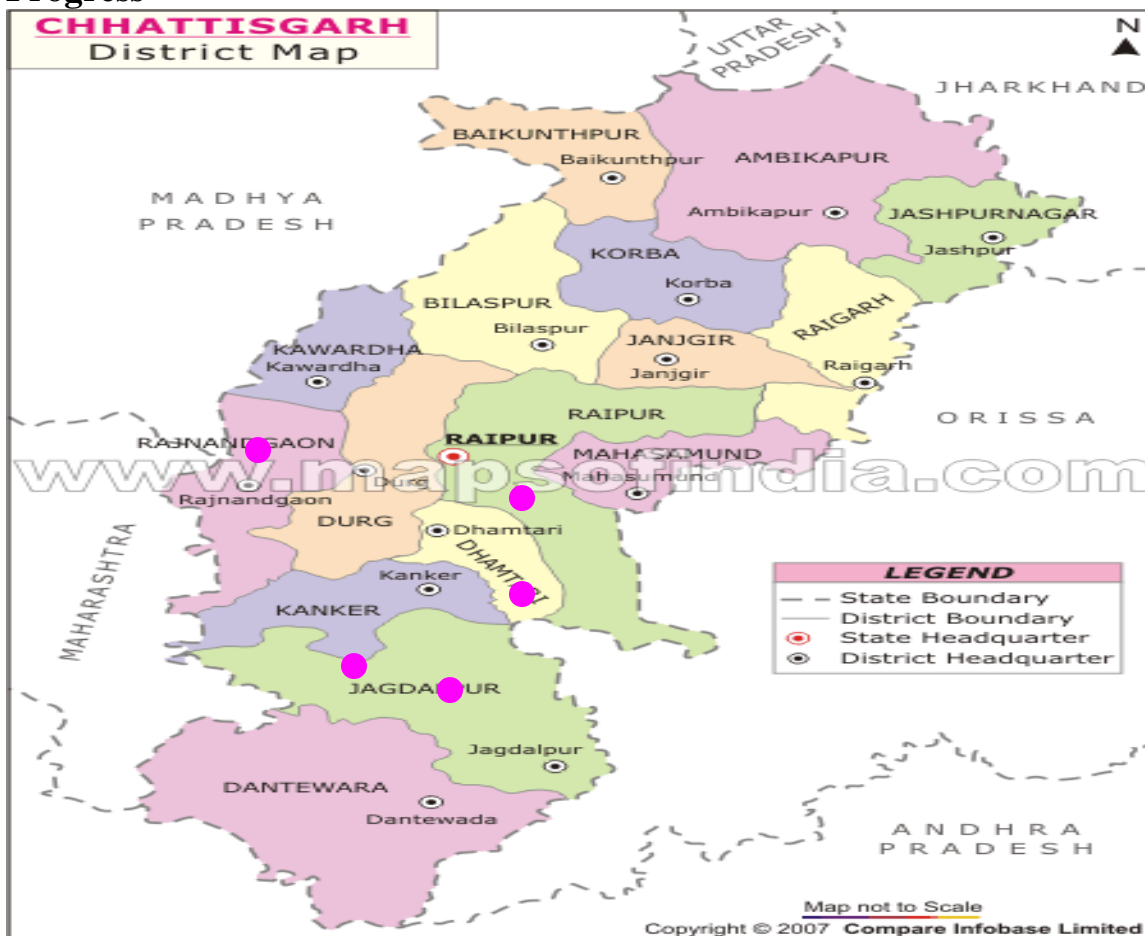


Report of the Joint Inspection Team for their visit to Chhattisgarh State During 24 to 30th May, 2012 to review National Horticulture Mission Progress



Districts visited by J.I.T of National Horticulture Mission ●

1. Rajnandgaon (LWE) 2. Dhamtari 3. Kanker (LWE) 4. Baster (Jagdalpur, LWE)
5. Raipur



National Horticulture Mission
Ministry of Agriculture
Department of Agriculture & Cooperation
Krishi Bhawan, New Delhi-110001

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Observations /Actionable Issues

1. While the State Horticulture Mission (SHM) is making good efforts to produce planting material for fruit crops through nurseries in the Public sector, there is need to involve private sector also to supplement the efforts.
2. Steps need to be initiated to accredit existing nurseries for ensuring supply of good quality planting material to the farmers under NHM. Moreover, the area expansion activity should be confined the availability of planting material.
3. Since area under banana is expanding rapidly in the State, package of practices for the crop needs to be disseminated to the farmers for getting better yield.
4. Senile orchards need to be rejuvenated in a phased manner by selecting few trees every year, instead of rejuvenating the entire orchard in one go. Farmers as well as field functionaries need to be trained on various aspects of protected cultivation through the PFDC/SAU. A training module and calendar needs to be developed for the purpose. Moreover, farmers and field functionaries need be provided training and exposure visits to progressive States for gaining first hand knowledge on latest technologies in horticulture development.
5. Use of highly toxic pesticides in vegetable production areas need to be discouraged by promoting IPM technology. IPM infrastructure like Bio control lab needs to be set up in the areas where horticulture crops are being cultivated commercially on clusters basis. Facilities of Central Integrated Pest Management Centre, Raipur could also be availed for this purpose.
6. There is ample scope for convergence with MNREGA programme with NHM on components like construction of ponds, trenches and fencing.
7. There is good demand for micro irrigation in the State. In order to ensure proper quality and after sales service of the system, there is need for proper monitoring and quality control by the implementing agency.
8. Display board with NHM logo may be placed wherever financial assistance has been provided under NHM.

Report of the Joint Inspection Team visited Chhattisgarh During 24-30th May, 2012 to Review National Horticulture Mission Progress

INTRODUCTION

A Joint Inspection Team was constituted by the Component Authority to monitor the National Horticulture Mission Progress of Chhattisgarh State during 2011-12 through field verification. This was communicated vide letter No. 33-7/2006 Hort., of Govt. of India, Ministry of Agriculture, Department of Agriculture & Cooperation, (Horticulture Division), dated 26th September, 2011.

The Joint Inspection Team comprised of the following members –

1. Dr. Om Prakash, Chief Consultant (NHM), DAC New Delhi.
2. Dr. D.A.Sarnaik Prof. & Head, Department of Horticulture, Indira Gandhi Krishi Vishwavidyalaya, Raipur.
3. Mr. Prashant Dubey, Professor & PI, (PFDC), IGKV, Raipur
4. Shri R.R. Sharma, Assistant Director (NHM), Krishi Bhavan, New Delhi.
5. Dr. Sunil Dubey, Joint Director, Horticulture / Shri Neeraj Shah, Assistant Director (Horticulture) and Nodal Officer, a nominee of SMD

The JIT conducted its preliminary field verification in the State from 24th -30th May, 2012. The Team was accompanied by Dr. Sunil Dubey, Joint Director, Horticulture and Shri Neeraj Shah, Assistant Director (Horticulture) and Nodal Officer, a nominee of SMD. The districts covered during JIT were Rajnandgaon, Dhamtari, Kanker, Baster and Raipur. A set of proformas developed by the Department of Agriculture & Cooperation were used for monitoring / recording the observations on progress of National Horticulture Mission.

About Chhattisgarh State: The state of Chhattisgarh, with Raipur as its capital, came into existence on 1st November 2000 by separation of 16 districts of Chhattisgarh region from Madhya Pradesh. Chhattisgarh is situated between 17-23.7⁰ N latitude and 80.40-

83.38⁰ E longitudes in Central eastern part of India with more than 20 million populations. The total geographical area of the state is 136.03 thousand sq. km.

Geographical features: Geographically, Chhattisgarh is divided into three distinct land areas viz., Chhattisgarh Plains, Bastar Plateau and Northern Hill Zones.

In the north of the state are the mighty Satpura Ranges, in the center the plains of River Mahanadi and its tributaries and in the South is the plateau of Bastar. The state receives annual rainfall ranging from less than 1200 mm to greater than 1600 mm in different areas. The border of Chhattisgarh is touched by the states Uttar Pradesh in the North, Bihar in the North East, Orissa in the East, Andhra Pradesh in the South and South East, Maharashtra in South West and Madhya Pradesh in the West. Paddy is the main crop of the state and due to abundance of production of paddy Chhattisgarh was earlier known as '*Rice Bowl of Central India.*'

Demographic characteristics: Total population of the state is about 20.79 million with 16.62 million people residing in rural area constituting more than 75% of the total population. The Scheduled Caste and Scheduled Tribe population constitutes more than 45% population of the state. Education system in Chhattisgarh needs greater attention especially in female education. The literacy rate is 65.12% as compared to the national rate of 65.38%. The literacy rates are still lower in rural areas particularly in tribal districts like Bastar, Surguja, Jashpur and Raigarh districts.

General climatic features: The general climate of Chhattisgarh state is dry sub-humid type where the annual potential evapo-transpiration is slightly higher than the annual rainfall. The average annual rainfall of the region is around 1400 mm and about 90 to 95 percent of this amount is received during southwest monsoon season (June-October). The monsoon sets in around 10th June in the tip of the Bastar area and covers the entire area by 25th June. Months of July and August are the wettest months. 3 Rainfall in October month occurs due to cyclonic activity in the Bay of Bengal and October rainfall is most crucial for the productivity of rice in the state.

Winter conditions set in from mid November when the average minimum temperature starts falling below 15⁰C. The northern districts especially Bilaspur division have more severe and longer winter period as compared to southern parts especially Bastar division.

The atmospheric humidity is very high (>90%) during monsoon months and starts decreasing from October onwards and reaches as low as 15-20 percent during peak summer months.

Soil type: The soils of Chhattisgarh vary considerably in the three agro-climatic zones. Though the nomenclature is different, the types of the soils especially the physical properties are the same. The different soils that exist in the three agro-climatic zones are as follows:

Chhattisgarh Plains	Bastar Plateau	Northern hills
Bhata (Lateritic)	Marhan (Coarse sandy)	Hilly soils
Matasi (Sandy loam)	Tikra (Sandy)	Tikra
Dorsa (Clay loam)	Mal (Sandy loam)	Goda chawar
Kanhar (Clay)	Gabhar (Clay & Clay loam)	Bahara

The first two categories of the soils in the three Agro climatic zones are very light type of soils with very low water retentive capacity. As a result water stress or drought conditions occur either during the crop growing season when there is a break of monsoon for more than 5-7 days or immediately after the withdrawal of monsoon. In Bastar plateau and northern hill zone rice is grown in upland conditions without bunds and they are called uplands. In Chhattisgarh plains rice is mostly grown under bunded condition.

Therefore, there is an urgent need to diversify cropping pattern wherever conditions are favorable to grow horticultural crops and to earn higher net profit in unit area.

Agro-climatic zones: Agro-climatically, Chhattisgarh may be divided into 3 distinct agro climate zones with immense potential of horticulture development.

Sl. No.	Agro-climatic Zone	Districts
1.	Chhattisgarh Plains	Raipur, Mahasamund, Dhamtari, Durg, Rajnandgaon, Kabirdham, Bilaspur, Korba, Janjgir and part of Kanker district (Narharpur & Kanker block) along with part of Raigarh district
2.	Bastar Plateau	Jagdalpur, Dantewada and remaining part of Kanker district.
3.	Northern Hills	Surguja, Koriya and Jashpurnagar and Dharamjaigarh Tehsil of Raigarh district.

