

## **ANNUAL ACTION PLAN 2011-12 UNDER NATIONAL MISSION ON MEDICINAL PLANTS**

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**1. INTRODUCTION:** Medicinal Plants are not only a major resource base for the traditional medicine and herbal industry but also provide livelihood and health security to a large segment of Odisha's population. The development of medicinal plant sector in the state needs the coordinated efforts of several Departments of Government. concerned with the subject e.g. Agriculture, Forest, Health and research institution. The involvement of NGOs and other stakeholders like traders, manufacturers, exporters and community as a whole is essential for development of this sector. The centrally sponsored scheme of National Mission on medicinal plants is being implemented in the state Orissa through the department of Horticulture Government of Orissa from the year 2009-2010.

In first phase all the 27 districts were covered under the mission. This year it is proposed to cover 30 districts. The selected districts will be emphasized to cultivate selective species taking a point of view of climate & market facilities. The varieties of Medicinal Plants shall be selected basing on the agro-climatic condition & market demand.

The document covers the following major issues, which are essential for the development of this sector in state.

1. Prioritizing zone-wise species for commercial cultivation and contract farming.
2. Fixing the entities for producing quality germplasm either through conventional methods or by utilizing the biotechnological tools of Tissue Culture to supply the mother germplasm, on demand, to the farmers.
3. Issues related to proper identification of different variants (Phenotypes, chemotypes, genotypes) of potential species for cultivation for which the help of Research Organization will be taken.
4. Promoting large-scale cultivation of valuable herbs through farmers in their private land through cluster approach.
5. Promotion of un-utilized forest land for growing valuable tree and perennial medicinal plant species especially in the high altitudes through community participation where land resource is hardly available.
6. Strategizing & encouraging the cultivation of herbs in Govt. land lying un-utilized in schools, health institutions, line departments or any other form in the state.

7. Providing facility for soil & water testing for the farmers before undertaking large-scale cultivation of medicinal plants.
8. Strengthening the training & extension activities regarding medicinal plants at state, district, zonal and block level and utilizing the infrastructure of the line departments viz. Agriculture, Horticulture, DRDA etc. for promoting the programme.
9. Developing cultivation practices (in pattern of single crop, mix cropping or crop rotational parameters) of potential species by reputed Research Organization and state Universities by conducting multi-locational trials with special preference to High Altitude medicinal plants.
10. Devising proper post harvest management methods for handling of raw produce during storage and transportation.
11. Giving special preference to promote the cultivation of high demand species viz.
12. Developing marketing strategies after proper assessment of demand supply relationship with users and producers.
13. Facilitating the arrangements for ensuring quality control of crude herbal material produced by farmers.
14. Making the procedure simple for crop certification (including seed certification and organic farming), forest regulations and obtaining quality germ plasm within the reach of farmers.
15. Ensuring comprehensive programmes for long term and sustainable development of medicinal plants sector through people participation and fixing accountability of private pharmaceutical houses to consume the production of growers.
16. Setting up of herb collection center, warehouses and semi-processing units at District level.
17. The proposed roadmap or Action Plan for development of medicinal plant sector will ensure the basic objectives of meeting the minor forest produce requirements of the rural and tribal populations as enshrined in the National Forest Policy, 1988 (sub-section 3.5 under section 3 i.e. essential of forest management).

**1.1 Geography & Climate:** From the physiographic point of view the state consists of four zones viz. (i) Northern Plateau (ii) Eastern Ghat Zone (iii) Central Table lands and (iv) Coastal Plane zone. However, on the basis of climate, soil, rainfall topography & crop suitability the state has been divided into ten Agro-climatic zone. Agro climatic zone wise selection of medicinal plants given below :

Sl. No.	Agro-climatic zone	Climate	Mean annual rainfall (in mm)	Soil group
1	North western plateau	Hot and moist	1648	Red and Yellow
2	North central plateau	Hot and moist	1535	Red loamy
3	North eastern coastal plain	Hot and moist sub-humid	1568	Alluvial
4	East and south eastern plain	Hot and humid	1449	Coastal alluvial saline (near the coast line)
5	North eastern ghat	Hot and moist sub-humid	1597	Laterite and brown forest
6	Eastern ghat high land	Warm and humid	1522	Red
7	South eastern ghat	Warm and humid	1522	Red, mixed red and yellow
8	Western undulating	Warm and moist	1527	Black, mixed red and black
9	West central table land	Hot and moist	1527	Red, heavy textured colourous
10	Mid central table land	Hot and dry sub-humid	1421	Red loamy, laterite mixed red and black

**1.1.1. Type of Soil:** The soil types differ widely from highly acidic to slightly alkaline and from light sandy to stiff clay. The soils are mainly acidic with the degree of acidity varying widely.

**1.1.2. Climate:** The climate of the state is tropical, characterized by high temperature, high humidity, medium to high rainfall and a mild winter. The normal rainfall is 1482.2 mm distributed over 72 rainy days. South west monsoon contributes about 81-83% of the annual rainfall in 53.57 days during June-September. The mean annual temperature of the state is 26.89<sup>0</sup> C with mean annual maximum of 32.56<sup>0</sup> C and mean annual minimum of 21.30<sup>0</sup>C.

## **1.2. Potential for Medicinal Plants in Orissa:**

The agro-climatic diversity in the state with its high rainfall distributed over a four month monsoon and a reasonable moderate winter allows for growing a variety of medicinal plants. There are a number of spp. Of medicinal plants e.g. herbs, shrubs & trees grows in different region all over the state. The agro climatic conditions are immensely suitable for perennial medicinal plants like Ashoka, Bael, Aanala, Harida, Bahada, Arjuna, Chandan, Jamu etc. and a

number of annuals & biennials. The forests of Orissa are still the natural habitats for diverse genetic species of flora & fauna. There are about 2727 spp. of Angiosperma Gymnosperms, and pteridophytes including 166 spp of cultivated plants are available in Orissa which have medicinal values.

