Pilot Project Proposal

On

Mission Aonla

Submitted By

Chhattisgarh State Medicinal Plant Board,

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Project Administration Detail

Title of the Project	**Mission Aonla**
Name of the Principal Investigator	CEO , Chhattisgarh State Medicinal Plant Board, Raipur
Name of the Organization	Chhattisgarh State Medicinal Plant Board, Raipur
Status	Government organization
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Project period	**2 Years (2008-2010)**
Grant to be issued in favour of	CEO , Chhattisgarh State Medicinal Plant Board, Raipur
Project Implementation Agency	**(1) Chhattisgarh State Forest Development Corporation-** **(2) NGOs**
Total Project Cost (in lakhs)	**Rs 331.77 Lakhs**

Introduction:

CHHATTISGARH STATE MEDICINAL PLANT BOARD

In view of its extremely rich and unique Bio-cultural-diversity, the Government has resolved to develop Chhattisgarh as **Herbal State**. Through the state led initiatives on *in situ* conservation, *ex situ* cultivation and propagation, capacity building of local communities, development of processing technologies and emphasis on value addition on herbal produce the forests of Chhattisgarh have become a large store house of varieties of medicinal & aromatic plants and to sustain the lives of large population of forest dependent rural communities through addressing their food, health and livelihood issues. As a part of this endeavor, the Chhattisgarh State Medicinal Plant Board, has been constituted on 28th July 2004, under the chairpersonship of the chief minister, Chhattisgarh with forest Minister as the Deputy Chairperson of the Board. Other important members are Finance Minister , Agriculture Minister , Tribal Welfare Minister , Health Minister, Industry minister and Panchayat & Rural Development minister. In addition to the above, representative of concerned Ministries of the Govt. of India, Manufacturers, Collectors, growers and traders etc. dealing with medicinal plants are members of the Board. The Chief Executive Officer is the Member Secretary of the Board.

We endeavor to....

- Facilitate research and development for medicinal plant sector.
- Monitor and co ordinate medicinal plant development schemes and projects funded by central and state government, their organizations and other institution.
- Formulate policy and project for conversation, development and non-destructive harvesting of medicinal plants.
- Facilitate development of primary processing (cottage and SSI), drug manufacturing, marketing and export of medicinal plants and herbal products.
- Avail national and international assistance for development of this sector.
- Document and ensure patenting of traditional knowledge.
- Co-ordinate bio-partnership and IPR issue.
- Address any other work relating to medicinal plant sector.

MISSION AONLA

1.1Aims of the mission aonla

1 to provide livelihood security and health security to beneficiaries.

2 To provide raw material for AYUSH industries

3 To develop Agro forestry and create green belt in villages

4 Economic developments of rural farmers and laborers

5 To improve the land productivity and prevent soil erosion

6 To create income and employment opportunities in village areas.

1.1.1 **About the species**

Species: *Emblica officinalis* Gaertn.

Syn.: *Phyllanthus emblica* L.

Family: Euphorbiaceae

Origin : India.

Habit A deciduous tree of small to Medium size up to 5.5 meters

The aonla fruit (the Indian gosseberry) (*Emblica officinalis G.*) is one of the richest sources of Vitamin C. It contains 500 to 700 mg of ascorbic acid per 100 g of pulp. This is much more than the vitamin C content of guava, tomato or citrus fruits.

Distribution: Aonla thrives well throughout tropical India and is met with wild or cultivated in the region extending from the base of the Himalaya to Sri Lanka and from Malacca to South China. It is more popular in India and is commercially cultivated in Uttar Pradesh. The vast tracts of usar land widely spread in various parts of Sultanpur district of Uttar Pradesh offer ample scope

for aonla cultivation. Commercial aonla orchards over 200 hectares are found in the districts of Azamgarh, Pratapgarh, Varanasi and Bareilly. These districts also have potential for expansion of area under aonla. Of late, commercial cultivation of aonla has come up in some parts of Tamil Nadu, Rajasthan and Madhya Pradesh also.

Climate : This is a fruit of sub-tropical region with distinct winter and summer. However, it is growing near the sea coast upto 1800 m altitude.

