

Feed back for Working Group on:

“Access to Health Systems including AYUSH for the Eleventh Five-Year Plan

(2007-2012)”, By Planning Commission, vide order no. 2(15)/ 2006-H&FW, dated 25th May 2006

From: *R P Mattoo, President, NRIF, New Delhi*

Ayurveda in India-Suggesting Changes / Modifications
in the programme and priorities for 11th FYP
(vis-à-vis strengthening of NMPB)

Preamble:

The sustainability of the *ayurvedic* industry itself is directly proportional to sustainability of forests and other landscapes wherefrom medicinal herbs and plants are extracted. The livelihood of tribal and other communities in different parts of the country is also directly dependent on the collection and cultivation of these herbs & medicinal plants. The procurement, production and processing of *ayurvedic* plants is no doubt highly complex and there are many aspects where improvements are needed. That is possible only though further research in a number of areas. However, we are giving below few recommendations that need an immediate attention during the eleventh five-year plan, if not taken up so far: -

Institutional responsibility for medicinal plants

- There are a plethora of organizations dealing with various aspects of medicinal plants and, yet we find a viability-gap for a nodal organization at national level to bring together various stakeholders and to deal with the entire range of issues pertaining to medicinal plants. Though National Medicinal Plant Board (NMPB)¹ at the Centre and State Medicinal Plant Boards has been constituted but these actors have yet to take the overall responsibility pertaining to herbs & medicinal plants.
- There is a paradoxical situation that Central / state organizations have not been able to develop / create an appropriate mechanism for inter & intra co-ordination among themselves. There lacks a synergy of internal & external monitoring information system from Centre to the States and States among themselves.
 - E.g. at national level, besides, NMPB, there is a need of clear-cut coordination and, responsibility to be assigned between numerous national and state government ministries and departments such as Ministry of Environment & Forests; Ministry of Health and Family Welfare; Ministry of Agriculture; Department of Science & Technology and Ministry of Tribal Affairs. Even within MoEF, there are seven different divisions charged with some responsibility for different aspects of medicinal plants.
 - There are many institutions under different ownership who look after R&D but there is a lack of coordination among them;
 - Technical Policies are made and governed by the Dept. of Forest, Govt. of India;

¹ Under Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homeopathy (AYUSH) formerly (Indian Systems of Medicines and Homeopathy), Ministry of Health and Family Welfare, Govt. of India.

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- Production is being used by Industry: Public or Private / Pharmacy / NGO's / Vaidya's / intermediaries / middlemen who control the entire market forces.
 - Majority of Gatherers are unidentified and, posing a great threat to conservation through unscientific / destructive harvesting. Cultivators, majority of whom are regulated by the Forest Dept., having smaller areas under cultivation but handling much larger volumes of commercial trade from the wild resources and using licence / registrations as a tool for protection. x
 - The above—observations are detrimental to sustainable growth of H & MP in the Country and within states, unless critical redressal is undertaken for at least six major variables viz.
 - Conservation;
 - Propagation / Cultivation / Nursery development & supply of quality planting material
 - Harvesting; • Post-harvesting; • Semi-processing / Process; • Marketing;

Long-term Strategy:

- **Herbs & Medicinal Plants (H & MP), is a specialized sector** like: Horticulture; Jute; Handicrafts; Poultry; Dairy & Milk; Cotton & Textiles; etc, The dispersion of activities in these sectors have been brought under the control by creation of **Commissioner** at the central level with the corresponding Central Ministry. And, the developmental works / role in these sectors are, more-or-less, organized besides streamlining the role for intermediaries / down the line for safeguarding the sector within the State.

NMPB: Given Delegation of Powers for Handling H & MP Sector in the Country:

- Therefore, it may be pertinent to mention that a **Commissionerate for H & MP**, (as a specialized sector needing regulatory intervention), be set-up at the central level. The NMPB be delegated the powers of a Commissioner at the Central Level under the MoH&FW (as it is) or preferably under MoEF, Gol (because of the entire resources of raw material is owned by the Forest Department).
- The NMPB be delegated with all the responsibility and, made solely accountable to all the functions as notified by Gol on 24th Nov. 2000.
- The NMPB could be assisted by the State Medicinal Plant Board (SMPB)², headed by the Development Commissioner ³ (H&MP) drawn from Forest Dept. with the rank of CCF and, appointed under the State Legislative Act. The SMPB could be accountable for all the functions of NMPB and, act as a Principal Co-ordinator between NMPB and the State Govt. and, Institutions operating within the State for development of H & MP sector.