Present Irrigation Scenario

Source wise irrigation

Sl. No.	Source of irrigation	Area (in lac ha.)	% age.
1.	Canals	8.76	70
2.	Tanks	0.53	4
3.	Tube-wells	2.06	16
4.	Wells	0.35	3
5.	Other Sources	0.79	7
Total -		12.49	100
Net irrigated area -			26

Chhattisgarh is one state without power deficit. With the launching of new scheme National Agriculture Development Plan, the harnessing of the surface and sub-surface water resources is possible by strengthening the existing irrigation infrastructure.

Importance of horticulture: Horticulture plays important role in livelihood security of poor farmers. It provides food security and perennial source of income to poorest of poor. It is a dynamic tool for ensuring ecological sustainability.

National Horticulture Mission in the state was effectively launched in the year 2006-07. Initially 7 districts out of the 21 districts have been included in the mission. The main focus had been on four major crops viz. Mango, Litchi, Cashew and Lime. Along with the main crops five crops namely Chilli, Ginger, Garlic, Coriander and Turmeric have been taken up essentially as inter crops. Later in the year 2007-08, four additional districts namely Raipur, Korea, Jashpur and Rajnandgaon were included in the action plan. Recent year six new crops were included in the list of main crops, they were Jamun, Aonla, Ber, Bael, Sitaphal and Banana and crops such as Lemon grass, Patchouli, Khus, E. citriodora,

Palmarosa, Jamarosa, Alovera, Sarpagandha, Ashwagandha and Bach have been selected as intercrop.

Perennial source of income: Land and water are two most important natural endowments but they are renewable but finite resources. However, with judicious mix of interventions like development of irrigation facilities, application of improved and modern horticultural practices and creation of other income generation activities based on natural resources, the possibilities of creating perennial source of income can be enhanced. Perennial source of income can be ensured through –

- I. Development of infrastructure especially for irrigation.
- II. Value addition and processing of horticulture produce.
- III. Vermi-composting in rural areas to promote organic farming.

Objectives

1. To improve the well being of indigenous and local communities by adopting integrated horticulture development and livelihood development.
2. To augment the income of landless farmers, rural women, marginalized social groups and small farmers of selected tribal dominated villages in the state.
3. To convert the existing conventional cultivation into organic and certifiable farming of horticultural crop.
4. To develop, refine and transfer grading, processing, value addition, marketing, certification and marketing technologies, methods, options and information system.
5. To build capacity of local organizations to plan and implement entrepreneurship development, business plan development and micro enterprise management.

6. To assess appropriate technologies and if necessary upgrade cultivation practices and local processing technology.
7. To ensure the preparation of Horticulture plans for the districts and states to achieve the goal of reducing the yield gaps in important crops through focused intervention i.e. through production of vegetable seeds of improved variety, propagation of quality planting material under the nurseries of government as well as private sector.
8. To maximize returns to the farmer in the Horticulture and it's allied sectors.
9. To address the Horticulture and allied sectors in an integrated manner and thereby bring about quantifiable changes in the production and productivity of Horticultural produce.
10. To meet out the nutritional requirement of the people of the state living below poverty line.

Cluster Approach in Chhattisgarh: In Chhattisgarh clusters are formed based on crops and the area of the crop under cultivation is the focus point. A cluster consists of **250.50 acres** in one patch will **10-20 villages** in radius of **15.20 kms**. One village should have minimum of **10 hectares** under one crop to qualify as a cluster. A micro cluster constitutes a single crop in a small area under a few farmers in one or two villages.

Under the crop based cluster approach till 2011-12, total 812 **clusters** in **11 districts** have been formulated in 6087 **villages** with 141042 **beneficiaries** and an area of 190284 ha (Table). These clusters were formulated on the basis of area expansion program of National Horticulture Mission. The key component of cluster approach of Chhattisgarh was orchard development, mandatory intercropping of aromatics/medicinal plants/spices, micro irrigation and vermi-composting.

National Horticulture Mission (Chhattisgarh) - At Glance

Sl. No.	Particulars	AAP 2005-06, 2006-07	AAP 2007-08	AAP 2008-09	AAP 2009-10	AAP 2010-11	AAP 2011-12	Total
1	Districts Selected	7	11	11	11	11	11	62
2	Number of clusters	54	134	106	112	176	230	812
3	Number of Villages	391	1007	547	799	1343	2000	6087
4	Number of farmers	9500	33708	19181	23496	31026	24131	141042
5	Area (ha.)	12659.3	38114	28381.5	74195	25033.75	11900	190284
6	Main crops	Mango, Litchi, Cashew, Lime	Mango, Litchi, Cashew, Lime, Aonla, Jamun, Bel, Sitaphal and Banana	Mango, Litchi, Cashew, Lime, Aonla, Sitaphal Papaya and Banana	Mango, Lime, Litchi, Aonla, Sitaphal and Banana	Mango, Lime, Litchi, Aonla, Guava, Custard Apple	Mango, Litchi, Lime, Guava, Cashew & Banana	---
7	Inter crops -							
	Aromatic Crops	Patchouli, Jamarosa, Palmarosa, Lemongrass, Vettiver	Patchouli, Jamarosa, E.Citridora, Alovera, Ash wagandha, Lemongrass, Vettiver	Patchouli, Palmarosa, E.Citridora, Alovera, Lemongrass, Vettiver	Vettiver, Citridora, Lemongrass	Vittiver, Palmarosa , E.Citridora, Lemon grass	E. citridora, Palmarosa , Lemon grass & Vettiver	---
	Flower Crops	Marigold, Crysanthemum	Rajnigandha, Gladiolus, Marygold, Crysanthemum , Anthurium and Gerbera	Rajnigandha , Marygold	Rose, Gerbera, Rajnigandha, Gladiolus, Marygold, Chrysanthemum, Glardia	Rose, Galaria, Rajnigandha, Gladiolus, Marigold	Rajnigandha, Gladiolus & Marigold	---
	Spices Crops	Chilli and Ginger	Chilli and Ginger, Coriander, Methi and Turmeric	Garlic, Chilli, Coriander, Ginger, Methi and Turmeric		Garlic, Chilli, Coriander, Methi, Ginger & Turmeric	Chilli, Coriander, Ginger and Turmeric	---

Out of these 41 selected for supporting various activities. These technical organizations are paid Rs.1500.00 per farmer for training on cultivation pattern of horticultural crops and related activities. Each cluster document contains:-

- I. Identification of farmers, detail of farmers and formation of clusters.
- II. Conducting Cluster Level Trainings (Village wise Extension) on-site as well as off-site.
- III. Practical Training on land preparation.
- IV. Preparation of Cluster Irrigation Plans (Based on community concept).
- V. Practical Training on Plantation.

On the basis of cluster document cluster booklet is formulated. Main content of cluster booklet are

- I. Village wise farmer's list and the selected crops along with their khasra numbers (Main Cluster Data – MCD)
- II. Cluster Irrigation Plan (CIP)
- III. Cluster Processing Plan (CPP)
- IV. Cluster Extension Plan (CEP)

Reporting Methodology

- Cluster Coordinator reports to NHM Cell at the Directorate level.
- Reporting to be done on Daily Basis in prescribed format.
- Daily Reports to be sent via, Email, Fax or in person or any other possible communication source.
- Failure to comply with reporting leads to termination of contract.
- NGO and Department send daily reports separately.
- Flying squad operation (from Directorate, Raipur) to verify and cross check from field.
- Horticulture Department adopting cluster approach for Horticultural crops area expansion

Salient Feature

1. State Level Memorandum of Understanding between Horticulture Department and in-contract Institutions.
2. Selection of farmers through community based selection process by district level contract between farmers and Horticulture department.
3. Provide complete technical know-how to the farmers and encourage them for cultivation of horticultural crops.
4. Facilitate in availing financial assistance from financial institutions (loans and credits from NABARD and other Banks).
5. Disposal of cultivated crops through assured market arrangements.
6. Efforts are on to arrange funds through 100% subsidy and Area Expansion Component under Macro-management Plan in which the Government of India will provide 90% amount and rest 10% will be made available by the Chhattisgarh State Government.
7. Farmers can jointly avail loans through NABARD.
8. The buyer will provide the inputs required.

Post Harvest Management**Resources Available**

- I. At present there are 45 cold storage units spread over 11 districts with a total storage capacity of 2,32,030 MT. for handling fruits and vegetables. Except one all other cold storages are in private sector. Fruits and vegetables that are readily stored are Potato, Onion, Tamarind, Citrus, Chili, Apple, Mahua fruits, Cut flowers and Bulbs of flowers.
- II. Electricity is readily available in the state.

Implementation strategy & approach

- I. Identification and development of farmers/grower association to establish processing industries in the private sector for processing of excess production which gets very less income in the market at the time of glut.
- II. Market studies and identification of targeted species.

- III. Training and awareness of the farmers/growers on processing technology of different horticultural crops.
- IV. Harvesting of different crops, processing and packaging.
- V. Developing market network and linkages and marketing of the products.

Impact

- I. By promoting technology interventions at the downstream end of the products will help in value addition of the products and increase their price at one hand and reduce the vulnerability of perishing the products on the other.
- II. Development of processing facilities for different seeds and vegetable crops will increase the shelf value and minimize the losses to the farmers due to glut of Horticultural produce in the market during the peak production season.
- III. By providing facilities for value additions of crops like Medicinal and Aromatic crops farmers will get higher income from there produce.

Status of National Horticulture Mission in Chhattisgarh

The Centrally sponsored Scheme of National Horticulture Mission (NHM) is being implemented in a Mission mode approach to address all the issues related to holistic development of Horticulture in the State since 2005-06.

The Programme in the State of Chhattisgarh is being implemented by the State Horticulture Development Society through District Mission Committees involving farmers, Societies, NGOs, Grower Associations, SHGs, State Institutions etc. The district covered under the programme includes Surguja, Raigarh, Korba, Bilaspur, Kabirdham, Durg, Jagdalpur, Raipur, Rajandgaon, Jaspur and Korea.

The focus crops identified under the programme include Mango, Cashew, Litchi, Patchouli, Jamrosa, Vetivera, Citriodora, Chrysanthemum, Marigold, Cycalyptus, Chilies, Garlic and Coriander.

Major activities being undertaken in the programme are production and distribution of planting material, vegetable seed production, area expansion, rejuvenation of crops, creation of community water resources, protected cultivation, IPM/INM, organic farming,

pollination support, development of post harvest management & marketing infrastructure and human resources development.

Physical and Financial achievement under National Horticulture Mission in Chhattisgarh during 2011-12

Sl.No	Component	Physical	Financial (Rs. In lakh)			% share of total
			GOI	State	Total	
1	Plantation infrastructure & development	110	100.95	672.99	791.75	6.42
	Planting material		0.00	0.00		0.00
2	Area Expansion	32085	611.28	4075.19	4794.34	38.88
	New area		0.00	0.00		0.00
	1st Year maintenance		0.00	0.00		0.00
	2nd year maintenance		0.00	0.00		0.00
3	Rejuvenation	500	9.56	63.75	75.00	0.61
4	Mushrooms	9	26.78	178.50	210.00	1.70
5	Community tanks	525	91.39	609.28	716.80	5.81
6	Protected cultivation (ha)	120300	34.48	229.86	270.42	2.19
7	INM/IPM		29.96	199.75	235.00	1.91
8	Organic farming		190.93	1272.88	1497.50	12.14
9	GAP Certification	4000	25.50	170.00	200	1.62
10	HRD	3136	13.55	90.35	106.29	0.86
11	Horticulture Mechanization	307	36.36	242.42	285.20	2.31
12	Beekeeping (No. of colonies / hives)		0.00	0.00		0.00
13	Technology dissemination		0.00	0.00		0.00
14	PHM & marketing		0.00	0.00		0.00
	PHM	1773	310.18	2067.84	2432.75	19.73
	Markets	17	16.51	110.08	129.50	1.05
15	Mission Management	12	74.88	499.18	587.27	4.76
	Total		1572.31	10482.05	12331.82	100.00

Major activities being undertaken in the programme are production and distribution of planting material, vegetable seed production, area expansion, rejuvenation of crops, creation of community water resources, protected cultivation, IPM/INM, organic farming, pollination support, development of post harvest management & marketing infrastructure and human resource development.