Soil : The crop is not very specific in its soil requirement and grows well in sandy loan to clay soils. It comes in the pH range of 6 to 8 very successfully. However, the production shall be highly benefited in deep and fertile soils.

Varieties : Aonla is successfully propagated by budding or softwood grafting. Popular varieties of aonla are Banarasi, Chakaiya, Krishna, Kanchan, Anand-1, Anand-2, NA-6, NA-7 and NA-10.

Selection of varieties

- After the intensive screening of the research papers on Selection of Aonla Varieties it is proposed that
- 3 numbers of NA -7 variety , one banarasi and one desi variety sapling can be provided to each families for better pollination and yield of Aonla fruits
- It is proposed to plant desi and grafted varieties in 40: 60.

The Study on variety

- An experiment was conducted during 1997/98 at Faizabad, Uttar Pradesh, India to evaluate the suitability of **aonla** (*Emblica officinalis* [*Phyllanthus emblica*]) cultivars NA-6, NA-7, NA-10, Kanchan and Chakaiya for fruit processing. Data were recorded for average fruit weight, acidity, and pulp, fibre, seed, total soluble solids (TSS), ascorbic acid and phenol contents. NA-6 recorded the lowest fibre content, high pulp and TSS contents, and moderate fruit size and ascorbic acid content. NA-7 showed average physico-chemical composition with high content of ascorbic acid. These cultivars also exhibited higher productivity and their fruits were free from necrosis or internal browning, indicating their suitability for fruit processing.

(Title: Evaluation of **aonla varieties** (*Emblica officinalis* Gaertn.) for fruit processing. Personal Authors: Shri Vinod Singh, Shri H. K.Singh & Shri I. S. singh Author Affiliation: Department of Horticulture, N. D. University of Agriculture and Technology, Kumarganj, Faizabad - 224 229, U. P., India.)

- Aonla fruit is an important indigenous fruit of India. It is highly nutritious and thereapeutically important. Five varieties (Banarasi, Chakaiya, Francis, Kanchan and Krishna) of aonla were evaluated for their productivity, physio-chemical characters and organoleptic quality of the products. The variability studied indicated the possibility of selecting varieties suitable for processing of aonla fruit. Kanchan and Krishna were found suitable for candy and Jam and Banarasi for drying. Chakaiya

variety showed desirable attributes and higher score for pickle, chutney and syrup.

(EVALUATION OF AONLA (*EMBLICA OFFICINALIS* GAERTN) VARIETIES FOR PROCESSING **Authors:** I.S. Singh, R.K. Pathak)

Planting : Grafts or buddings of aonla are best planted in June-July at a distance of 10 m under square system of lay-out.

Trimming and Pruning : Aonla trees do not require regular pruning. However, pruning in early years for giving proper shape and development of strong frame may be necessary for which trees should be trimmed to a single stem upto the height of about 1 m and then primary branches can be allowed at regular space all round the trunk.

Bio- Fertilization : For better fruiting of aonla bio-fertilizer like vermin-compost etc. will be applied . Since the fruit remains dormant in summer, the soil should not be disturbed during that period. Aonla trees are hardy and stand very well against drought. Therefore, hardly any irrigation is practiced. However, the crop will be benefited by giving 2-3 irrigations at the time of full bloom and fruit set.

Pests and Diseases : Caterpillar, leaf rolling caterpillar, bark eating caterpillar, mealy bug etc. are the main pests. Ring rust, fruit rot, leaf rust etc., are the diseases. Biological control and bio-ferliliser will be used on the recommendation

of state horticulture Plant protection measures should be followed as recommended by the local Department of Horticulture.

Harvesting: A vegetative propagated tree starts fruiting commercial crop after 6 to 8 years of planting. The economic life is considered to be about 60 years under good management. Generally, aonla fruits are ready for harvest in November /December. Their maturity can be judged either by the change of seed colour from creamy white to black. Banarasi is a poor yielder as compared to N-7 . On an average a grown up tree should yield 100 to 150 kg per annum

Use full part: Fruits

Fruits, fleshy, almost depressed to globose, 2.24 cm in diameter, 5.68 g in weight, 4.92 ml in volume, primrose yellow 601/2 (Horticultural Color Chart of the Royal Horticultural Society). The stone of the fruit is six ribbed, splitting into three segments, each containing usually two seeds: seeds 4–5 mm long, 2–3 mm wide, each weighing 572 mg, 590 micro liters in volume.