² SMPB: The controlling authority of State Medicinal Plant Boards vary from state to state, they are either under the control of the Dept. of Horticulture & Food Processing (e.g. in Uttaranchal) or Dept. of Forest (e.g. in Chhatisgarh) or Department of Health (Tamil Nadu) etc.

³ “Development Commissioner (Herbal & Medicinal Plants)” to exercise the powers and perform the functions on behalf of the State Govt. for the purpose,

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- The National Medicinal Plant Board is still in the process of framing appropriate legal and policy frameworks to address these problems. While doing so Medicinal Plants Board will have to work closely with the proposed National Biodiversity Authority and the State Biodiversity Boards in this regard. The emphasis should be on facilitating sustainable harvests and management methods instead of merely regulating production and supply.
 - Despite the impacts of the supply crisis, it is generally felt that, industries are not showing adequate concern towards conservation and sustainable supply of raw material and the well-being of collectors. It is recommended that the NMPD / SMPBs as nodal agencies should bring together all interested parties i.e. the government agencies (Forest and Agriculture departments), industries, collectors / growers, NGOs etc.
 - The nodal agency should also ensure flow of information and develop participatory approaches for future development. It must be realized that it is in the interest of all stakeholders and the country that the science of *ayurveda* flourishes and its returns are shared by humanity at large, nationally and internationally.
 - The International networking for brand imaging and market development is made through GAME THEORY practices. This not only requires understanding the five P's of marketing (viz. Product, Placement, Price, Promotion and Policies), but also needs development of Product Development Matrix which narrate the existing products, need for new products, diversification etc. particularly in light of international competition. Impact of globalization and WTO in particular need to be studied to save the domestic markets and explore international markets.
 - Further, all the stakeholders can be categorized as primary, secondary and tertiary stakeholders. The interventions normally refuse to catch up since the planning does not assess capabilities of them to reap the benefit. In view of this it is advisable that the primary stakeholders capabilities should be assessed in terms of their possession of human capital, natural resources capital, physical capital, financial capital and social capital. The associated risks mainly vulnerability risks, political economy risks, environmental risks, exogenous risks and disaster risks should also be calculated along with their mitigation measure. Similarly capabilities of institutions i.e. tertiary sector should also be assessed for their R&D capabilities, dissemination attitude etc. Accountability is another factor to be kept in mind. Pharmacies contribute to the value addition chain but are not paying attention to their social & environmental responsibilities. The monetary impact of value addition should be assessed through cost of transaction at each stage and pharmacies should be made responsible for bio-diversity and livelihood.

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 • **Proposed Role of different Agencies for Selected Variables:**

- Keeping in view, the above administrative set-up the selective operational variables can be handled through proposed role of different agencies as given for consideration at *Annex-1* below.

• **Raw material appraisal, Assessment of resource base and current level of utilization**

- *Ayurveda* uses medicinal plants in various forms. Harvesting can be destructive for many plants: for about 30% of plants, roots are used; in 16% of plants, the whole plant is used; and in 13% of cases, bark is used. In other cases, medicines use the fruits, leaves, flowers, rhizome, seeds etc. It is commonly thought that medicinal plants are herbs, but in fact about one-third are trees, which has implications for conservation and management of supplies to the industry. Varieties of species of medicinal plants come from various agro-climatic zones of India. A large proportion of medicinal plants supply comes from Himalayas and, the Western Ghats. Around 80-90%% of the medicinal plants active in trade are procured from wild areas, mostly notified as forestland. This also confirms that that majority of plants in *ayurvedic* formulations are procured from the wild, and only less than 10% are cultivated on private lands (e.g. *Buta monosperma*, *Mangifera indica*, *Sapindus emarginatus*, *Tamarindus indica*). Though some species are now grown commercially, but the cultivation remains a very small proportion of the overall supply.

• **Immediate Strategy:**

- There is no ready-hand inventory for medicinal plants available either state-wise or the country as whole, even though there is growing economic, social and ecological importance of medicinal plants, it is *essential that inventory methods be evolved through research and development, like inventory for timber and fuel production that is carried out at regular frequent intervals of time.*
- Commercially important *medicinal plant resources need to be inventoried to get the picture of production potential, their conservation status, use practices, etc.*
- Mechanism to accurately estimate the quantum of medicinal plants used by the *ayurvedic* industry needs to be evolved though *a comprehensive survey that needs to be carried out to assess the quantum of medicinal plants used, along with the sources of supply.* A ready reference guide for correlating trade names of medicinal plants to their botanical names need to be prepared to help in estimating the volume of trade of different species.