Physical Progress

Under the Mission, during 2005-06 to 2011-12.

- An additional area of 158216.27 ha of identified horticulture crops has been covered.
- 75 nurseries for production of quality planting material have been established.
- 3370 ha, has been brought under rejuvenation of old and senile orchards.
- Coverage of 229 ha under vegetable seed production.
- Adoption of organic farming in an area of 4645 ha for promotion of organic cultivation in horticultural crops.
- Establishment of 62320 number of vermi- compost units.
- An area of 6812 ha. has been brought under adoption of IPM practices and establishment of 3 IPM infrastructure including 2 bio control labs and 1 leaf/tissue analysis lab.
- 5041 water harvesting structures have been created.
- Under the component of Post Harvest Management, 895 units (741 pack houses 140 evaporative / low energy cool chambers, 10 low cost onion storage and 4 cold storage) have been established.
- Apart from setting up of 4 whole sale markets.
- Total number of 71031 farmers have been trained under various horticulture activities.

Financial Progress

During 2005-06 to 2011-12, an amount of Rs. 412.77 crore was released to the State. The State has reported an expenditure of Rs. 434.49 crore.

An allocation of Rs. 125 crore including GOI share of Rs. 106.25 crore has been earmarked for 2012-13 and SHM has been requested to recast its Annual Action Plan 2012-13 with stipulated amount.

Year-wise details of Outlay, Fund Released and Expenditure under NHM in Chhattisgarh

(Rs. in crore)

Year	Outlay		Releases	Expenditure	Balance
	Total	GOI			
2005-06	50.29	50.29	23.68	3.43	20.25
2006-07	111.92	111.92	55.00	47.33	27.92
2007-08	154.13	131.01	62.52	33.57	56.87
2008-09	126.46	107.49	30.00	84.76	2.11
2009-10	82.24	69.90	60.00	66.71	-4.60
2010-11	115.00	97.75	96.57	83.38	8.59
2011-12	110.00	93.50	85.00	115.31	-21.72

Chhattisgarh produce 5.94 m MT of horticultural produce from an area of 0.59 m. ha and accounts for 2.47 % of horticultural production in the country. Major share of production of horticulture produce is from Vegetables (71.49%) and fruit (26.41%).

Tomato

- Chhattisgarh accounts for 4% of total production of tomato in the country and produces about 0.63 m. MT of tomato from an area of about 0.04 m ha. The productivity of crop is 14.6 t/ha.
- The major tomato producing belts in the State are Raipur, Durg, Baster.

Potato

- Chhattisgarh is producing about 0.53 m MT of potato from an area of about 0.03 m. ha with productivity of 14.5 t/ha.

Brinjal

- Chhattisgarh accounts for 4% of total production of Brinjal in the country and is producing about 0.44 m. MT of Brinjal from an area of about 0.03 m. ha with productivity of 16.5 t/ha.

Cabbage

- Chhattisgarh accounts for 3% of total production of cabbage in the country and is producing about 0.26 m. MT of cabbage from an area of 0.02 m ha having productivity of 17.5 MT/ha.

Cauliflower

- The State is producing about 5% of the total cabbage production in the country.
- The production of cabbage is about 0.31 m MT from an area of 0.02 m ha having productivity of 16.6 MT/ha.

Okra

- The State is contributing about 4% of the total production of okra in the country. It produces about 0.25 m MT of okra from an area of 0.03 m ha with productivity of 9.9 MT/ha.
- The major okra producing belts in the State are Raipur, Durg, Rajnandgaon.

Peas

- Chhattisgarh contributing about 4% of total production of Peas in the country.
- Production of peas is 0.01 m. MT from an area of 0.01 m ha with productivity of 9.2 MT/ha.

Banana

- Among fruits, banana is the major crop involving a production of 0.4% m. MT from an area of 0.01 m ha. forming 22% of the total fruit production in the State.

Papaya

- Chhattisgarh is the sixth leading producer of papaya in the country.
- State produces about 6% of Papaya in the country. The production is 0.25 m. MT from an area of 0.01 m ha with productivity of 23.3 MT/ha.

Guava

- Chhattisgarh produces about 4.2% of the total production of guava in the country.
- Production guava in the State is 0.01 m ha with productivity of 7.7 MT/ha.
- Major guava producing belts in the State are Raipur, Durg and Jagdalpur.

List of Departmental Nurseries Selected for up gradation as Model Nursery (Yearwise)

Sl. No.	Dist. Name	Year 05-06	Year 06-07	Year 07-08	Year 08-09	Year 09-10	Year 10-11	Year 11-12
1.	2.	3.	4.	5.	6.	7.	8.	9.
1	Jagdalpur	Govt.Horti.Nur. Asna (Block-Jagdalpur)	Govt. Horti. Nur. Kopabeda (Block-Kondagaon)	Govt. Horti. Nur. Tevesha (Block-Visharampur)	1. Bademarenga (Block-Tokapal) 2. Adenga (Block-Keshkal)	Fharasgaon (Block-Fharasgaon)	1. Badangi Block-Lohandiguuda 2. Sorgaon Block- Bastar	
2	Durg	Aheri (Block-Dhamdha)	Ruabandha (Block-Durg)	Atari (Block-Patan)	Parkidih (Block-Bemetra)	1. Berla (Block-Berla) 2. Arjunda (Block- Durg) 3. Achholi (Block) 4. Navagarh (Block -)	1. Mohara Block - Gurur	
3	Korba	Patadi (Block-Korba)	Podilapa (Block-Pali)	Patiyapali (Block-Kertela)	Nagoi (Block-Kodiuprora)	Pandaripani (Block- Katghora)		
4	Surguja	Belkota (Block-Lakhenpur)	Ambikapur (Block-Ambikapur)	Datima (Block-Surejpur)	Gumgarakala (Block-Lakhanpur)	Pratappur (Block-Khorma)	Shivpur, Block-Ramanuj nagar	Oberi Block-Balrampur
5	Bilaspur	Lalpur (Block-Gaurella)	Sarkanda (Block-Bilaspur)	Pathgawan (Block- Pendra)	1. Masturi (Block-Masturi) 2. Sharda (Block- Lormi) 3. Bahtarai (Block-Takhatpur)	1. Kargikala (Block- Kota) 2. Baghamuda (Block- Mungeli) 3. Sendari (Block Pathariya)	Marwahi Block-Marwahi	Lalpur Block-Gourela
6	Kabirdham	Khutu (Block-Kabirdham)	Lalpur (Block-Bodla)	Mohtara (Block-Pandariya)	Sahas-Lohara (Block- Sahas-Lohara)	No Nursury	Khutu Block – Kabirdham	
7	Raigarh	Dharmjaigarh (Block-Dharmjaigarh)	Boeirdadar (Block-Raigarh)	Gharghoda (Block-Gharghoda)	Bandhatola (Block-Pussour)	1. Kunjara (Block- Lailunga) 2. Anjoripali (Block- Kharsiya) 3. Nadigaon (Block-Baramkela)	Basanpall Block- Tamnar	Beltikeri Block-Sarangarh
8	Raipur	-	-	Kharkhara (Block-Chura)	Kachlon (Block- Simga)	1. Madhi (Block-Tilda) 2. Semariya (Block- Palari)	Kharri belari Block- Kasdol	1. Paragaon Block-Arang 2. Hasada Block-Bhatapara
9	Jashpur	-	-	Jashpur nagar	Duldula (Block)	Kalmitikada	1. Budadand	Tempo

				(Block- Jahpur)	Duldula)	(Bloc- Pathalgaon)	Block – Bagicha 2. Pandripani Block- Pharsabahr	Block- Manora
10	Koriya	-	-	Sorga (Block- Baikunthpur)	Janakpur (Block- Bhartpur)	Ghughra (Block- Sonhat)	Soraga Block – Bankunthpur	Chirmi Block- Khadgaonwa
11	Rajnandgaon	-	-	Pendri (Block- Rajnandgaon)	Dorba (Block- Manpur)	Acholi (Block- Dongargarh)		
Total	7	7	11	14	18	18	11	6

Plantation Programme in the State to be undertaken

(area in ha, rupees in lakh) (2011-12)

Sl. No.	Year	Crop	Target		Achievement	
			Physical	Financial	Physical	Financial
		Mango	900	89.10	900	89.10
		Banana	5019	1139.58	5019	1139.58
		Litchi	400	42.30	400	42.30
		Lime	250	39.76	202	32.21
		Anola	-	-	-	-
		Sitaphal	200	19.76	200	19.76
		Guava	650	64.20	607	59.75
		Cashew	150	18.00	122	14.57
		Chilli	4620	577.50	4620	577.50
		Garlic	-	-	-	-
		Ginger	2700	337.50	2700	337.50
		Coriander	950	118.75	950	118.75
		Turmeric	3200	400.00	3200	400.00
		Methi	300	37.50	21	2.61
		Rose	55	19.25	55	19.25
		Gerbera	100	35.00	100	35.00
		Rajnigandha	1200	540.00	1200	540.00
		Gladiolus	1300	585.00	1300	585.00
		Marigold	1025	123.00	1025	123.00
		Chysamthimus	-	-	-	-
		Galardia	-	-	-	-
		Vetiver	150	18.75	150	18.75
		E.Citridora	200	25.00	200	25.00
		Pamarosa	100	12.50	100	12.50
		Lemongrass	400	50.00	400	50.00
		Total -		4292.45		4242.13

Rejuvenation programme undertaken in the State (2011-12)

(Area in ha., Rs. in lakh)

Sl. No.	Year	Target		Achievement	
		Physical	Financial	Physical	Financial
1	2005-06	2450	367.50	0	0.00
2	2006-07	1420	213.00	1420	213.00
3	2007-08	1200	180.00	0	0.00
4	2008-09	950	142.50	950	142.50
5	2009-10	250	37.50	0	0.00
6	2010-11	500	75.00	500	75.00
7	2011-12	500	75.00	500	75.00
Total -		7270	1090.50	3370	505.50

Requirement of planting material for area expansion of fruit crops under NHM Year 2012-13

Sl. No.	Name of Crops	Target (in ha.)	No. of plants per ha.	Total No. of requirement	Source of Procurement		Remarks
					Departmental Nurseries	Other Sources	
1.	2.	3.	4.	5.	6.	7.	8.
1	Mango	1000	100	100000	50000	50000	CG State Seed Corp.
2	Litchi	300	150	45000	45000	-	-
3	Lime	300	277	83100	83100	-	-
4	Aonla	-	-	-	-	-	-
5	Guava	500	277	138500	131500	7000	CG State Seed Corp
6	Custard Apple	-	-	-	-	-	-
7	Banana	800	2252	1801600	-	1801600	CG State Seed Corp
8	Cashew nut	8000	200	1600000	-	1600000	OSDCD Odissa
Total -		10900					