### **1.2.1. Socio Economic Profile of the Project Area:**

**1.2.1.1.** Orissa comprising 4.74% India's landmass and with 36.7 million people accounts for 3.57% of its population live in rural areas and depend mostly on agriculture for their livelihood.

**1.2.1.2.** Orissa has ancient history of using of medicinal plants in traditional ethno medicine. The recipes and formulae of the ethno-medicines have been handed down orally for generations. The rural poor also do not have easy access to the codified medical system i.e. Ayurveda, Unani, Sidha, homoeopathy etc. or modern system of medicine which have sophisticated theoretical foundations. These medicines are mostly prepared from 8000 medicinal plants throughout the country and some from animals, birds, reptiles, minerals etc.) As most of the medicinal plants are not commercially cultivated but gathered from wild sources without ensuring the regeneration this has resulted in over exploitation of the floristic and faunal wealth and subsequent threat to many species. Therefore, there is urgent need for conservation of medicinal plants.

### **1.3. Existing Infrastructure:**

Orissa has no major trade centres. The medicinal plants flow to Bihar, West Bengal, Chhatisgarh, M.P. & Rajasthan due to un-organized market & lack of market intelligence. There is a need to develop trading centres within the state for serving local & regional demand. These centres would be established at Block level and could also provide financial management quality certification and marketing support to the gather owned community enterprises.

A medicinal plant cultivation resource center should be established in each district for sourcing, testing and disseminating medicinal plant gathering and cultivation Technologies.

**Govt. owned Ayurveda Pharmacy units buy many species, available in the state from Private traders. State Govt. procurement policies for buying raw drugs for the primary health care system should promote the gather owned community enterprises through preferential trading arrangements.**

**There are about 200 Ayurvedic pharmacies in the state but only 65 numbers have good manufacturing practices license. (source: DIM & H)**

#### **1.3.1. Marketing (Linkage with mandies) & Market Intelligence:**

The Orissa Forest Development Corporation Ltd., (OFDC Ltd.) has planned to establish 10 mandies in the state. 2 such mandies will be established shortly, one at Jashipur and the other at Bhawanipatna.

The Tribal Development Co-operative Corporation (IDCC) has submitted a proposal under Medicinal plant service programme to improve trading through infrastructure development for Quality & safe storage, awareness & training of stake holders. The cost projected is Rs.65.47 lakh.

### **1.3.2. Linkage with R&D Institutions (ICAR, ICFRE, CSIR etc) / SAUs for R&D support and certification.**

The following institutions have been identified for extending R&D activities in the sector.

#### **A : R&D Institutions-**

- a)Institute of Mineral and Material Technology (IMMT) CSIR, Bhubaneswar
- b)Regional Research Laboratory, Bhubaneswar.(CSIR)
- c)Regional Plant Resource Center, Bhubaneswar.
- d)Animal Disease Research Institute, Phulnakhara
- e)University Department of Pharmacology Science(UDPS)  
Vanivihar,Bhubaneswar.

#### **B : Agriculture University-**

- a) Orissa University of Agriculture & Technology,  
Bhubaneswar (ICAR)
- b )Krishi Vigyana Kendras (ICAR)- 22 Nos.

### **1.3.3. TESTING LABORATORY FOR RAW DRUGS :**

The following institutions have been identified' for having the infrastructure for testing raw drugs. The RPRC, Bhubaneswar has submitted a proposal for standardizing drug certification from cultivated source for 5 species' of medicinal plants which has been recommended to NMPB for financial assistance.

- a) IMMT, Bhubaneswar under CSIR
- b) Regional Plant Resource Center(RPRC), Bhubaneswar
- c) Govt. Ayurvedic Pharmacies under DIMH, Bhubaneswar & Bolangir
- d) Animal Disease Research Institute (ADRI), Phulnakhara, Cuttack

### **1.3.4. Linkage with Govt. Organization for QPM & Project implementation:**

The following institutions and organizations have been identified in the state for above purpose.

A: R&D Institutions-

- a) IMMT, Bhubaneswar under CSIR
- b) Regional Plant Resource Center, Bhubaneswar.
- c) Animal Disease Research Institute, Phulnakhara

B: Agriculture University-

- a) Orissa University of Agriculture & Technology, Bhubaneswar (ICAR).
- b) Krishi Vigyana Kendras.(ICAR)- 22 Nos.

C: Institutions-

- a) Silviculturist, Bhubaneswar
- b) Research Garden of Forest Department in the state (10 nos)

The success of cultivation of medicinal plants requires Quality planting materials (QPM) and certified seeds to ensure productivity and marketability. The following institutions are identified to have infrastructure for supplying QPM.

(A) Research Garden of Forest Dept. – There are 31-research garden in the state. Ten research gardens spread over different parts of the state have been identified to be suitable for raising medicinal plants nursery in large quantity against advance indent.

(B) Krishi Vigyana Kendras (KVK) - There are 22 KVK in the state of which 10 nos can be selected for raising QPM.

(C) IMMTS (RRL) – Bhubaneswar under CSIR of GOI has developed technology for mass propagation of few medicinal plants like BAEL, Gudmari, Ashok and Amla through tissue culture method. They have the capacity to provide QPM in selected species of medicinal plants.

