable management of NTFP** **Chairman:** Sri A.A. Ansari, Add. MD, MP MFP Fed, Bhopal. **Co-Chairman:** Sri.R.D Kamboj, Gujurat Forest Development Corporation	
	• S.P. Tripathi, S.D. Sonkar & NPS Jain, TFRI, Jabalpur • R.K.Pandey & Satvant Kure Saini,TFRI ,Jabalpur • Dr. Prativa Bhatanagar & Dr. R.K. Pandey, SFRI, Jabalpur • Dr. N. Roy Choudhury & K.C.Joshi, TFRI, Jabalpur • Dr. A.K. Pandey,TFRI, Jabalpur • Dr. B.K. Pandey, Dr. Alok Yadav & Mr. H. O. Saxena, RFRI, Jorhat, Assam • Dr. (Mrs.) Sangeeta Tripathi, AFRI, Jodhpur, Rajasthan	
4.00- 4.30 pm	Open house discussion/ questions, clarifications and comments, etc	
	Business session –III: Issues and interventions on sustainable harvesting of NTFP **Chairman:**Dr.R.L. Srivastava,Director,Afri,Jodhpur **Co-Chairman:** Mr. P. Bhattacharya, Faculty, Forestry and Ecosystem Management, IIFM, Bhopal	

4.30- 6.00 pm	• Miss Tamalika Chakravorthy, RCDC, Bhubaneswar • Dr. D. K. Giri and Ms. Nivedita, Orissa Forestry Sector Support Project. • Sri. Senthil Prasad, Keystone Foundation, Chennai.
6.00 – 6.30 pm	Questions, clarifications and comments, etc
6.30 pm	Break for the day
8.30 pm onwards	Dinner
Day – 2: 19th January 2008	
9.00-9.15 am	Recapitulation of Day 1
9. 15-11.15 am	**Business session –IV: Sustainable management practices, models and protocols.** **Chairman:** Sri Vijay Bahadur, Director, SFRI, Jabalpur **Co-Chairman:** Sri K.A Mohammed Noushad IFS, CF, Kerela
	• Dr. P.C. Kotwal, IIFM, Bhopal. • P. Bhattacharaya, Faculty, IIFM, Bhopal • Sunil Mishra, DFO, Dhamtari, Raipur • C.P Rai, R.K Shrivastav, Dr. Chitra Srivastav, Dr.S. C Biswas • R.L Srivastava,Director,SFRI,Jodhpur,Rajasthan
11.15- 11.30 am	Break for tea
11.30 -12.15 pm	• Dr. Man Mohan Dobariyal, Rajasthan • Hitendra K.Ram MP, PARC Bhopal • Sir Vir Kush, NTPC, New Delhi • Sri B.K. Sahu, JK Paper Mill, Rayagada
12.15-12.45 pm	Questions, clarifications & commentes, etc
12.45-1.30 pm	Summing up, future plan of action and Valediction Chairman: Dr. PK Shukla, IFS, Add. PCCF, Bhopal Co-chairman: Dr. A.K Mandal, Director, TFRI, Jabalpur
1.30 pm	Lunch and Close