Physical and Financial Progress under NHM Year : 2011-2012

(Rs. in lakhs)

Sl. No.	Programme	Unit	Scale Per Unit (lakh)	Subsidy (Proposed Assistance)	Targets as per approved action plan		Targets as per Fund Released		Achievement	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
A.	Plantation Infrastructure & Development -									
1.	Production of planting material -									
	i) Model Nursery -									
	(a) Model Nursery (2 to 4 ha.) in Public Sector (Rs.6.25 lakh/one ha. unit)	No.	25.000	25.000	10	250.00			10	255.59
	ii) Small Nursery -									
	(a) Small Nursery (1 ha.) in Public Sector (Rs.6.25 lakh/one ha. unit)	No.	6.250	6.250	3	18.75			0	0.00
	iii) Seed Infrastructure (Public Sector)								1	100.00
	Total				13	268.75			11	355.59
	iv) Seed production and distribution for Vegetables -									
	(a) Seed Production (Public sector)	Ha.	0.500	0.500	51	25.50			31	15.50
	(b) Seed Production (Private sector) - @50% subsidy.	Ha.	0.500	0.250	25	6.25			25	6.25
	Total				76	31.75			56	21.75
2.	Establishment of New Gardens (Area Expansion) -									
I.	Fruits -									
	(a) Cost intensive crops (For a maximum area of 4 ha. per beneficiary)									
	iii) Banana (TC) (@50% subsidy)	Ha.	0.832	0.312						
	- 75% subsidy on planting material in 1st year.	Ha.	0.832	0.312	2969	926.37			3495	1090.83
	- 25% subsidy on planting material in 2nd year.	Ha.	0.832	0.104	2050	213.21			3353	349.10
	Sub total -				5019	1139.58			6848	1439.94
	(c) (i) Fruit crops other than cost intensive crops using normal spacing. (@75% subsidy)	Ha.	0.400	0.300						
	- 60% subsidy on planting material in 1st year -									
	a) Mango	Ha.	0.220	0.099	900	89.10			1053	105.63
	b) Litchi	Ha.	0.235	0.106	400	42.30			529	56.09
	c) Lime	Ha.	0.3534	0.159	250	39.76			202	32.21
	e) Guava	Ha.	0.2195	0.0988	650	64.20			607	59.75
	f) Custard Apple	Ha.	0.220	0.0988	200	19.76			204	20.16
	Sub total -				2400	255.12			2595	273.83
	- 20% subsidy on planting material in 2nd year -									
	a) Mango	Ha.	0.220	0.033	1200	39.60			1200	39.60
	b) Litchi	Ha.	0.235	0.0353	230	8.11			230	8.11
	c) Lime	Ha.	0.3534	0.053	280	14.84			280	14.84
	d) Aonla	Ha.	0.2334	0.035	350	12.25			350	12.25
	e) Guava	Ha.	0.2195	0.033	100	3.29			100	3.29
	f) Custard Apple	Ha.	0.220	0.033	200	6.60			200	6.60
	Sub total -				2360	84.70			2360	84.70

- 20% subsidy on planting material in 3rd year -									
a) Mango	Ha.	0.220	0.0495	850	42.08			850	28.05
b) Litchi	Ha.	0.235	0.0529	180	9.52			180	6.35
c) Lime	Ha.	0.3534	0.0795	50	3.98			50	2.65
d) Aonla	Ha.	0.2334	0.0525	100	5.25			100	3.50
Sub total -				1180	60.82			1180	40.55
Total				10959	1540.22				1839.01
II.	Mushrooms -								
	(a) Integrated mushroom unit for spawn, compost production and training -								
	ii) Private Sector (@50% subsidy).	Unit	50.000	25.000	2	50.00		0	0.00
	(b) Spawn making unit -								
	i) Public Sector	Unit	15.000	15.000	1	15.00		0	0.00
	(c) Compost making unit -								
	i) Public Sector	Unit	20.000	20.000	1	20.00		0	0.00
	Total				4	85.00			0.00
III.	Flowers (For a maximum of 2 ha. per beneficiary) -								
	(a) Cut Flowers -								
	i) Small & Marginal Farmers (@50% subsidy).								
	a) Rose	Ha.	0.700	0.350	55	19.25		114	39.98
	b) Gerbera	Ha.	0.700	0.350	100	35.00		140	48.80
	Sub total -				155	54.25		254	88.78
	(b) Bulbulous Flowers -								
	Small & Marginal Farmers (@50% subsidy).								
III.	a) Rajnigandha	Ha.	0.900	0.450	1200	540.00		1913	859.50
	b) Gladiolus	Ha.	0.900	0.450	1300	585.00		1930	877.46
	Sub total -				2500	1125.00		3843	1736.96
	(c) Loose Flowers -								
	i) Small & Marginal Farmers (@50% subsidy).								
	a) Marigold	Ha.	0.240	0.120	1025	123.00		1571	188.41
	Total				3680	1302.25		5667.3	2014.15
IV.	Spices (For a maximum area of 4 ha. per beneficiary) -								
	Seed spices and Rhizomatic Spices. (@50% subsidy)								
	b) Chilli	Ha.	0.250	0.125	4620	577.500		7199	899.99
	c) Coriander	Ha.	0.250	0.125	950	118.750		1214	151.52
	d) Methi	Ha.	0.250	0.125	300	37.500		21	2.61
	e) Ginger	Ha.	0.250	0.125	2700	337.500		3800	475.00
	f) Turmeric	Ha.	0.250	0.125	3200	400.000		4084	510.48
	Total				11770	1471.250		16318.02	2039.59
V.	Aromatic Plants (For a maximum area of 4 ha. per beneficiary) -								
	(a) Cost intensive aromatic plants (Patchouli, Geranium, Rosemary, etc.) - @50% subsidy								
	(b) Other aromatic plants. (@50% subsidy)								
	a) E-Citridora	Ha.	0.250	0.125	200	25.00		486	60.73
	b) Pamaroza	Ha.	0.250	0.125	100	12.50		100	10.00
	c) Vetiver	Ha.	0.250	0.125	150	18.75		150	18.75
	d) Lemon-Grass	Ha.	0.250	0.125	400	50.00		600	75.00
	Total				850	106.25		1336	164.48

VI.	Plantation crops (For a maximum area of 4 ha. per beneficiary) -									
	(a) Cashew & Cocoa including replanting - (@50% subsidy).	Ha.	0.400	0.200						
	- 60% subsidy on planting material in 1st year.	Ha.	0.200	0.120	150	18.00			122	14.57
	- 20% subsidy on planting material in 2nd year.	Ha.	0.150	0.0225	970	21.83			970	21.83
	- 20% subsidy on planting material in 3rd year.	Ha.	0.150	0.0338	150	5.06			100	3.38
Total					1270	44.89				39.77
3.	Rejuvenation / replacement of senile plantation including Canopy management. (@50% subsidy to a limited of 2 ha. per beneficiary)	Ha.	0.300	0.150	500	75.00			500	75.00
4.	Creation of water resources -									
(a) Community Tanks -										
i) Community tanks/on farm ponds/on farm water reservoirs with use of plastic/RCC lining - (10 ha. of command area, with pond size of 100m x 100m x 3m) -										
- In Plain areas		No.	15.000	15.000	15	225.00			0	0.00
(b) Water harvesting system for individuals - for storage of water in 20m x 20m x 3m ponds/wells @Rs.100.00 cum (@50% subsidy) -										
- In Plain areas		No.	1.200	0.600	70	42.00			0	0.00
- In Hilly areas		No.	1.380	0.690	20	13.80			0	0.00
Sub total -					90	55.80				0.00
(c) Borewells -										
- In Plain areas		No.	0.700	0.700	200	140.00			200	140.00
- In Hilly areas		No.	0.700	0.700	100	70.00			100	70.00
Sub total -					300	210.00			300	210.00
Total					405	490.80			300	210.00
5.	Protected Cultivation -									
1. Green House Structure -										
(a) Fan & Pad System (Rs.1465.00 sq.m. @50% subsidy of the cost limited to 4000 sq.m. per beneficiary).		Sq.Mtr.	0.01465	0.0073	8000	58.60			83	60.78
(b) Naturally ventilated System-										
i) Tubular Structure (Rs.935.00 sq.m. @50% subsidy of the cost limited to 4000 sq.m. per beneficiary).		Sq.Mtr.	0.0094	0.0047	27000	126.23			25487	119.28
2. Plastic Mulching (@50% subsidy of the total cost limited to 2 ha. per beneficiary).		Ha.	0.20	0.10	2800	280.00			3387	338.66
3. Shade Net House -										
5	i) Tubular Structure (Rs.600.00 sq.m. @50% subsidy of the cost limited to 1000 sq.m. per beneficiary).	Sq.Mtr.	0.006	0.003	9000	27.00			2000	6.00
Total					---	491.83				524.71
6	Promotion of Integrated Nutrient Management (INM) / Integrated Pest Management (IPM) -									
ii) Promotion of IPM/INM (Rs.2000.00/ha. @50% subsidy of cost subject to a maximum of Rs.1000.00/ha. limited to 4 ha./beneficiary).		No.	0.02	0.01	20000	200.00			17729	193.38

	iii) Disease forecasting unit (Public Sector)	Unit	4.00	4.00	1	4.00			0	0.00
Total					---	204.00			17729	193.38
7	Organic Farming -									
	(a) Adoption of organic farming (Rs.20,000.00 - @50% subsidy of cost limited to Rs.10,000.00/ha. for a maximum area of 4 ha. per beneficiary) -									
	i) 40% subsidy in 1st year.	Ha.	0.10	0.04	500	20.00			900	36.00
	ii) 30% subsidy in 2nd year.	Ha.	0.10	0.03	1500	45.00			0	0.00
	iii) 30% subsidy in 3rd year.	Ha.	0.10	0.03	1250	37.50			0	0.00
	Sub total -				3250	102.50			900	36.00
	(b) Organic Certification (Rs.5.00 lakh for a cluster of 50 ha.) -									
	i) 30% subsidy in 1st year	Cluster	5.00	1.50	10	15.00			133	198.50
	ii) 30% subsidy in 2nd year.	Cluster	5.00	1.50	30	45.00			0	0.00
	iii) 40% subsidy in 3rd year.	Cluster	5.00	2.00	15	30.00			0	0.00
	Sub total -				55	90.00			133	198.50
	(c) Vermi compost units/organic input production unit -									
	ii) 50% of cost conforming for HDPE Vermibed to the size of 96 cft (12'x4'x2') to be administered on pro-rata basis.	No.	0.100	0.050	34417	1720.85			35303	1738.31
Total					---	1913.35				1972.81
8	Certification for Good Agricultural Practices (GAP), Including infrastructure - (@50% subsidy)	Ha.	0.100	0.050						
9	Pollination support through beekeeping -									
	(c) Honey bee colony (Rs.1400.00/colony of 4 farmers @50% subsidy of cost limited to 50 colonies/beneficiary).	No.	0.014	0.007	650	4.55			464	3.25
	(d) Hives (Rs.1600.00/hive @50% subsidy of cost limited to 50 colonies/beneficiary).	No.	0.016	0.008	650	5.20			0	0.00
	(e) Equipment including honey extractor (4 farmer), food grade container (30 kg), net, etc. (Rs.14,000.00/set @50% subsidy of the cost limited to one set per beneficiary).	No.	0.140	0.070	65	4.55			0	0.00
Total					1365	14.30				3.25
10	Horticulture Mechanization -									
	(a) Power operated machines/ tools including Power Saw and Plant Protection equipments etc. (@50% subsidy limited to one set per beneficiary).	No.	0.350	0.175	50	8.75			0	0.00
	(c) Power Machines (20 HP & above including accessories / equipments) - @50% subsidy limited to one set per beneficiary.	No.	3.000	1.500	250	375.00			250	375.00
Total					300	383.75				375.00
11	Human Resource Development (HRD) -									
	(b) HRD for Gardeners.	No.	15.000	15.000	1	15.000				