(D) The Regional Plant Resource Center (RPRC) - at Bhubaneswar is the regional center for conservation of wild and cultivated plant genetic resources. They have collection of 3250 species of plant including 160 species of medicinal plant in their arboretum. They have the capability to provide QPM for medicinal plant.

(E) Herbal Garden at Nrusinghanath – The Herbalist Association at Nrusinghanath has developed a garden on their effort where they have raised about 500 species of medicinal plant as nursery stock. They bring out a monthly Journal Banausadhi which describes techniques of cultivation, nursery management and post planting care in local language. They can be identified as a source of providing QPM.

*Pvt. Source: grafted seedling only.*

**1.4. Land Availability :**

The state has a total cultivable areas of 61:65 lakh hectares. Out of this 15.57 lakh hectares are low lands, 19.14 lakh hectare are medium lands and 26.94 lakh hectare are high lands. Out of the cultivable area about 41% is under irrigated condition (18.5 kharif + 8.5 Rabi) & 59% in non irrigated.

The areas is enriched by discontinuous hill ranges extending from Similipal hill in the north and eastern ghat in the south and interspersed with rivers in the Western to eastern wardly direction in the central table land and coastal plain region.

Preference for organic cultivation & certification will be made.

### **1.5. Existing level of cultivation :**

The cultivation of medicinal plant in commercial / contractual farming scale has started since 2003 in Orissa. Out of 30 revenue districts only 18 districts have started medicinal plant cultivation.

The SMPB has identified certain medicinal plants that can be grown in association with horticulture crops in different agroclimatic zones. The list is enclosed as Annexure-B.

## **2. SWOT Analysis :**

### **2.1. Strength :**

Awareness building through extension and information dissemination on medicinal plant possibilities and marketing demand. The state horticulture extension has

- (a) Ten agro-climatic zones of the state are most suitable for growing of different medicinal species.
- (b) Suitable high land and medium land are plentifully available which can be utilized for horticulture as well as medicinal plant as inter-crop.
- (c) State has nos of Govt. firm and nurseries to produce quality planting materials of different medicinal species.
- (d) State agriculture University and Krishi Vigyan Kendra to provide new and need based technologies.
- (e) Enactment of Fruit nursery Act-1999 ensures control over producing medicinal QPM in the private sector.
- (f) Access to Metropolis like Mandies and other big cities where medicinal market facility available shall be established to enhance the possibilities for export the product.

### **2.2. Weakness :**

- (a) Non-availability adequate planting material of medicinal species.
- (b) Lack of budgetary indication at least one year before for advance action plan.
- (c) Poor economic condition of farmers.
- (d) Inadequate management and maintenance of the plantation.

- (e) Lesser Irrigation facility.
- (f) Shortage of Human resources in Horticulture Dept. in Govt. Sector.
- (g) Absence of Air connection to major cities other than the metros.
- (h) Slow pace in adoption of improved technology
- (i) Lack of infrastructure facilities for post harvest management and marketing.
- (j) Inadequate of trained manpower.

### **2.3. Opportunities :**

- (a) There is tremendous demand for medicinal plants in the state which otherwise is being met by import from other states.
- (b) There is scope of introduction and expansion of new medicinal crops and varieties.
- (c) Tremendous scope for establishment of processing units.
- (d) Availability of abundant suitable land for growing medicinal crops.
- (e) Scope for protected cultivation of rare & valuable medicinal species
- (f) Scope to generate marketable surplus for domestic use and also surplus for export.

### **2.4. Threats :**

- (a) Uncertainty in weather conditions and frequent occurrence of natural calamities like flood, cyclone and draught.
- (b) Uncertainty about market stability and farmers do not get remunerative price.
- (c) Exploitation by middleman in market chain
- (d) Poor economic condition of small and marginal farmers

## **3. DETAILS OF THE ANNUAL ACTION PLAN :**

### **3.1. OBJECTIVES OF NATIONAL MISSION ON MEDICINAL PLANTS**

Support cultivation of medicinal plants which is the key to integrity, quality, efficacy and safety of the AYUSH systems of medicines by integrating medicinal plants in the farming systems, offer an option of crop diversification and enhance income of farmers.

3.2 Cultivation following the Good Agricultural and Collection Practices (GACPs) to promote standardization and quality assurance and thereby enhance acceptability of the AYUSH systems globally and increase exports of value added items like herbal extracts, phytochemicals, dietary supplements, cosmeceuticals and AYUSH products.

Support setting up processing zones/clusters through convergence of cultivation, warehousing, value addition and marketing and development of infrastructure for entrepreneurs to set up units in such zones/clusters.

Implement and support certification mechanism for quality standards, Good agriculture Practices (GAP), Good Collection Practices (GCP), and Good Storage practices (GSP).

Adopt a Mission mode approach and promote partnership, convergence and synergy among stake holders involved in R&D, processing and marketing in public as well as private sector at national, regional, state and sub state level.

### **STRATEGY OF NATIONAL MISSION ON MEDICINAL PLANTS :**

The Mission would adopt an end-to-end approach covering production, post harvest management, processing and marketing. This will be achieved by promoting cultivation of medicinal plants in identified clusters/zones within selected districts of states having potential for medicinal plants cultivation and to promote such cultivation following Good Agriculture and Collection Practices (GACPs) through synergistic linkage with production and supply of quality planting material, processing, quality testing, certification, warehousing and marketing for meeting the demands of the AYUSH industry and for exports of value added items.

The Mission also seeks to promote medicinal plants as a crop alternative to the farmers and through increased coverage of medicinal plants and with linkages for processing, marketing and testing, offer remunerative prices to the growers/farmers. This will also reduce pressure on forests on account of wild collection.