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• **Measures to control unsustainable harvests and improve production**

- Unsustainable and destructive extraction has been widely reported. In the absence of full knowledge of sustainable harvesting regimes for different products, at least 50 % of the fruits, roots, leaves, flowers and other materials collected should be left on the plant for future regeneration.
- There is a need to control premature harvesting of products such as fruits of *Emblica officinalis*. An initiative in this direction in Madhya Pradesh / Chhatisgarh has shown positive results.
- Value addition and processing at the collector level should be encouraged so that the collectors can earn the same amount of income from much less quantity.
- Direct link between the processing industry and primary collector / cultivator / cluster wise need to be encouraged so as to eliminate the exploitative role of the middlemen.
- Given that the collection and trade of medicinal plants are highly unorganized at the local levels, it is recommended that local level institutions such as FPCs need to be strengthened, so that the cultivation and conservation of medicinal plants may be integrated into the JFM arrangements. With proper micro-credit facilities and training, micro-enterprises can be developed by these FPCs. A few initiatives in this regard have already been started in some states.
- There is also need for strengthening the dispensary and ' vaidyas' network to establish perpetual demand of finished products. This requires baseline survey to capture demands on mass level from these segments. Unless this sector is strengthened the products will not accept domestic demand. If there is lack of domestic demand it will be difficult to capture international demand.
- At present, export of prohibited plants (29 species including 18 mentioned in appendix I and II of CITES⁴) is possible if these are present in some formulation (as against raw form) or if the label of the formulation does not mention the name of the species. This policy should be urgently reviewed.

• **Cultivation**

- A comprehensive review regarding the current status of cultivation of medicinal plants in the country should be carried out. Existing bottlenecks being faced by farmers as well as companies should be identified and removed.

⁴ CITES: Convention on International Trade in Endangered Species.

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- Large-scale cultivation of important medicinal plants has been tried in different regions of the country. These practices have often used very heavy doses of inputs such as chemical fertilizers, pesticides, etc. There is little information on the likely impact of these inputs on the medicinal properties of the plants. Until the results of further research on such impacts become available, large-scale cultivation should be taken up with caution. It is recommended that the certification criteria of WHO (GAP: Good Agricultural Practices) be applied for the products from *ex situ* sources. The certification results should be acceptable to pharmacies and Vaidyas. This will prevent exploitation of collectors and cultivators by trading and user segments.
 - **Identification of draft ‘Criteria’ and ‘Indicators’ (C & I)**
 - The concern of sustainable management of herbs & medicinal plants can broadly be addressed by using ‘criteria’ and, indicators’ approach for ensuring sustained supply of forest goods and services. This refers to a set of eight criteria and 43 indicators that had been developed for sustainable forest management in India, through a process known as the ‘Bhopal-India process’. The Task Force report on this subject has already been submitted to the Government of India, which has now initiated action to apply them to different forest types of India. The bulk of the supply of medicinal plants comes from forest areas and it is largely in the forest areas that the plants are threatened due to unscientific, un-sustainable extraction and use practices. Draft C & I has been provided for the use of FD, which is given in *Annex-II below*.
 - Application of criteria and indicators is most likely to be effective if it is market-driven. It may be more realistic to start with a voluntary code of practice for the production of *ayurvedic* medicines, complemented by education of both consumers and producers. However, it depends upon industry and/or consumer organizations to initiate this. The identification and organization of buyers who demand certified products would ultimately bring greater market access and higher prices for industry, and assured quality for consumers. The current thrust of the Planning Commission on increasing the exports of the *ayurvedic* formulations should be used as opportunity for exploring niche markets for certified *ayurvedic* products.
 - With the help of C & I, the status of medicinal plants in relation to their contribution and, well-being of humans and ecosystems can be measured in sample areas, trial sites or - best of all- forests subject to certification, where their status can be correlated with production figures.
 - With baseline data, subsequent measurements will indicate the direction of change leading to well being (or not) of humans and ecosystems⁵.