(c) Training of Farmers -									
i) Within the district (Rs.400.00/day per farmer excluding transport, 2 days training is proposed).	No.	0.008	0.008	925	7.400			925	7.40
(e) Exposure visit of farmers -									
i) Within the district (Rs.250.00/day per farmer excluding transport, 1 day visit is proposed).	No.	0.0025	0.0025	475	1.188			475	1.19
iv) Outside of India (Rs.3.00 lac per participant)	No.	3.000	3.000	20	60.00			1	20.00
Sub total -				495	61.188			476	21.19
(f) Training/Study Tour of Technical Staff/Field Functionaries -									
ii) Study tour to progressive Sates/Units (group of minimum 5 participants @ Rs.650.00/day per participant plus TA/DA, as admissible, 7 days tour is proposed).	No.	0.046	0.046	35	1.593			0	0.00
iii) Outside of India (Rs.5.00 lac per participant)	No.	5.00	5.00	10	50.00			0	0.00
Sub total -				45	51.593			0	0.00
Total				1466	135.18			1401	28.59
C. Integrated Post Harvest Management -									
i) Pack house/On farm collection & storage unit (Rs.3.00 lakh/per unit with size of 9m x 6m - @50% subsidy).	No.	3.000	1.500	431	646.50			431	646.50
ii) Cold storage units (Construction/Expansion/Modernization) -									
(a) Rs.6000.00/MT credit linked back-ended subsidy @40% of the capita cost of project in General areas for 5000 MT capacity.	No.	300.000	120.00	6	720.00			1	52.92
(b) Rs.6000.00/MT credit linked back-ended subsidy @55% of the capita cost of project in Hilly & Scheduled areas for 5000 MT capacity.	No.	300.000	165.00	0	0.00			0	0.00
Sub total -				6	720.00				52.92
iii) Processing units -									
(a) Cashew nut processing unit credit linked back-ended subsidy @40%.	No.	15.000	6.00	6	36.00			0	0.00
iv) Ripening chamber -									
(a) Rs.6000.00/MT credit linked back-ended subsidy @40% of the capita cost of project in General areas for 5000 MT capacity.	No.	300.000	120.00	1	120.00			0	0.00
(b) Rs.6000.00/MT credit linked back-ended subsidy @55% of the capita cost of project in Hilly & Scheduled areas for 5000 MT capacity.	No.	300.000	165.00	0	0.00			0	0.00
Sub total -				1	120.00				
v) Evaporative / low energy cool chamber (8 MT) - @50% subsidy.	No.	4.000	2.00	140	280.00			140	280.00
vi) Low cost onion storage unit	No.	1.000	0.50	10	5.00			10	5.00
Total				584	1807.50				984.42

D.	Establishment of Marketing Infrastructure for Horticultural Produce -									
	i) Terminal markets (Rs.150.00 crore/project @25% to 40% (limited to Rs.50.00 crore) as Public-Private Partnership mode through competitive bidding.	No.	15000.0	1000.0	0	0.00			0	0.00
	iii) Rural Markets/Apni Mandies/Direct Markets -									
	(a) Credit linked back-ended subsidy @40% of the capital cost of project in General areas.	Unit	20.000	8.000	9	72.00			0	0.00
	(b) Credit linked back-ended subsidy @55% in case of Hilly & Scheduled areas for individual entrepreneurs.	Unit	20.00	11.00	2	22.00			0	0.00
	Sub total -				11	94.00				0.00
	iv) Retail Markets / Outlets (environmentally controlled) -									
	(b) Credit linked back-ended subsidy @55% in case of Hilly & Scheduled areas for individual entrepreneurs.	Unit	10.00	5.50	2	11.000			0	0.00
	viii) Market extension, quality awareness & market led extension activities for fresh products (100% assistance to State Govt./SHM/Public Sector Agencies).	No.	3.00	3.00	2	6.000			0	0.00
	Total				---	111.00				0.00
Total Project Cost -					10477.06				10841.50	
F.	Mission Management -									
	I. State Level -									
	(a) State & Districts Mission Offices and implementing agencies for administrative expenses, project, preparation, computerization, contingency etc.				0	224.31			0	689.04
	(b) (i) Institutional Strengthening, hire/purchase of vehicles.	Project Based	5.50	5.50	0	125.00				
	(ii) Hardware/software.		L.S.		0	20.00				
	(c) Seminars, conferences, workshops, exhibitions, Kisan Mela, horticulture shows, honey festivals etc. -									
	ii) District level (Rs.2.00 lakh per event of two days).	No.	2.00	2.00	12	24.00				
	(d) Technical Support Group (TSG) at State Level for hiring experts/staff, studies, monitoring & evaluation, mass media, publicity, video conference etc.	Project Based	50.00	50.00	0	129.66				
	Total -				---	522.97				689.04
	Grand Total -					11000.03				11530.54

RAJNANDGAON (LWE) DISTRICT

Rajnandgaon surrounds the Kabirdham district in north, Kanker in south, Durg in east and Balaghat district of M. P. in west. The Rajnandgaon district is administratively divided in three sub-divisions along with 9 Block in which 696 gram panchayat and 1680 villages.

PROFILE -

Geographical area 8,02,252 ha. (5.82 % of the state).

Net sown area 3,65,323 ha. (45.53% of its geographical area).

Total horticulture area during 2008-09 - 0.14 lakh ha.(3.8% of its net sown area)

Proposed horticulture area (after 5 years 2014-15) - 0.2 lakh ha. (5.47 % of its net sown area).

Percentage increase after 5 years from the 2008-09 – 42.5%.

60% soil is medium to light.

Forest covers 2.59474 lakh ha. (32.34 % of its geographical area).

Average rainfall 1274 mm

Farm families: 2.55546 lakh (27 % ST, 10 % SC). 49.98 % marginal farmers own 34.96 % land. 25 % small farmers own 35% land 74.98% Small / Marginal Farmers own 69.96% land 25.02% others own 30.04 % land.

Average land holding: 1.42 ha.

Under fruits Mango is a major crop which occupies 1032 ha of the total cropped area of fruits (1818 ha.) Under Spices Chili is major crop which occupies 1055 ha. of the total cropped area of spices (2217 ha.).Under Vegetables Potato is major crop which occupies 1250 ha. of the total cropped area of Vegetables (9787 ha.).

Area under Rabi crops 1.419 lakh ha. which constitutes only 38% of the net sown area. Net irrigated area 93.450 lakh ha. (25.5 %), cropping intensity 135%.

Geography and Climate -

General climatic features: The most favoured factor of Rajnandgaon district is climate. Climatic conditions are very idle for growing most of the horticulture crop. Maximum temperature is 44⁰ C and the minimum temperature is 10-12⁰ C. Average temperature remains around 23⁰ to 24⁰ C. Relative humidity is also high which is congenial for optimum growth and cultivation of horticultural fruit crops like Banana, Mango, Lime, Guava, Papaya & Custard apple and vegetables like Tomato, Brinjal, Chilli, Bitter guard, Okra & *Kundru*.

Present Irrigation Scenario –

In the district the net irrigation area is 93,450 ha. which constitutes 25.58% of net sown are, most important source of irrigation being surface water where irrigation by Canals & Tanks which constitutes 60.8% of the net irrigation area. It is the district without power deficit, district.

Source wise irrigation

Sl. No.	Source of irrigation	Area (in lac ha.)	% age.
1.	Canals	0.53	56.67
2.	Tanks	0.038	4.13
3.	Tube-wells	0.23	24.35
4.	Wells	0.096	10.35
5.	Other Sources	0.041	4.44
Total -		0.935	100%

Horticultural Brief in the District

In the district at present about 3.8% cultivated area is under horticulture crops (13,910 ha.), out of which 86.29% area is under vegetables and spices cultivation (12,004 ha.). Crop diversification and selection of appropriate sites for horticultural crop cultivation can bring a major breakthrough not only in area extension and increase in productivity but also in economic up-lift of small and marginal farmers of the district,

34% of up-land area in which paddy and other cereal crops are grown. The major horticulture crops can be promoted in different blocks of the district is given below:-

Sl. No.	Crops	Blocks Selected
A. Fruits -		
1.	Mango	Rajnandgaon, Dongargaon, Khairagarh, Chhuikhadan,
2.	Lime	Rajnandgaon, Dongargaon, Dongargarh, Chhuria,
3.	Custard apple	Chhuikhadan, Ambagarh Chowki,
4.	Banana & Papaya	Rajnandgaon, Dongargaon, Khairagarh
B. Vegetable & Spices -		
1.	Chilli	Rajnandgaon, Dongargaon, khairagarh
2.	Brinjal	Rajnandgaon, Dongargaon, khairagarh
3.	Tomato	Rajnandgaon, Dongargaon, khairagarh
4.	Cauliflower	Rajnandgaon, Dongargaon, khairagarh
5.	Bottle gourd	Rajnandgaon, Dongargaon, khairagarh
C. Flowers -		
1.	Marigold	Rajnandgaon, Dongargaon, Dongargarh
2.	Rose	Rajnandgaon, Dongargaon, Dongargarh

Existing Physical Resources in terms of infrastructural facilities-

Nurseries: There are 3 departmental nurseries situated in 3 blocks in the districts. These nurseries are established during the period of 1982 to 1995. All 3 nurseries have been up-graded and modernized under NHM but still these nurseries require further strengthening and up-gradation. There are 9 blocks in the district, in remaining 6 blocks 6 new nurseries are in the process of establishment.

Horticultural Nurseries in the Rajnandgaon District

Sl. No.	Nurseries	Block	Area(ha.)	Establishment year	Remark
1.	Pendry	Rajnandgaon	11	1982	Up-gradation and modernization is taken up under NHM.
2.	Dorba	Manpur	11	1982	
3.	Achholi	Dongargarh	4	1995	Up-gradation work is proposed under NHM.

Orchards: Among 3 departmental nurseries the major fruit orchards are of Mango & Guava. In some nurseries orchards of other fruits like Ber, Lime & Aonla are also established in various blocks. Mango orchards are developed in about 10 ha. in 3 departmental nurseries, presently used as a source of mother trees for propagation of Mango grafts with the production capacity of 1.5 lakh grafted plants per annum.