Mission seeks to adopt communication through print and electronic media as a strong component of its strategy to promote integration of medicinal plants farming in the agriculture/horticulture systems with emphasis on quality and standardization through appropriate pre and post harvest linkages.

Promote and support collective efforts at cultivation and processing in clusters through Self Help Groups, growers cooperatives/associations, producer companies and such other organizations with strong linkages to manufacturers/traders and R&D institutions.

#### **3.2 Implementing Agency :**

For implementing the mission's programme in the state registered society designated the Orissa Horticulture Development Society (OHDS) will be the implementing agency. The OHDS has a general body headed by the Minister, Agriculture and an Executive Committee headed by the Agriculture Production Commissioner to take all day to day decisions. The society has branches in every district for implementation of the programme in the district.

The Director of Horticulture who is the member secretary of the OHDS is the Principal Coordinator for all the activities of the mission.

The State Horticulture Mission will implement the scheme in coordination with the Agriculture, Ayush, Industries department and SMPB. It should also have the functional autonomy to receive the funds and implement the scheme. The Panchayati Raj Institutions would be fully involved in identifying the agency for implementation at the district level and in identification of clusters and organizing growers in to SHG/ Co-operatives associations and producer companies.

**Address of the Implementing Agency :**

Orissa Horticulture Development Society

Udyan Bhawan, Bhubaneswar-751015, Orissa

Ph. No-0674-2551831 – 2551978 (FAX)

E-mail : [udyanhort@sify.com](mailto:udyanhort@sify.com)

**3.3 Salient aspects of the Annual Action Plan-2010-11**

- a) There shall be a Technical Screening Committee of domain experts to appraise the proposals / action plans at state level.

A Technical Support Group (TSG) consisting of scientists of OUAT, ICAR Institutions, CSIR Institutions and members of facilitation centers & other experts in the field will be constituted to oversee the implementation of the mission.

- b) In developing the action plan, the thrust has been on area approach and promotion of medicinal crops in compact patches and in cluster villages. The crops have been selected for each area to which they are most suitable from the agro-climatic point of view.
- c) The costs of cultivation have been determined as per norm of NMPB. These cost norms have been adopted in calculating the requirement of funds for the area expansion activities under the programme.
- d) The Annual Action Plan has to be viewed as an integrated project covering all the 30 districts of the state. For facility of implementation separate district plan have been drawn up taking in to account the potential of each district.

- e)The following major components have been included in the action plan.

- i. Nursery*
- ii. Cultivation*
- iii. Post Harvest Management*
- iv. Processing & Value Addition*
- v. Management Support*

**3.4. COMPONENTS OF ANNUAL ACTION PLAN 2011-12:**

**3.4.1. Nursery (Production of Planting Materials)**

Model nursery will be developed to setup the production of quality planting material both in public & private sectors. The main objective of the scheme is to fulfill the demand of the

farmers of our state by supplying of good quality planting material. Simultaneously it also helps self employment by creating employment opportunity.

Infrastructure for model nurseries would include the following :

- i. Mother stake block maintenance to protect from adverse weather condition.
- ii. Raising root stake seedling under net house condition.
- iii. Propagation house with ventilation having insect proof netting in the sides and fogging and sprinkler irrigation system.
- iv. Hardening / maintenance insect proof net house with light screening and sprinkler irrigation system.
- v. Pump house to provide sufficient irrigation and water storage.
- vi. Soil sterilization steam sterilizations with system with boilers.

A model nursery should an average of about 4 ha. & would cost of Rs.20.0 lakhs per unit. The model nurseries which would be established under the public sector will be eligible for 100% assistance of a maximum of Rs.20 lakhs per unit and for the private sector. The assistance will be 50% of the cost subject to a maximum of Rs. 10 lakhs per unit for the small nurseries. The assistance will be extent of 100% of the cost under public sector and 50% of the cost subject to a ceiling of Rs.2.00 lakh for the nurseries in the private sector.

The model nurseries and small nurseries proposed below will have to produce 2 to 3 lakhs planting materials and 60000 nos respectively annually.

It would be the responsibility of the nurseries to ensure quality of the planting materials. Though certification for which independent certification agencies will be identified and notified by the NMPB.

The nurseries would be multi-crop or crop specification depending upon the requirements of planting materials on the locality perfect area. The nursery programme for this year 2011-12 is as follows:

Component	Physical Programme	Rate of Asst./ Unit (Rs)	Financial Programme
<b>Public Sector</b>			
Model Nursery (4ha.)	5	Max. of Rs.20.00 lakh / nursery	100.00
Small Nursery (1 ha.)	6	Max. of Rs.4.00 lakh / nursery	24.00
<b>Private Sector</b>			
Model Nursery (4ha.)	5	50% of the cost limited to Rs.10.00 lakh	50.00
Small Nursery (1 ha.)	15	50% of the cost limited to Rs.2.00 lakh	30.00
<b>Total</b>	<b>31</b>		<b>204.00</b>

### 3.4.2 Cultivation :

The cultivation is proposed to be done in conjunction with the processing facilities and market available for medicinal plants. This is to be done in cluster identified by the state govt. through individuals Self Help Groups.

Co-operative Societies of medicinal plants growers, preference to cultivation on cluster through SHGs, growers, co-operatives, producers companies over individuals genetic cultivation will ensure for setting of subsidy to the small and marginal farmers. Therefore, small and marginal farmers will be organized in to Self Help Groups and Co-operative Societies of medicinal plants growers or as producers companies to enable them to take up medicinal plants cultivation, which presently they are unable to do.

However, in the state of Orissa, during the year 2009-10 out of 57 species selected by NMPB under subsidy 10 nos species have been finalized on different agro- climatic condition for cultivation to be cover an area of 2570 ha for which subsidy raising from 20% to 75% will be admissible.