⁵ However, application of criteria and indicators and the potential development of a system of certification may not be welcomed by some of the actors in the medicinal plants trade. Especially, an unorganized market definitely makes better business sense to the traders and agents. The traders and agents prefer to have no

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- **Potential regarding Applicability of C & I**
- Measurement of all indicators may have some limitations, as all of them cannot be measured in one go. Therefore, measurability can be grouped into three categories (i) the ones measured that can be measured from the existing secondary sources of information; (ii) the ones for which information can be gathered from the field with little effort; and, (iii) for the ones which require long-term research. As resources develop and the potential of medicinal plants grows, the third category of indicators can also be measured through investment in research and development.
- **Potential agencies to monitor indicators and certify the system as sustainable**
- Govt. of India can identify a certification agency as per the international standards. Such agency can handle certification issues and trainings under the WWF/ World Bank Alliance initiatives. A number of government recognized autonomous institutions having wherewithal and infrastructure in different parts of the country can be identified to undertake certification. The development of group certification schemes will help to lower the cost of certification.
- Such agency can also look into the Product development matrix so as to cover the following parameters: -

▪ Existing products	▪ New products	▪ Innovativeness
▪ Value addition	▪ Improved sales	▪ Technology
▪ Diversification	▪ Market leader	▪ New product line

bills, not adherence to policy norms; convincing forest officials to compromise on policy norms, and local communities having field day to further their business interests. In a way traders and agents literally prefer to control the market prices. Hence they find little incentive in supporting the streamlining of market transactions. Therefore, it is all the more essential to support application of criteria and indicators so that the all the identified organizations and the buyers are forced to follow certified products sustainable system.

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Annex-1: Proposed Role of different Agencies for Selected Variables:

Keeping in view, the suggestive administrative set-up, the selective operational variables can be handled through various stakeholders as per below: -

Selected Variables	Stakeholders	Proposed Role
Conservation	FD / FDC	<ul style="list-style-type: none"> • Developing of database: • For inventory <ul style="list-style-type: none"> • <i>In-situ</i> conservation • <i>Ex-situ</i> conservation • Supply of quality planting material development • Plantation of tree species of H & MP • Development of extension, information, education & communication related to H & MP • Administrative control on harvesting
	Community living in and around forest / JFM	<ul style="list-style-type: none"> • Follow guidelines & regulations of FD • Encourage cultivation, micro-enterprise for semi-processing
	Cultivators / primary gatherers	<ul style="list-style-type: none"> • Follow guidelines & regulations of FD • Encourage cultivation, micro-enterprise for semi-processing
	Marketing agencies	<ul style="list-style-type: none"> • Use skilled labourers to discourage destructive & immature harvesting <ul style="list-style-type: none"> • Purchase produce only through community based legal organizations like JFM / VDFC's / VFC's
	Research Institutions	<ul style="list-style-type: none"> • Provide appropriate & implemental extension, information, education & communication to Forest committees or user groups <ul style="list-style-type: none"> • Developing standardization norms for different altitudinal species
Propagation / Cultivation	FD / FDC	<ul style="list-style-type: none"> • Provide hassle-free transit permits / licence <ul style="list-style-type: none"> • provide quality planting material to cultivators • Non-bureaucratic <i>in-situ</i> inspection to ascertain the origin of the product
	Research Institutions	<ul style="list-style-type: none"> • Implemental technology dissemination from lab-to-land training <ul style="list-style-type: none"> • Appropriate extension, harvesting, semi-processing, processing technical know-how
	Industry / Pharmacies etc.	<ul style="list-style-type: none"> • Develop buy-back arrangements with the cultivators through a tripartite agreement with the approval of Development Commissioner (H & MP) <ul style="list-style-type: none"> • Develop R&D back-up support for propagation & cultivation of H & MP • Provide funds to cultivators on contract-farming- basis
	Financing Institutions / Banks / NHB / NMPB/ Refinance by NABARD including	<ul style="list-style-type: none"> • Develop & propagation the techno-economic feasibility norms for cost of cultivation & production norms of different altitudinal species