Sl. No.	Block	Nursery	No. Of mother plants				
			Mango	Guava	Ber	Aonla	Total
1.	Rajnandgaon	Pendry	228	74	3	3	308
2.	Manpur	Dorba	175	80	0	0	255
3.	Dongergarh	Achholi	173	42	14	49	278
	Total -		576	196	17	52	841

Present Status of Horticulture in the District –

Fruit Crops: The major fruit crops grown in Rajnandgaon are Mango, Guava, Lime, etc., apart from these major fruit crops minor fruits like Jack fruit, Sitafal, Ber, Anola etc., are also grown both as cultivated and wild crop. The total area of the fruit crops in the district is 1818 ha along with the production 14679.6 MT.

Vegetables: Mostly all vegetable crops like Solanecious crops, Beans, Cole Crops Cucur bitecious crops etc. are grown very well in the district. The total area of vegetable crops in the Rajnandgaon was recorded 9787 ha with the production of 106207 MT.

Spices: Chili, Ginger, Turmeric, Coriander are the major spices grown in the district. The total area of spices was 2217 ha. with the production of 26043 MT.

Flowers: Area under flower cultivation is negligible in the district. With the formation of new state the demand of flowers is increasing day-by-day, to meet out the growing demand of flowers it is essential to promote commercial floriculture among the farmers.

The major flowers like Marry-gold, Tuberose, Roses, etc., are grown very well without much care. The present area under floriculture in the district is 65 ha. with the production of 236.36 MT.

Crop wise (variety wise) Production and supply of nucleus seed/ planting material

Sl. No.	Plants / Seeds	Name of Nursery (District)	Expected Production capacity	Actual Production in 2008-09	Supply in 2008-09	Actual Production in 2009-10	Supply in 2009-10	Available planting stock for 2010-11
1	Mango	Pandri	15000	3105	1242	3275	3203	72
		Dorba	10000	7323	4673	4150	2955	1195
		Achholi	15000	4998	2041	8957	5138	3819
Total			40000	15426	7956	16382	11296	5086
2	lime	Pandri	100000	15839	8638	7202	2194	5011
		Dorba	50000	1283	630	1640	683	957
		Achholi	50000	10336	9978	2918	2360	558
Total			200000	27458	19246	11760	5237	6526
3	Aonla (Deshi)	Pandri	15000	5791	5191	—	—	—
		Dorba	30000	—	—	5000	230	4770
		Achholi	15000	—	—	1909	234	1675
Total			60000	5791	5191	6909	464	6445
4	Guava	Pandri	30000	8593	2693	7911	1797	6114
		Dorba	50000	4047	1047	3000	1530	1470
		Achholi	30000	9116	8110	15006	265	14741
Total			110000	21756	11850	25917	3592	22325
5	Other	Pandri	90000	73476	50000	74251	46899	27352
		Dorba	50000	45000	37532	49509	25212	24297
		Achholi	90000	49263	45177	57819	21184	36635
Total			230000	167739	132709	181579	93295	88284
Grand Total			640000	238170	176952	242547	113884	128666

J.I.T. visited the following beneficiaries of Rajanandgaon District (LWE)

S. No.	Name of the Beneficiary	Address	Crop	Year of Plantation	Area in Hect.	Nos. planted	Nos. survived as on date of inspection	%age of survival	Remark
1	Govt. Model Nursery	Pendri Rajnandgaon	Mango Bael , Guava. Lasora, Bamboo, Sapota, Aonla	1982 (Estd) (2008-09 & 2009-10) -Shade net -Mist chamber -Agri shade net(11 structures)	11 ha	308 (Mother plants)	308	-	<ul style="list-style-type: none"> • Upgraded and modernized but production of planting material is low seeing the infrastructural development. • Guava plants need rejuvenation.
2.	Sri Dinesh Sahu	Village – Banhardi, Block Dongargaon	Banana (G9)	2011 (July)	1.873	2252	2252	100% maintained after gap filling	<ul style="list-style-type: none"> • Due to high temperature leaf scorching symptoms noticed. • Less soil around plants. • More than 5 suckers noticed in one plants.
3.	Sri Naveen Bhai Parmar	Village Mochanpur Dongargaon	Banana (G9)	July, 2010	4.340	4952	-	99	<ul style="list-style-type: none"> • Good plantation, needs staking to avoid breaking • Need more irrigation to avoid

			Tube rose	September, 2011		14240		85	wilting due to hot winds.
4.	Smt. Suneeta Parmar	-do-	Pack house with grading machine cap. 100 kg/hour	2011-12 Rs. 1.50 lakh released as subsidy	-	-	-	-	Grading of onion/potato and tomato is done; pack house structure developed its own.
5.	Smt. Neelam	Village-Deewanjhitiya B. Dongargaon	Banana G9	2011-12 (July)	4.00	9008	-	99	Extra suckers need immediate removal , Staking to be done in growing plants.
6.	Sri Manish Tonk	Dongargaon	Papaya (Red Lady Cv)	April, 2012	27 ha	-		96%	Newly developed land being used for papaya, which is coming up well.
7.	Govt. Nursery Achholi	Dongargarh Achholi	Mango, Guava, Aonla , jackfruit, Lime ornamental, Lime etc.	1995	4 ha.	-	278		Up gradation of nursery is needed.

Activities visited

- Govt. Model Nurseries (2Nos)
- AEP, Banana, Tube rose, Papaya
- Pack house with grading machine
- Drip (MIS), Sprinkler.

Observations:

1. Team felt satisfied with the achievements made in the district. By and large area expansion programme of banana and papaya is going on at right direction. However, banana ripening chambers need to be developed soon.
2. Government Model nursery established at Pendri with NHM assistance, developed huge infrastructures (11 Nos) for production of planting material. Seeing the facilities developed at nursery, the production of planting material during the year 2011-12 was 22120 which were below the target. There is an ample scope to produce more grafted plants i.e. 1,50,000 plants/ year.
3. Govt. nursery located at Achholi needs up gradation, as there is good scope of fruits crops mainly citrus in the region.
4. There is good scope to developed protected cultivation for flowers and vegetables.
5. Surplus production in the district provides opportunity for creation of new market infrastructure and setting up of processing units.
6. Excessive withdrawal of ground water for irrigation purpose may lead the permanent depletion of under ground water resource if this situation is not properly monitored may cause problem as most of the blocks have already been declared under dark zone.
7. At few places, NHM was displayed.
8. SHM is giving subsidy for installation of grading and weighing machines costing equal to pack house. The beneficiary constructs the pack house of its own resource. The design needs to be standardized. This needs clarification from SHM Chhattisgarh.
9. Extra suckers of banana to be removed, only one sucker is allowed to grow for 2nd crop. More soil around main stem needs to be put when plants are in bearing stage to avoid breaking.

DHAMATARI DISTRICT

Geographical Features-

Dhamtari district is located between the latitude 20-20' N to 49 North and longitude 80-33 to 81-57 East. Its elevation is 321.54 meter from mean sea level. It is in the South Eastern part of Chhattisgarh and surrounded by the district Raipur, Durg and Kanker. The Head Quarter of the district is located at Dhamtari, which is about 78 km. from the capital of the State i.e. Raipur and is well connected by road and rail as well.

The total geographical area of the district is 4.08 lakh ha. Out of which 212550 ha. (About 52%) is under forest. Hence, the district is rich in paddy population in district.

The main rivers "Mahanadi" flow through the district starts from Shihawa Pahad.

Climate

The Climate at the district is monsoon type the May month is hottest the December is the coolest once. The south-west monsoon is rainy season start from mid June till the end of September. The average rainfall is 1374.70 mm.

Demographic characteristics-

Dhamtari has total population 703569 consisting of 49.88 percent male and 50.12 percent female populations. The entire district is covered under the tribal sub-plan, around 26.59% population is Schedule Tribes.

General climatic features-

Dhamtari district falls under hot temperate climate of the Chhattisgarh plains agro climatic zone and hence, the district experiences very hot and dry summer. Summer season starts from April to mid June. Due to South-West monsoon, the rainy season starts from mid June till the end of September. The average rain fall of the district is

1374.70 mm, rainfall is highest during July & August and progressively recedes until September.

Soil type-

Soil –Broadly the soil structure and the texture in the district is

1. Black soils (Kanhari type) = 71%
2. Red soils (Bhata type) = 20%
3. Sandy soil (Dorsa Type) = 06%
4. Samdi loam = 03%

The district is predominating by enceptisol and amphibole soil type which is acidic in nature and having more than the normal iron content in it.

Agro climatic zones-

Agro-climatically, Dhamtari District is under Chhattisgarh plains.

Present Irrigation Scenario-

Much irrigation facilities are available in the district. Only percent of the total cultivated area is irrigated in the district. The major source of irrigation area and Canals, Tube wells. Hence, it is the major constraints for the district in agriculture development.

Sl. No.	Source of irrigation	Area in ha.	% age
1.	Canals	84316.00	60%
2.	Tanks	1700.00	1.2%
3.	Bore wells	18000.00	12.85%
4.	Wells	1000.00	0.71%
5.	Lift irrigation	-	-
6.	Other sources	5010.00	2.57%
	Total	110026.00	78.59%

Out of 1.40 ha. net sown area 110026.00 ha. (78.59%) is under assured irrigation & remaining 29974 ha. (21.41%) area is rainfed. Existing physical resources in terms of infrastructural facilities-

Horticulture Nurseries

There are 4 nurseries situated in 4 blocks, two nurseries are established during period of 1979-80 and one nursery was established in 2008-09. Under RKVY 2 nurseries up-gradation and modernization work has been taken up. One nursery is established in 2010-11 in Rakadih (Magarlod Block)

Sl. No.	Nurseries	Block	Area (ha.)	Establishment	Remark
1.	Bendranawagaon	Dhamtari	6.00	1979-1980	Established by State Govt.
2.	Semra	Nagri	6.00	1979-1980	
3.	Bhatagaon	Kurud	6.00	2008-2009	Established by R.K.V.Y.
4.	Rakadih	Magarlod	6.00	2010-11	Established by R.K.V.Y.
Total			24.00		

Orchards-

Among 4 departmental nurseries the major fruit orchards are of Mango (6.5 ha.), Guava (2 ha.), Jack fruit, Cheeku, Lime (1.5 ha.).

Sl. No.	Nurseries	Block	No. of mother plants			
			Mango	Guava	Lime	Total
1.	Dhamtari	Bendrawagaon	250	138	138	526
5	Nagri	Semra	200	277	138	615
3.	Kurud	Bhatagaon	200	138	138	476
4.	Magarlod	Rakadih	200	138	138	476
	Total		850	691	552	2093

Seed production farms:-

There is no specified seed production farm in Dhamtari district. In Bhatagaon nursery 2 ha. vacant land is available which may be used as seed production area for implementation of various vegetable seed production programs.

STRENGTH-

- Irrigation facility especially canal irrigation system (60% of total irrigation) and tube-well irrigation (12.85% of total irrigation) is most suitable factor in favour of horticulture crops especially vegetables in the district. Net irrigated area of district is 78.59%. Assured irrigation facility may be combined with micro irrigation system to grow high value horticulture crops.
- Agro-climatic conditions are suitable to grow almost all the horticulture crops in the district. Winter period is very short therefore cultivation of frost prone crop is easier. This feature promotes cultivation of fruits like Banana, seasonal vegetables like Bottle guard, Sponge guard, Okra, Brinjal, Beans etc. throughout the year.
- There is quick adoption of new technologies by the farmers. There is good response for the vermi composting, drip irrigation, farm mechanization and organic farming. Number of progressive farmers are coming forward in the field of commercial cultivation of high value horticulture crops especially vegetables and fruits.
- District has a wide network in both the private and public sector for supply of various inputs fertilizer, pesticides, implements/equipments and seed/planting material. Thus farmers have easy and timely access to these inputs related with horticulture development.
- Good surface transport system is available and condition of roads is also good.
- A better awareness about agri-credit facility and better coordination/cooperation among farmers, bankers and government officials, are encouraging farmers to avail credit facilities from the banks and other financial institutions in the horticulture sector.
- Catchment area of 3 big dams, suitable for cultivation of horticulture crops. During winter almost all type of the vegetable and spices are cultivated in this area which is major source of income of landless poor farmers.