Analysis of the fruit pulp:

Fruit pulp	90.97% of the whole fruit by weight
	70.5% moisture.
Total soluble solids (juice)	23.8% of the juice
Acidity	3.28%
Total sugars	5.08%
Tannins	2.73%
Pectin	0.59%
Protein	0.75%

Minerals (represented by ash)	2.922%
Ascorbic acid	1094 mg/100 ml of juice

Medicinal Uses

The root bark is useful in ulcerative stomatitis and gastrohelcosis. The bark is useful in gonorrhoea, jaundice, diarrhoea and myalgia. The leaves are useful in conjuctuvitis, inflammation, dyspepsia, diarrhoea and dysentery. The fruits are useful in diabetes, cough, asthma, bronchitis, cephalalgia, ophthalmopathy, dyspepsia, colic, flatulence, hyperacidity, peptic ulcer, erysipelas, skin diseaes, leprosy, haematemesis, inflammations, anaemia, emaciation, hepatopathy, jaundice, strangury, diarrhoea, dysentery, haemorrhages, leucorrhoea, menorrhagia, cardiac disorders, intermittent fevers and greyness of hair. It is the principal constituent of the famous Ayurvedic restorative tonic called chayavan prash

Demand and supply

- Market demand of Aonla in 2001-2002 is 22729.5 MT and that of in year 2004-05 41782.9 MT (Source SMPB AP)
- The annual growth rate for aonla market is 22.5 % (Source SMPB AP)
- The current production of Aonla in Chhattisgarh is 31000 quintal Worth Rs. 9.30 Crores (CGMFP Study 2005)
- The present annual trade as per FRLHT 2008 report on demand and supply of medicinal plant in India is 16000 MT

Status of Aonla trees present in Chhattisgarh forest

Forest Type	Area in sq Km
Total forest Area	59770
Open forest	17018
Barren and rocky area	3772
Inaccessible area due to insurgency and remoteness	16109
Total unproductive area for Aonla (61 %)	36899
Total Aonla tree bearing area (39%)	22871

- 22871 Sq Km area have Aonla plant that are commercially harvested

- Total number of plant present in this area is 25633764 9 (256 Lakhs)

- The total yield from above derived number of plant is 31000 Quintals as per the CGMFPfed report 2005
- The above production figures published in the Market survey report of CGMFPFED for the year 2006 for Aonla is 31000 qtls. which was wrongly published as 13100 MT in state wise annual production and supply data (table 7.1 page 63) of FRLHT.

The total yield of Aonla fruits is reducing day by day in Chhattisgarh due to

- Due to high demand (from newly established factory of Dabur at Katni (M.P.), which uses fresh aonla as raw material) of fresh Aonla collector lop the tree.
- High demand leads to non-sustainable practices of harvesting .
- This results in reduction in the crown of the Aonla tree, which ultimately results into loss of regeneration and productivity.
- The fruiting of Aonla varies year to year. Good fruiting comes in alternate year.

- ***1.2 Plantation Scheme of the project***
- The plantation of Aonla saplings will be carried out on farmers land and villagers backyard on mission mode basis as pilot project.
- It is proposed to plant 7.21 lakhs saplings *(mainly local verities and high quality grafted)* on the individual farmer's land and villager's backyard. The ratio of Desi to grafted aonla will be 40:60.
- 5 saplings of Aonla will be distributed per family in all the villages in one block of five districts of State.
- Farmers will be supplied with saplings and supervision of the plants will be done by FDC/ NGOs .
- The growers contribution will be in the form of land, labour, and after-care for maintenance of plants.