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Selected Variables	Stakeholders	Proposed Role
Harvesting	FD / FDC	<ul style="list-style-type: none"> Inventory norms / prescription of harvesting for different species <ul style="list-style-type: none"> Inspection / protection norms against destructive harvesting Training & capacity building for identification of positive harvesting techniques
	JFM / Communities / Primary Gatherers	<ul style="list-style-type: none"> Adoption of harvesting norms as per guidelines of FD Avoidance of harvesting of endangered, threatened / rear species <ul style="list-style-type: none"> Adoption of semi-processing practices for value addition hence less quantitative harvestings
	Cultivators	<ul style="list-style-type: none"> Approach institutions for getting training for propagation, cultivation, harvesting & related norms for backward-forward linkages etc
Post-harvesting	FD / FDC	<ul style="list-style-type: none"> Provide technical know-how & infrastructure transit set-up
	Research Institutions	<ul style="list-style-type: none"> Prescribe PH norms for species such as time of harvesting, grading, sorting, storage / shelf-life etc
	Marketing agencies	<ul style="list-style-type: none"> Collect information on production and disseminate the same for adoption of similar PH treatments
	Industry / Pharmacies etc.	<ul style="list-style-type: none"> Buy only graded and certified products through govt. approved agencies
Semi-processing	JFM / Communities / Primary Gatherers / Cultivators	<ul style="list-style-type: none"> Adopt value-addition through scientific semi-processing techniques such as: drying, shaping, colouring, debarking, peeling, cleaning, pulping, de-seeding etc
Semi-processing (Contd.)	Industry / Pharmacies etc.	<ul style="list-style-type: none"> Help develop training for semi-processing <ul style="list-style-type: none"> Act as bridge between industry & semi-processors
Selected Variables	Stakeholders	Proposed Role
Marketing	JFMCs / Communities / VDFC / VFC / Primary Gatherers / Cultivators	<ul style="list-style-type: none"> Procurement of standardization products from local sources. <ul style="list-style-type: none"> Application of PH & semi-processing practices for value-addition Maintenance of receipt and deliver schedule of products fro FDC Develop mechanism for usufructs sharing norms for accruals & related issues thereof
	FDC	<ul style="list-style-type: none"> Generate buyers on equitable price <ul style="list-style-type: none"> Quality maintenance of the products Develop appropriate apportioning of financial norms for usufructs sharing. Develop advance buy-back arrangements with the industry and disseminate profit margins to JFM Committee / Gatherers / cultivators after adjusting trade commission Develop perfect market intelligence system to update national, international product movement & pricing

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Annex-2: Criteria & Indictors for Sustainable Management and supply of H& MPs

Criteria	Indicators
1. Increase in the extent of associated forest and tree cover	1.1 Area of dense and open forest 1.2 Area under JFM (including H & MP)
2. Maintenance, conservation and enhancement of biodiversity	2.1 Area of protected ecosystems 2.2 Area of fragmented ecosystems 2.3 Number of rare, endangered, threatened and endemic species 2.4 Level of species richness and diversity in selected areas 2.5 Availability of medicinal and aromatic plants in various forest types 2.6 Status of non-destructive harvesting 2.7 Number of keystone and flagship species in various forest types 2.8 Certification norms 2.9 Gene-pool maintenance
3. Maintenance and enhancement of ecosystem function and vitality	3.1 Status of natural regeneration 3.2 Extent of secondary forests with medicinal plants 3.3 Incidence of pests and diseases, weed infestation, grazing and fire
4. Conservation and maintenance of soil and water resources	4.1 Extent of ground cover 4.2 Area under watershed treatment 4.3 Soil erosion status 4.4 Level of scientific harvesting
5. Maintenance and enhancement of forest resource productivity	5.1 Growing stock of keystone and flagship species 5.2 Volume of production of identified/ important medicinal plants 5.3 Propagation in non-forest areas
6. Optimization of forest resources utilization	6.1 Aggregate and per capita consumption of medicinal plants 6.2 Import and export 6.3 Recorded removals 6.4 Direct employment in conservation, development and extraction 6.5 Direct employment in <i>ayurvedic</i> industries 6.6 Level of processing and value addition 6.7 Auditing and price acceptance by Industry
7. Maintenance and enhancement of Social, cultural and spiritual benefits	7.1 Degree of people's participation: number of Committees and area protected by them 7.2 Use of indigenous knowledge 7.3 Human development index 7.4 Extent of cultural / sacred protected landscapes: forests, trees ponds, streams, etc.
8. Adequacy of policy, legal and Institutional framework	8.1 Existing policy and legal framework for conservation, extraction and utilization of medicinal plants 8.2 Enabling conditions like JFM resolution, transit rules etc., for participation of communities, NGOs, civil societies 8.3 Level of investment and priority for research and development of medicinal plants 8.4 Human resource capacity building 8.5 Status of information dissemination and utilization