WEAKNESS-

1. Extension staff available at the grass root level is negligible. The extension personnel available at block level in the department are 1-2 as compared to 15-30 personnel with the other line department viz. Agriculture, Animal Husbandry, Forest etc. No extension personnel are available either at Panchayat or village level. This result in inadequate technology transfer.
2. Forest occupies 52% area of the district and only 18% area is available for cultivation. Paddy is the prominent crop of cultivation in both *Kharif* and *Rabi* season therefore for crop diversification and area expansion of horticulture crop very little scope is left.
3. Open grazing system is prevalent during the 8 months of the year. Only for 4 months cattle are governed by cattle grazers and rest of the year they freely move in the open field. Stall feeding practice is non-existent, therefore protected cultivation of the horticulture crop, is the only option left which is very costly affair.
4. Current productivity status of horticulture crops is far below the yield potential recommended by SAU.

OPPORTUNITIES-

1. Big demand driven market is available in the district and State capital Raipur. There is huge demand for all the horticulture produce like fruits, vegetables and spices especially off-season produces.
2. 100% electrification and un-interrupted power supply in the district is suitable for assured irrigation, setting up of food processing units and cold chain units.
3. Dhamtari district is a big trading centre of medicinal / aromatic and other minor forest produce. Therefore big traders and manufactures have frequent interaction and backward linkages with the local traders and producers. These linkages can be harnessed for trading and processing of horticulture crops.
4. In urban areas due to good paying capacity and changing food habits demand for off-season vegetables, spices and fruits, canned, preserved, processed and ready-

to-serve horticulture produce is expanding day-by-day. This demand can be taken up as an opportunity for off-season vegetables, spices and fruits cultivation and establishment of small processing/value addition units.

THREAT-

1. Lack of proper weather forecasting will adversely affect the crop protection against disastrous conditions such as drought, floods and other natural calamities, resulting in the damage of crops.
2. Termites are serious problem to the horticulture crops especially vegetable crop like Brinjal, Tomato and fruit plantation.
3. Excessive withdrawal of ground water for irrigation purpose may lead the permanent depletion of under-ground water resource. If this situation is not properly monitored will cause environmental problems.
4. Excessive use of chemical fertilizers and pesticides if not controlled will cause ecological imbalance and ultimately decrease in productivity and resistance against pesticides.

Present Status of Horticulture in the Dhamtari District

Dhamtari is non NHM district. The MIS programme is only component funded by NHM in the district. In the last Two years, Rastriya Krishi Vikas Yojna has helped to increase in area and productivity of fruit crop, flower crops, vegetable and medicinal and aromatic crop. Most of the components like area expansion, water tank, vegetable production and bamboo plantation are being funded by RKVY & Bamboo Mission.

A. Fruit Crops-

The major fruits grown in Dhamtari district are Mango, Lime, Guava, Sitaphal (Natural) etc. apart from these crops minor fruits like Ber, Aonla etc. are also grown.

The total area of the fruit crops in the Dhamtari is 7660.00 Ha. along with the production of 69318 Mt. in the year 2011-12.

B. Vegetables-

Mostly all vegetables crops like *Tomato*, *Bhindi*, Brinjal, Cowpea, Bottle guard, Bitter guard, Sponge guard, Cabbage, Cauliflower etc. are grown very well. The total area of vegetable crops in the Dhamtari was recorded 10705.00 ha. in the year 2011-12 with the production of 122912 Mt.

C Spices-

Chili, Coriander, Ginger, Garlic, Turmeric, & Methi are the major spices grown. The total area of spices recorded in year 2011-12 was 2843 ha. with the production of 1789 Mt.

J.I.T. visited the following beneficiaries of Dhamatri District

S. No	Name of the Beneficiary	Address	Crop	Year of Plantation	Area in ha.	Nos. planted	Nos. survived as on date of inspection	%age of survival	Remarks
1.	Shri Ram Lal	Village Bongarl Block Kurud Dhamtari	Vegetable cluster Brinjal * Tomato (MIS)	2011-12	1.5	-	-	90	Vegetables were under drip, total subsidy of Rs. 18750.0 given, advised to adopt IPM instead of chemical sprays in vegetables.
2.	Dhaneswar Sahu	Village-Mandrud Block -Kurd Dhamtari (Deori cluster)	Banana (G 9, T.C.) vegetables (MIS)	2011-12	1.5	3565	-	95	Good growth of banana, advised to do staking, protect plants from wind by planting of Dencha around field, subsidy of Rs. 62400/- for MIS released.
3.	Sri Bhawal Lal	Village Potiyadih Block-Dhamtari	Banana (TC. G9) vegetables (MIS)	2011-12	2.00	5000	4800	95	Entire area was under drip, good growth of banana but Bract mosaic disease observed, advised for removal of affected plants.
4.	Hari Ram Sahu	Village-Potiyadih Block-Dhamtari	Vegetables (Bhindi) vermi compost) RKVY	2010-11	1.58 (1.5X1.5 M)	-	-	-	Drip system installed in the field to grow vegetables, Rs. 87838.00 paid as subsidy.

5.	Sri Ram Lal	Village-Bangar Block-Kurud	Drip MIS	2010-11	1.77 (1.5X1.5 M)	-	-	-	Subsidy of Rs. 57987 paid for MIS.
6.	Sri Bhawal Lal Devagon	Potiyadiha Dhamtari	Drip (MIS)	2011-12	98 (1.5X1.5 M)	-	-	-	Rs. 86225/- subsidy paid for MIS by CG agro, Dhamtari.
7.	Govt. Model Bhatagaon nursery	Kurud, Bhatagaon	Mango, guava, lime, jack fruit, sapota	2008-09 (RKVY)	6.00	-	-	-	Fruit mother block is coming up well, about 35000 root stock of mango is ready for graft, advised to paste mango stem to avoid cracking and gummosis disease.

For holistic development of horticulture, this district is covered under RKVY along with micro irrigation scheme under NHM and other State departmental schemes.

Activities visited

- Nursery under RKVY, (1 Nos)
- MIS- Mango, guava, papaya, leman, vegetable crops
- Vermi compost.

Observations

1. Climatic conditions are very much suitable to grow almost all the horticultural crops, including vegetables in the district. Winter period is short; hence frost prone crops could be grown easily.
2. There is very good response for MIS, vermi compost and organic farming.
3. Extension staff available at the grass root level in the district is negligible, that too they look after many schemes run by central and State Govt. sectors.
4. Lacks of trained IPM staff, vegetable growers are facing a lot of problems in managing diseases/pest. No option left but to contact local pesticide dealers for managing the pests with chemical pesticides which may develop resistance against pests.
5. Model nursery developed at Bhatagaon is coming up well and it should be more farmers friendly to produce more grafted plants during ensuing season.
6. Termite is the serious problem to horticultural crops.
7. There is good opportunity for converges of NHM schemes with RKVY etc. for effective implementation of the scheme and to optimize benefits of the scheme. ‘
8. Most of the place, board of NHM logo was found missing.
9. Banana is expending very fast in the district, more technical know how needs to be supplemented to the farmer for better up keep and avoidance of pest problems.

KANKER DISTRICT (LWE)

Kanker is non NHM district. The MIS programme is only component funded under NHM in the district. Most of the components like AEP, water tank, vegetable production and Bamboo plantation are being funded by RKVY and Bamboo Mission.

J.I.T. visited the following beneficiaries of Kanker District (LWE)

S. No.	Name of the Beneficiary	Address	Crop	Year of Plantation	Area in Hect.	Nos. planted	Nos. survived as on date of inspection	%age of survival	Remarks
1.	Sri Radhey Shyam	Pushwara, Kanker	Bitter gourd Drip (MIS)	2011-12	1.00	-	-	-	Bitter gourd crop was over, new cucurbits are growing well.
2.	Dulare Singh	Makdi, Kanker	Chilli & Brinjal (MIS) drip	2011-12	1.0	-	-	-	Crops were good but leaf curl and fruit borers observed, advised to use biopesticide instead of chemical pesticides.
3.	Smt. Surjoyti Bai	Markatola, Kanker	Tomato, onion & shadenet (MIS) drip	2010-11	1.00	-	-	-	Onion & tomato crop was good, maximum production taken from tomato but wilt problem in tomato observed, advised not to take Solaneceous crops in this field, take other vegetables / follow crop rotation.
4.	Sm. Suneeta Bai	Babudbena, Kanker	Brinjal & Tomato Drip (MIS)	2010-11	1.00	-	-	-	Standing brinjal and tomato crops found affected by wilt, advised as suggested

									above. In two years, she purchased three whether for transporting vegetable in the main market and earned 4 lakhs from vegetables covered under MIS.
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Activities visited

- MIS
- Vegetable cultivation

Observations

- Massive programme of vegetable cultivation under MIS has been taken up in the district. The JIT felt satisfied with the progress of drip. It is difficult to meet out the demand of farmers in the district. More intervention is needed for supply of drip from the SHM.
- Success story of the Smt. Sunita Bai needs to be reported and documented.

BASTER (JAGDALPUR) DISTRICT (LWE)

Geographically, Bastar district is comes to Bastar Plateau Zone Bastar is quite a large district with 12 development Blocks. This district has 8,755.79 sq. k.m. area of revenue lands.

The Characteristic features of the district are described below. Bastar district is a North-East plateau zone, Bastar district lies between 17.46 North latitude and 80.15 to 82.01 East Longitude. Bastar district is surrounded by Orissa in East, Andhra Pradesh in South, Maharashtra in West and Durg and Raipur districts of Madhya Pradesh in North. The altitude of the district varies from 566 meters to 647.44 meters above sea level.

Demographic characteristics –

The total Population of the district is 1193650 and out of this, more than 90% live in rural areas. More than 80% of the people residing in this district are tribel, 60% of them falling below poverty line. The representation of scheduled tribes is 70.26 % and that of scheduled castes 1.88 % in the district. District has more than 40% population are small and marginal farmer. That is the strength for future horticulture development programme.

General climatic features –

The Climate of this district is hot sub-humid with hot summers and cool winters. The temperature range is 30.6 C in January to 41.1 C in May at maximum level and 4.4 C in December-January to 19.4 C in July. The rainfall pattern ranges from 1100 mm to 1600 mm with an average rainfall 1295 mm. More than 90% of rainfall is received in the months of June to September. Only 6.44% of the area is facilitated with irrigation. Another feature of the district is to get rains in at least once in a month. In the month of May and June highest temp does not go above 42 C such type of situation provide opportunity to grow off season vegetables, dry land fruit crops plantation can be without irrigation.