1.3 Proposed area for plantation .

Under pilot project one block from each district namely Durg, Bilaspur Mahasamund Raipur, and Kabirdham will be covered. For field level intervention representative of NGO's and field staff of CGSFDC will be available. The plantation will be done on 205 villages in FY 2008-09 and 745 villages in FY 2009-10

- Selection of beneficiary, project publicity, training, and capacity building will be provided by selected *NGO (Five NGOs have been identified who have sufficient network in the area and currently working in the field of health and education)*

- Distribution, plantation and subsequent technical support will be provided by trained field staff of the Chhattisgarh state forest development corporation (CGSFDC) .

  (The consent in this regards has been obtained from CGSFDC)

1.4 Formation of Aonla Growers Co-operative Society(AGCS)

In the project area a cooperative society will be formed by the NGO . All the growers will be the member of the society. Required funds may be created by fees collected from each member. The funds so collected will be used for purchasing of fresh aonla and revolving funds for the processing unit.

1.5 Processing of aonla

- A small processing unit for value addition will be established on block level. The management of Unit will be done by the AGCS. The processing unit will have pulverizer, packing and labeling m/c .

1.6 Marketing of the produce:

Aonla is a seasonal crop, the production of fresh aonla comes in the month of Nov- Jan every year. Aonla is sold in market in two farm -

1- Fresh Aonla/ Green Aonla
2- Dry Aonla

The individual grower will sale the fresh aonla to the AGCS of the concerning block . The AGCS will sale the fresh Aonla to the near -bye big horticulture mandi, like Raipur, Bilaspur & Jagdalpur. Herbal Mandi is being setup at Dhamtari, where the purchaser from all over country is suppose to come . In this mandi AGCS can sold the Aonla . The AGCS can inter in to marketing

agreement with manufacturers and industrial users of Aonla. The AGCS will sale the fresh aonla, dry aonla and value added products .

The value added products can be manufactured by grower co-operative society after providing the training . This value added product can be sold locally on village level & can also be sold to the other National market through "Sanjivani" the retail outlet of forest department of CG Govt.

1.7 Project implementation

- For publicity with pre and post plantation management on every village one **"Aonla Mitra "** will be provided by the NGO**.** On every 10 village one "**field co-ordinator"** will be deputed for the operational administration of the project by NGO.
- The field staff of the CGSFDC will provide technical support .

1.7 Monitoring of the project

State Level committee

State level committee shall consists of following member

1 Chief executive officer , SMPB Chhattisgarh

2 Executive director CGSFDC Chhattisgarh

3 Representative of forest department of government of Chhattisgarh.

4 Subject matter specialist

5 Representative of NGO

Block level Committee

For proper monitoring of the project a monitoring committee will be set at consisting following member.

1 Representative of SMPB

2 Staff of the Chhattisgarh State Forest Development Corporation ltd

3 President of AGCS

4 Representative of local Panchayat

5 Representative of NGO

Table 1 List of selected NGO and block assigned

SN.	Block office and District name	NGO selected
1	Block Kasdol Dist Raipur	Shree Buneshwar Sahu **Gram Swaraj Seva Sanshthan village Balram pur** Bidora Post Fingeshwar District Raipur Mob. 094255-23923
2	Block Bodla Dist Kabhirdham	Ku. Shadhna Shende , **Anad Samaj Kalyan Kendre** Professor colony, Near S. P Office Khavardha Dist Kabirdham Mob. 099938-59151 ,
3	Block Durg Dist Durg	Shri- Ajay Deshmukh **Kalyani social Welfare and Reasearch Organisation** Qr. No. 4 A, Street No. 67 Sector 5 Bhilai Nagar Dist Durg.
4	Block Mahasamund Dist Mahasamund	Shre -Kuldeep Khare **Vikash Samj Sevi Sanshthan** Gram Post Tahsil Bindra Navagon Dist Raipur.094255 -25930
5	Block Kota Dist Bilaspur	Shri -Rajkumar Srivas **Chhattisgarh Gramin vikash Seva Samiti** Indira Nagar Nahar Colony Pamgarh Dist Jangir -Champa 099937-45509 ,098934-25898

These NGOs are already engaged in the promotional scheme of health and education department of Government of Chhattisgarh.