Commercially the cultivation of medicinal plant has started since 2003 in Orissa state. Out of 30 revenue districts only 18 districts have started medicinal plants cultivation like Angul, Balasore, Bargarh, Bolangir, Cuttack, Deogarh, Dhenkanal, Ganjam, J.S.Pur, Jajpur, Kandhamal, Kendrapada, Khurda, Koraput, Mayurbhanj, Nayagarh, Puri, Sambalpur and Sundargarh over an area of 350 acres as on 2004-05. During 2009-10, about 750 ha has been covered under plantation of Aonla & Aswagandha crops. During this year. It was decided by the

Technical Screening Committee to include Giloe (*Tinospora cordifolia*) in addition to previous year crops. The details of monitorable physical and financial target is given below.

Component	Unit	Physical Programme	Rate of Asst./ Unit (Rs)	Financial Programme (Lakh Rs.)
Anola	Ha.	1500	20% of the cost limited to Rs.13000/- ha. in 3 installments of 65 : 20 : 15 subject to survival of 75% in 2nd yr. & 90% in 3 <sup>rd</sup> yr.	126.75
Sarpagandha	Ha.	120	50% of the cost limited to Rs.31250/- per ha. in 2 installments of 75 :25 subject to survival of 90% in 2nd yr.	28.13
Aswagandha	Ha.	130	20% of the cost limited to Rs.5000/-	6.50
Shatavari	Ha.	80	20% of the cost limited to Rs.12500/- per ha. in 2 installments of 75 : 25 subject to survival of 90% in 2nd yr.	7.50
Ghrit Kumari ( <i>Aloe vera</i> )	Ha.	150	20% of the cost limited to Rs.8500/- per ha.	12.75
Ashoka ( <i>Saraca indica</i> )	Ha.	120	50% of the cost limited to Rs.31250/- per ha. in 3 installments of 65 : 20 : 15 subject to survival of 75% in 2nd yr. and 90% in 3rd yr.	30.47
Pipali ( <i>Piper Longam</i> )	Ha.	100	20% of the cost limited to Rs.12500/- per ha. in 3 installments of 75 : 25 subject to survival of 75% in 2nd yr. and 90% in 3rd yr.	9.375
Tulasi ( <i>Ocimum Sanctam</i> )	Ha.	40	20% of the cost limited to Rs.6000/-	2.40
Bael ( <i>Aegle Marmelos</i> )	Ha.	250	50% of the cost limited to Rs.20000/- ha. in 3 installments of 65 : 20 : 15 subject to survival of 75% in 2nd yr. & 90% in 3rd yr.	32.50
Giloe ( <i>Tinospora cordifolia</i> )	Ha.	50	20% of the cost limited to Rs.5500/- per ha.in one instalment.	2.75
<b>Total</b>		<b>2570</b>		<b>259.12</b>

The implementing agency of the above programme is Directorate of Horticulture. The beneficiaries are selected by the field staff involving the Panchyat Raj Institution. The plantation programme taken up by ITDA / Watershed / other Govt. agencies under NHM mode should be approved by the concerned District Management Committee prior to implementation of programme. The quality planting materials will be supplied to the selected beneficiary by the department on deposit of 25% of the cost of the planting material as his share. The balance subsidy in respect of cost of cultivation will be released in shape of A/C payee cheque / demand draft in two installments. The approaches should be made to cover plantations in compact patches and cluster of village.

### 3.5 Maintenance:

**3.5.1** For success of the plantation programme and proper growth of the plant, it is proposed to give maintenance for medicinal crops. There is provision to give maintenance for the plantation programme taken up during 2009-10. The subsidy of maintenance of the plantation is given to farmers after assessing the survivality percentage as per the norm. The subsidy amount will be released to the beneficiaries for 1<sup>st</sup> year maintenance as per survival report. The

cost of maintenance is proposed as per the AAP 2009-10. The physical and financial provision is given in the table.

**3.5.2** The component wise physical and financial programmes for 2010-11 is as follows.

Component	Unit	Physical Programme	Rate of Assistance / unit	Financial Programme
2 <sup>nd</sup> Year Maint of Anola	Ha	600	15% of assistance of Rs.13000/- i.e, Rs.1950/- per ha	11.70

### 3.4.3. POST HARVEST MANAGEMENT:

Post harvest management is very crucial to minimize loss & in enhance the marketability of the produce through drying and storing followed by sorting, grading and packing. Due to in adequate infrastructure of drying shade, storage go down etc many medicinal produces are loss after harvest.

#### i. Drying Shed:

There is a provision for 100% assistance under the component of drying shades to be establishment by self help groups / cooperative sector / public sector. It is suggested 5 no. drying shades may be established under the 100% assistance which enable the medicinal produce to be dried on the same drying shade after harvesting the different medicinal produce.

#### ii. Storage Godown:

Similarly, provision has been made for construction of 5 no. of storage godown under self help group / cooperative sector / public sector. The assistance is 100% and an amount of Rs.5.00 lakh is proposed for such structure.

The detail physical & financial programmes are given below.

Component	Implementing Agency	Unit	Physical Programme	Rate of Asst. / Unit (Rs.in lakhs)	Financial outlay (Rs.in lakhs)
Drying Shades	SHGs / Cooperative / Public Sector	Nos.	15	100% assistance - Rs.5.0 lakh per no.	75.00
Storage Godown	SHGs / Cooperative / Public Sector	Nos.	15	100% assistance - Rs.5.0 lakh per no.	75.00
<b>Total</b>			<b>30</b>		<b>150.00</b>

### 3.4.4. PROCESSING & VALUE ADDITION :

Processing and value addition is the major components of medicinal produce, if this component will be strengthen in Orissa then number of farmers will be involved medicinal plantation under Orissa State. Since medicinal crops first time implementing by Directorate of Horticulture, so it is suggested project based 100% assistance schemes i.e., marketing infrastructure for establishment of mandi at rural as well as district level may be kept under

processing & value addition components. The detail physical & financial programme of above item are given below :

Component	Unit	Physical Programme	Rate of Asst. / Unit (Rs.in lakhs)	Financial outlay (Rs.in lakhs)
Marketing Infrastructurefor Rural Mandi	Nos	10	100 % assistance (Rs10.0 lakhs per unit)	100.00
For District Mandi	Nos.	1	100 % assistance (Rs200.0 lakhs per unit)	200.00
<b>Total</b>		<b>11</b>		<b>300.00</b>

### 3.4.5. Mission Management:

In the event of commissioning of National Mission on Medicinal Plant at the State as well as district level the workload has increased manifold. But the existing infrastructure and staff strength under the Directorate of Horticulture is highly inadequate to cope up with the additional workload. It is proposed to provide support to the Directorate of Horticulture, Dy. Director of Horticulture and the Horticulturists at the field level by providing additional manpower through contractual appointment. Strengthening of Information technology for early communication of data from field level to Headquarter is necessary to closely monitor the scheme. The total amount of Rs.46.24 lakhs (5% of the total outlay) is approved under this component.

The details of physical and financial is given below :

Component	Unit	Physical Programme	Rate of Asst. / Unit (Rs.in lakhs)	Financial outlay (Rs.in lakhs)
i) State and District level organisations implementing the programme including additional manpower	LS		5% of total annual expend. On the basis of appraised need. The salary of the contractual staff and project management consultant for each component of the scheme to be paid under the scheme	46.24
ii) Project preparation cost and other administration cost including hiring of transport, Travel Expenses, office expenses hardware / software etc.	LS		Project based - within 5 % available for management support	
iii) Other expenses including exposure visits within the country and abroad	LS	500 nos. within state + 100 nos. outside the state	Project based - within 5 % available for management support	
<b>Sub - Total</b>				<b>46.24</b>

ANNUAL ACTION PLAN UNDER  
CENTRALLY SPONSORED SCHEME OF  
NATIONAL MISSION ON MEDICINAL  
PLANTS DURING 2011-12

DIRECTOR  
HORTICULTURE,ORISSA,BHUBANESWAR

**Annexure-A1**

<b>Statement showing district wise list of Farmers with area covered under medicinal plant cultivation for financial assistance under NMPB</b>									
Sl.No	Name of the District	2002-03		2003-04		2004-05		2005-06	
		No. of Farmers	Area (acs)	No. of Farmers	Area (acs)	No. of Farmers	Area (acs)	No. of Farmers	Area (acs)
1	Angul	1	37.5	12	130.94	2	13	16	94
2	Balasore			1	9	1	47	1	12
3	Bargarh			1	2	7	17.5	6	43
4	Bolangir			3	21				
5	Cuttack			3	49.8	5	67	7	68.43
6	Deogarh			1	13				
7	Dhenkanal			3	32.14	4	48	5	45
8	Ganjam			2	9.3	1	16	3	23.5
9	Jatsinghpur					2	14.5		
0	Jajpur					1	4.5		
1	Kandhamal					1	10		
2	Kendrapara			1	4				
3	Khurda	2	35	17	173.3	3	38.19	2	10
4	Koraput							1	8
5	Mavurbhani			1	8	1	3		
6	Nayagarh			1	3.76	7	33.5	2	12
7	Puri			1	8				
8	Sambalpur					3	7	1	8
9	Sundamarh					3	6	2	16.5
	<b>Total</b>	<b>3</b>	<b>72.5</b>	<b>47</b>	<b>464.24</b>	<b>41</b>	<b>325.19</b>	<b>46</b>	<b>348.43</b>

**Statement showing district wise cultivation of medicinal plant species under Contract Farming proposals recommended by State Medicinal Plants Board, Orissa during 2004-05 for Financial Assistance**

Crop Area (ac)

SI No.	Name of the District	No. of Farmers	Amla	Brahmi	Safed Mushli	Aswagandha	Sarpagan dha	Bacha	Satavari	Kalmegh	Aloe Vera	Coleus	Pippali	Tulsi	Lemon
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	Angul	2	0	0	4.5	3		1	0	1.5	0	3	0	0	0
2	Balasore	1	27		20				0	0	0	0	0	0	0
3	Baragarh	7	0	0	14	0		3.5	0	0	0	0	0	0	0
4	Bhadrakh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Bolanoir	1	0						0	0	5	0	0	0	0
6	Boudh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Cuttack	5	10	0	6	7.75		5	0	3.75	6	27	6	0	0
8	Deoosarh	0	0	0	0	0	a	0	0	0	0	0	0	0	0
9	Dhenkanal	4	10	0	5.5	0.47		0	0	0	25	0.25	0	0	0
10	Gajapati	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Ganiam	1	8		5			0	3	0	0	0	0	0	0
12	Jagatsinghpur	2	0	0	3	0		0	0	0	0	11.5	0	0	0
13	Jajpur	1			4	0.5		0	0	0	0	0	0	0	0
14	Jharsuguda	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Kalahandi	0	0	0	0	0	0	0	0	0	0	2	0	0	0
16	Kandhamal	1	5	1		1		0	0	1	0	0	0	0	0
17	Kendrapara	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Keonihar	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Khurda	3	2	0	10.07	8.12	1.2	0.94	0	6.5	0	9.04	0	0	0.32
20	Koraput	a	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Malkangiri	a	0	0	0	0	0	0	0	0	0	0	0	0	0
22	Mayurbhanj	a	0	0	0	0	0	0	0	0	0	0	0	0	0
23	Nayagarh	8	2	1.8	10.1	9.8		0	3.8	0	3.73	6	0	0	0
24	Nowrangpur	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Nuapara	a	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Puri	1						0	0	0	4.5	0	0	0	0
27	Rayagada	0	0	0	0	0	0	0	0	0	0	0	0	0	0