Contribution of farmers and villagers

- To provide the land for planting
- Ensure maintenance and post planting care.
- Ensure watering , manuring of plant for 4 subsequent years.
- Formation of AGCS
- To develop market linkage

Table 2 : Quantity of Aonla Saplings required

SN.	District	Block	No. of Village proposed	No. of proposed Families	No. Of Aonla saplings to be distributed
1	Raipur	Kasdol	213	29000	190000
2	Kabhirdham	Bodla	299	24288	121440
3	Mahasamundra	Mahasamund	195	35950	167950
4	Bilaspur	Kota	162	29978	100000
5	Durg	Durg	81	25031	125155
		Total	950	144247	704545

Average number of family per village 152

Year and block wise sapling required in Lakhs

Year	Particulars	Kasdol	Bodla	Mahasamund	Kota	Durg	Total
2008-09	Covered Villages	30.00	40.00	35.00	50.00	30.00	185.00
	Family	4555	6074	5314	7592	4555	28090
	Sapling required	0.23	0.30	0.27	0.38	0.23	1.40
2009-10	Covered Villages	183.00	259.00	160.00	112.00	51.00	765.00
	Family	24445	18214	30636	22386	20476	116157
	Sapling required	1.22	0.91	1.53	1.12	1.02	5.81

Number. of families are based on average the actual may vary after detail survey

Year wise Cost of saplings

Year	Particulars	Desi	Grafted/ Banarasi	Total
	Distribution Mix	2.00	3.00	5.00
	Percentage multipler	0.40	0.60	1.00
2008-09	Saplings	0.56	0.84	1.40
	Rate per plant	15.00	25.00	0.00
	Total cost	8.43	21.07	**29.49**
2009-10	Saplings required	2.32	3.48	5.81
a	Rate per plant	15.00	25.00	
b	Total cost	34.85	87.12	121.96

PROPOSED PROJECT COST DURING 2008-09

Sn	Particulars	Cost in Rs. Per plants	Total plants in lakhs	Total cost in lakhs Rs.
1	**Cost of Saplings**		1.40	29.49
2	Staking & digging	6.75	1.40	9.48
3	Plantation	1.25	1.40	1.76
4	Weeding three times	3.00	1.40	4.21
5	Transportation of the plants to field	3.00	1.40	4.21
6	Publicity	1.00	1.40	1.40
7	Administrative cost of NGO*	2.00	1.40	2.81
8	Implmentation expenses to be reimbursed to CGSFDC	2.00	1.40	2.81
9	Pesticides and bio -fertilizer	5.00	1.40	7.02
10	Contingencies	1.00	1.40	1.40
11	**Total plantation cost (sum of 1 To 10)**	25.00		**64.61**
12	Budget required for 2009-10 project for preparation of saplings (75 % of the cost of sapling)			91.47
13	Total budget required in first year (2008-08)			156.08

PROPOSED PROJECT COST DURING 2009-10

Sn	Particulars	Cost in Rs. Per plants	Total plants in lakhs	Total cost in lakhs Rs.
1	Cost of Saplings (25 % of the cost)		5.81	30.49
2	Staking & digging	6.75	5.81	39.20
3	Plantation	1.25	5.81	7.26
4	Weeding three times	3.00	5.81	17.42
5	Transportation of the plants to field	3.00	5.81	17.42
6	Publicity	1.00	5.81	5.81
7	Administrative cost of NGO*	2.00	5.81	11.62
8	Implementation expenses to be reimbursed to CGSFDC	2.00	5.81	11.62
9	Pesticides and bio - fertilizer	5.00	5.81	29.04
10	Contingencies	1.00	5.81	5.81
11	**Total plantation cost (Sum of 1 To 10)**			**175.69**

TOTAL BUDGET REQUIRED (IN LAKHS)

Year	*Cost*
2008-09 (Including 75 % cost of preparation of saplings for 2009-10 Project)	156.08
2009-10	175.69
Total cost	**331.77**

TOTAL PROPOSED COST OF PROJECT RS. THREE HUNDRED THIRTY ONE LAKHS AND SEVENTY SEVEN THOUSAND ONLY.

YEAR WISE TOTAL COST (IN LAKHS)