28	Sambalpur	3	1.5	0	4			0.5	0	0	0	0	0	1	0
29	Sonepur	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Sundargarh	3	3	0	3			0	0	0	0	0	0	0	0
	<b>Total</b>	<b>43</b>	<b>68.5</b>	<b>2.8</b>	<b>89.17</b>	<b>30.64</b>	<b>1.2</b>	<b>10.94</b>	<b>6.8</b>	<b>12.75</b>	<b>44.23</b>	<b>58.79</b>	<b>6</b>	<b>1</b>	<b>0.32</b>

**Annexure-A3**

**MEDICINAL PLANTS CULTIVATED DURING 2005-06 WITH NMPB ASSISTANCE (area in Acs)**

Name of Dist	Lemon grass	Aloe vera	Sarpagand ha.	Safed musli	Stevia	Bacha	Coleus	Amla	Kalmegh	Aswagand ha	Total area inAcs	CROP AREA IN Acs
1	2	3	4	5	6	7	8	9	10	11	12	13
Cuttack				6	3		10				20	19
			1	2			1	10	3		10	17
					3		5.5	8.5			8.5	17
					4			7.93		3.93	7.93	15.86
		3			2		2				7	7
		2			2					3	7	7
			2		4					2	8	8
Khurda					3			5		2	5	10
				1			4	5			5	10
Ganjam				4			5			3	12	12
				1.5				2		2	5.5	5.5
				5				6		1	6	12
Baraarah				2	4	1		1			8	8
				2	4	1		1			8	8
				2	4	1		1			8	8
				2	8	2					12	12
				1	2		2				5	5
										-		
					8		2			2	12	12
Navaaarh				3				6		3	6	12
				3						3	6	6
S~ndergarh				2.5	4			6.5			6.5	13

		5		4			1			10	10
Sambalpur				2	4		1	1		8	8
AnQul		3		3	1					5	7
		3		3	1					5	7
		3		3	1					5	7
		3		3	1					5	7
		2		1	2					5	5
		2		1	2					5	5
		5		2	4					11	11
		5		2	4					11	11
1		2		1	2					5	5
		2		1	2					5	5
		2		2	2					6	6
		2		2	2					6	6
		2		1	2					5	5
		2		1	2					5	5
		2		1	2					5	5
		2		1	2					5	5
Dhenkanal	10									0	10
		2		1	2					5	5
		2		1	2					5	5
		5				5				0	10
		8			3			12		5	23
Balasore			5		1			6		2	12
Koraput				2				4	1	1	8
TOTAL	10	69	8	75	99	10	32.5	83.93	4	25.93	350.43

**Annexure-B**

**Districts & Block under different agro-climatic zones of Orissa**

SI No.	Agro Climatic Zone	Covering Dists/ Division	Name of the Blocks	Medicinal Plant Species suitable for cultivation	
				Wet Zone	Dry Zone
1	North Western Plateau	Sundargarh	Sundargarh sadar~ Balisankara, Lephripara, Hemagiri, Bachha, Tangapalli, Rajgangpur; Kutna, Bargaon, Lathikata, Mandukapami Nuagaon, Kumarmunda. Bishra, Bonai, Gurundia, Kciida, Lahunipada, Subdega	Bachha, Brahmi, Mandukaparni	Harida, Bahada, Amla, Bela, Arjun, Aswagandha, Kalmegh, Tihudi, Vruddhadarak Gudmar, Guuucm" Sarpagandha. NB: ashok and nageswar recommended only for Deogarh district.
		Sambalpur Deogarh Jharsuguda	Kucmnda, Bamara Reamal, Barkote, Tileibani Laikera		
2	NorthCentral plateau	Keonjhar	Keonjhar, Saharapada, Telkoi, Champua, Jhumpura, Arjun, Bachha, Brahmi and Banspal, Joda, Ghatgaon, Patna, Harischandrapur, Ghasipura	Arjun, Bachha, Brahmi and Mandookaparni	Amla, Awagandha, Bela, Guduchi, Gudmar, KaJha:i, Kalmegh, Pippali, Tulasi, Tihudi, Vruddhadarak NB: ashok and lodhra for Mayurbhanj, and ashok for Balasore district. and baruna in coastal districts.
		Mayurbhanj	Baripada, Samakhunta, Suliapada, Udala, Khunta-I, Khunta-II Kaptipada, Betanati, Badasahi, Rasagovindpur, Morada, Bangiriposi, Kuliana, Saraskana, Karanjia, Thakurmunda, Sukruli, Raman, Joshipur, Bisoi, Rairangpur, Jamdada, Biiatola, Bahalada, Tiringi, Kusumi		
3	NorthEastern plateau	Balasore	Balasore, Basta, Remuna, Nilagiri, Ouapada, Bahanaga, Jaleswar, Bhogarai, Baliapal, Sora, Simulia, Khaira		
		Bhadrak	Bhadrak, Bhandaripokhari, Dhamnagar, Tihidi, Chandabali, Basudevpur, Bonth		
		Jajpur	Jajpur, Dasarathpur, Bingharpur, Dharmasal, Rasulpur, Bari, Korai, Danagadi, Badachana		
		Keonjhar	Anandpur, Hatadihi		

4	East South & Eastern Coastal Plain	Cuttack	Cuttack Sadar, Barang, Niali, Kantapada, Salipur, Nichintakoili, Mahanga, Tangichaudwar		
		Jagatsinghpur	Jagatsinghpur, Biridi, Nuagaon, Balikuda, Raghunathpur, Tirtol, Ersama, Kujang		
		Kendrapara	Kendrapara, Derabis, Marshaghai, Mahakalpada, Garadpur, Pattamundai, Aut Rajakanika, Rajanagar		
		Puri	Puri Sadar, Brahmagiri, Krushnaprasad, Satyabadi, Kanas, Delang, Pipili, Nimapara, Gop, Kakatpur, Astarang		
		Khurda	Bhubaneswar, Balipatna, Baliana, Jatni, Khurda, Begunia, Bolgarh, Tangi, Chillka, Banpur		
		Nayagarh	Nayagarh, Odagaon, Bhapur, Khandapara, Ranapur, Dasapalla, Gania, Nuagaon		
		Ganjam	Patrapur, Chikitii Rangeilunda, Kukudakhandi, Digapahandi, Sankhamundi, Chhatrapur, Ganjam, Purusotampur, Hiniikatu, Kodla, Kabi Survanagar, Polsara		
5	North Eastern Ghat	Phulbani	Phulbani, Kotgarh, Nuagaon, Balliguda, Olakapada, Phiringia, Daringibadi, G. Udaygiri, Raikia, Tikabali	Arjun, Brahmi, Bachha, Mandookaparni Ashok...	Gudmar, Dankari, Phanaphana, Bela, Harida, Bahada, Amla, Gambhari, Patala Vruddhadarak Tihudi. NB: pippali in Gajapati district. Amla, Harida, Bahada, SArpagandha, Gudmar, Giloe, Kalmegh,
		Rayagada	Rayagada, Muniguda, Ramanguda, Padampur, Gunupur, Gudari, BiShamakataka, Chandanpur, Kashipur, Kalyansinagar		
		Gajapati	Nuagarh, Mohana, R. Udayagiri, Rayagarh, Kashinagar, Paralakhemunid, Guma		

		Ganjam	Belguntha, Bhanjanagar, Shergarh, Jaganathprasad, Buguda, Aska, Dharakote, Sorada		
6	Eastern Ghat High Land	Koraput	Kotapad, Koraput Sadar, Dasamathpur, S-iguda, Nandapur, Pottangi, Lampatput, Laxmipur, Narayanpatna, Bandhugaon	Arjun, Brahmi, Bachha, Ashok...	Amla, Harida, Bahada, Sarpagandha, Gudmar, Giloe, Kalmegh
		Nawarangpur	Umerkote, Jharigaon, Chandahandi, Raigahr, Nawrangpur, Nandahandi, Tentulikhunti, Papadahandii Kasagumuda		
7	South- Eastern Ghat	Malkangir	Malkangir, Kalimera, Khairput, Korukunda, Podia, Mathili, Kudumuluguma		Vruddhadarak Baibidanga, Pippali, Gudmar, Tihudi.
		Koraput	Jeypore, Kundra, Boriguma, Boipariguda		
8	Western undulating	Kalahandi	Bhawanipatna, Kesinga, Kariamunda, M. Rampur, Narala, Langigarh, Junagarh, Golmunda, Dharmagarh, Kalampur, Mandookaparni. Kokosara, Th. Rampur, Jaipatna	Arjun, Brahmi, Bachha, Mandookaparni Ashok...	Harida, Bahada, Amla, Bela, Pippali, Aswagandha, Kalmegh, Gudmar, Baibidanga, Dankar, Phanphana, Gambhari, Patale. and Vruddhadarak NB; sarpagandha, kalihari, neem, guduchi, tihudi and vriedhadaraka in Bargarh, Sonepur and Bolangir districts.
		Nawapara	Nawapara, Khariar, Sinapalli, Komna, Boden		
		Nawarangpur	Nawarangpur, Dabugaon		
9	West Central Table Land	Sambalpur	Dhanakunda, Maneswar, Jujumara, Rengali, Rairakhol, Naktideul, Jamarikira		
		Boudh	Boudh, Harbhanga, Kantamal		
		Jharsuguda	Jharsuguda, Laxmanpur, Kalabiri, Kirimira, Padmapw		
		Baragarh	Bargarh, Bhaden, Barapalli, Bhatili, Ababhana, Attabira, , Paikamal, Jharbandha, Sohela, Bijepur, Gaise1et		

		Bolangir	Bolangir, Deogan, Guduvelia, Titilagarh, Sainatala, Bongomunda, Muribahal, Tuneikela, Patnagarh, Bellara, Khaprakhole, Puintala, Loisinga, Ajalpur		
		Sonepur	Sonepur, Tarava, Birmaharajpur, Ullanda, Dunguripali, Binka		
10	Mid Central Table Land	Dhenkanal	Dhenkanal Sadar, Gondia, Hindol, Odapada, Kamaskhyanagar, Parjang, Bhuban, Kankadahada	Amla, Bela, Ashok, Arjun and Mandookaparni	Aloe, Guduchi, Gudmar, Kalihari, Kalmegh, Tulasi, Pippali, Tihudi, Vruddhadarak Amla, Bela.
		Angul	Angul, Banarpal, Chhendipada, Athamallick, Kishorenagar, Ta1cher, Palahara, Kaniha		
		Cuttack	Athagarh, Banki, Tigiria, Banki, Dampada, Baramba, Narsinghpur, Sukinda		