Soil type: Surface texture of soil varies from sandy clay to loamy sand whereas, sub-soil is loamy sand as obvious from the soil profile in the gullies and *nala* beds. In low lying areas, *wide* variation in soil texture with varying depth is due to deposition of transported materials through gullies and *nalas*. Soil is generally shallow at higher elevation and thick at lower elevations. The surface drainage is rapid as soil is located between *nala* and upland ridges, which form the yield with undulating topography.

The dominant soil slopes of the area are gentle to very gentle. Taxonomically Bastar Plateau zone valleys have alfisol. Vertisol and inceptisol, while uplands are entisol and alfisol. In general, soil are light to medium textured, non-calcareous, slightly to moderately acidic.

Agro- climate Zones: Bastar district is comes in Bastar plateau agro climatic zones

Present Irrigation Scenario –

Major irrigation facilities are not available in the district. Perennial rivers, rain water harvesting tank, well, tube well are the major source of irrigation. Total area in all the blocks come under irrigation facility is 0.216 lakh ha which is only 6.38 % of the total cultivable land. Pattern of average rainfall per year in all the block is similar and average rainfall in bastar district is recorded 1295 mm annually. Rainfall is spread over all the 12 months and intensity is higher during the June to September.

Present Status of Horticulture–

Bastar has often been dubbed rice bowl of C.G. with the main crop being Paddy. Apart from paddy, cereals like maize, *kodo-kutki* and other small millets, pulses like *tur* and *kulthi* and oilseeds like Groundnut, Niger and are also grown. Yet productivity is not very high. This brought a new thrust on the sector of Horticulture, as the region is also suitable for growing Cashew, Mango, Banana, Guava and other fruits and a variety of vegetables.

Horticulture is growing popularity owing to the high value of horticulture produces than agriculture crops. However, there needs to be a greater impetus in boosting the irrigation resources of the state and in promoting horticulture in intensive mode in the district. According to the old and existing data, a brief analysis is made on the status of Horticulture in the state which is furnished below. However, fresh efforts are being made to generate and compile statistical data through systematic data collection on Horticulture crops in the district.

A. Fruit Crops –

The major fruit crops grown in Bastar are Cashew, Mango, Guava, Lime, etc., apart from these major fruit crops minor fruits like Jack fruit, Sitafal, Ber, Anola etc., are also grown both as cultivated and wild crop.

The total area of the fruit crops in the district is 14400 Ha. along with the production of 58470 MT in the year 2010-11.

Agro climatically Cashew can be grown in the whole part of the district successfully while the area of Bakawand, Bastar, Tokapal, Darbha and Jagdalpur block is suitable for production of Cashew nut can be grown well in the plateau region of the Bastar.

B. Vegetables -

Mostly all vegetable crops like Solaneious crops Brinjal, Cabbage, Cauliflower tomato etc., are grown very well in the district. The total area of vegetable crops in the Bastar was recorded 9115 Ha. in the year 2010-11 with the production of 105525 MT.

C. Spices -

Chili, Ginger, Turmeric, Coriander are the major spices grown in the district. The total area of spices recorded in year 2010-11 was 4350 Ha. with the production of 27325 MT.

D. Flowers -

Area under flower cultivation is negligible in the district. With the formation of new state the demand of flowers is increasing day-by-day, to meet out the growing demand of flowers it is essential to promote commercial floriculture among the farmers. The major flowers like Marry-gold, Gladiolus, etc., can be grown very well without much care. The present area under floriculture in the district is 87 ha. with the production of 289 MT. approximately in the year 2010-11.

E. Aromatic & Medicinal Plants -

The medicinal crops grown in the district are Lemongrass, Butch, E.citiridora etc. Some aromatic crops like Pamarosa, Jamarosa, Patchauli, are promoted by the department for commercial cultivation among farmers.

J.I.T. visited the following beneficiaries of Baster District (LWE)

S. No.	Name of the Beneficiary	Address	Crop	Year of Plantation	Area in Hect.	Nos. planted	Nos. survived as on date of inspection	%age of survival	Remarks
1.	Sri Giga Bhai	Village-Singhanpur B-Kondagaon, Baster	Mango, community tube well and vermi compost	2006-07	2.00	200	160	80	<ul style="list-style-type: none"> • Cash subsidy received of Rs. 13404 for mango and tube well, Rs. 68000, for vermi compost units Rs. 30,000. • Mango crop not properly maintained, about 30% plants were burnt due to fire.
2.	Sri Kadar Bhai	Village-Singhanpur B. Konda gaon, Baster	Mango, Dusheheri & other	2006-07	2.00	200	175	87.5	<ul style="list-style-type: none"> • Cash subsidy Rs. 13404 given. Survival rate is very low due to negligence.
3.	Sri Vikash Dubey	Singhanpur, Kondagaon, Baster	Banana (T.C , G 9)	2010-11	1.00	2476	-	90	<ul style="list-style-type: none"> • About 80% banana plants are surviving, no care is taken by the farmer in spite of drip/ tube well given to beneficiary.
4.	Sri Ghanshyam	Village Chichadi, B. Pharas gaon,	Banana (TC, G-9) Drip Tube well	2010-11	1.00	1990	1000	50.25	<ul style="list-style-type: none"> • Banana is grown under drip, vermi unit (Portable) given but not in use, growing

		Kandagaon, Baster	Vermi unit						vegetables in a big way.
5.	Sri Punuram	Vilalge Charkai B. Pharasgaon, Kondagaon, Baster	Mango (Dasheheri, Langra and community tube well & Banana)	2008-09	1.00	100	-	70	<ul style="list-style-type: none"> • Survival rate is low needs gap filling, • Plants, burnt with fire • Banana plants are not in good condition needs training on production management.
6.	Sri Hiralal	Village Charkai Block Pharasgaon, Baster	Cashewnut (v-4)	2009-10	0.8	80	40	50%	<ul style="list-style-type: none"> • Cashew inter cropped with banana is doing well • Cashew plants are not trained properly needs training.
			Banana TC (Community well)	211-12	2250	-	-	95%	<ul style="list-style-type: none"> • Banana needs staking.
7.	Sri Raisingh	Village – Charkai, Block- Pharasgaon, Baster	Cashew, v-4, Mango	2009-10 2009-10	0.75	75 50	51 25	68 % 50 %	<ul style="list-style-type: none"> • Heavy incidence of termite on mango stem/ branch noticed, survival of fruit crops is very less.
8.	Sri Ashok	Village - Sonarpal ,Munjula, Kondagaon, Baster	Chilli-435 Namdhari Drip Tube well	2001-12	1.55	-	-	-	<ul style="list-style-type: none"> • Crop is good but had an incidence of wilt and viral diseases. • Regular spraying of bio pesticides is

									needed.
9.	Sri Kuharu	Dewda	Chillis 1701	2011-12	1.214	-		-	<ul style="list-style-type: none"> Mosaic and leaf curl are frequently encountered. Spraying is needed to control the disease.
10.	Sri- Ram Kirati	Kolchur Jagdalpur Jagdalpur	Banana, Drip G-9	2011-12	1.20	-	4053	90	<ul style="list-style-type: none"> Advised to put Boarder crops like Sesbania/ Dencha and take inter crop of cucurbits initially.
11.	Sri Rawbali	Kolchur Jagdalpur	Banana , TC-G9, Drip	2011-12	3.00	6756	6080	90	-do-
12.	Govt. Model Nursery	Bade Maringa Tokapal Jagdalpur	Mango (72) Guava (85) Cashew (184) Sapota (78)	1980(Estd)	5.40	-	About 35000 sapling per year		<ul style="list-style-type: none"> Vermi compost pits to be utilized properly. Tremendous scope to increase the capacity to produce more grafted plants. Old mother block needs rejuvenation to get more scion sticks.
13.	Sri Ram Dayal	Village Chidaipadar, Baster, Jagdalpur	Chilli (1701) (drip) Pack house	2011-12	Drip area (1.8 ha)	Seed sowing	-	-	<ul style="list-style-type: none"> Good performance of chilli noticed except problem of wilt/ virus in few plots, advised to spray-biopesticide.
14.	Sri Veeresh Chandra Dubey	Chhote-Morachhpal, Baster /	Drip (vegetable)	2011-12	4.00	Subsidy Rs. 341054	-	-	<ul style="list-style-type: none"> Good managed vegetable and chilli crops.

		Jagdalpur							
15.	Sri Kondu	Kurenga, Baster Jagdalpur	Mango, Tube well, Drip	2007-08	0.5	50	-	70	<ul style="list-style-type: none"> • Mango plants need canopy management; local officials are not trained, needs training on this aspect.

Activities visited by JIT

- Area Expansion programme of Horticultural crops.
- Vermi compost
- Community, tube wells.
- Drip under MIS.
- Vegetables and inter crops.
- Pack house
- Model Nursery

Observations

1. Due to proximity of coastal area, climatic conditions, uniform distribution of rains throughout the year, moderate temperature and high humidity are congenial for off season cultivation of fruits and vegetables. About 55% upland with fertile soil is having appropriate humus and by default organic in nature, is another added advantage.
2. Adoption of modern technologies like micro irrigation based activities and mechanization in and around the town is very common in the district but adoption rate and receptivity rate of remote tribal villages are very slow due to low literacy rate and poor exposure.
3. Availability of surplus raw material like mango, Tamarind, cashew nut etc. can cater the need of small processing units for mango related products, Tamarind pulp and candy and cashew soft drink.
4. Climatic conditions and rich bio diversity is most suitable for apiculture and mushroom cultivation.
5. Team observes that excess / over dose pesticides are being used in chilli and other vegetable crops which may lead to ecological imbalance and resistance against the pests.
6. Seeing the vast area of the district to implement the scheme in mission mode, field implementing and Extension Personnel are very less in the district.
7. Team also felt that progress under the PHM / Pollination support/ Market components have been found to be very discouraging, need prioritization.
8. Govt. model nursery established at Bade Maringa in the year 1980 and upgraded under NHM, and able to produce 15000-20,000 grafted plants per year only. The

production capacity needs to be enhanced by trained budder and grafter. The non availability of funds for continuous production of planting material is an other constraint. During visit the team could see the propagation technique being practiced with good success in this season.

9. Most of the places, permanent board with NHM logo was found missing in the district.

Visit to Directorate of Spices and Plantation Crop, Kera Bhawan, Kondagaon, Baster

Visited Directorate of Spices and Plantation Crop, Kera Bhawan, Kondagaon, met Dr. Sengar, Assistant Director and Station Incharge. This station has 100 acre area where the tall cultivars of coconut (3439 Nos), Hybrid (472), Exotic cultivars (211) and perennial inter crops consist of mango (2002 Nos), coffee (1116 Nos), cinnamon 70 Nos, black pepper (388), pine apple (814 suckers), Aonla (81 Nos), cashew (115 Nos) and cocoa (3699 Nos) etc. are being grown in the farm. In nursery, they are having tall cultivar of coconut seedlings i.e. 1,59913, Dwarf 2808 seedlings ready for sale in the ensuing season. As per programme, they are ready to provide quality planting material to the farmers of Chhattisgarh State, to cover **500 ha new area under area expansion programme** which is likely to be implemented in the potential districts of Chhattisgarh such as Beejapur, Sukma. Jagdalpur, Narayanpur, Kondagaon, Kanker, Dhanawada, Sarguja, Jashpur and Mahasamund. During discussion, Dr. Sengar informed that this year nursery programme will be implemented in farmer's field in the State so as to increase the quality planting material to meet the demand.

JIT noticed that there is **immense scope for promotion of cocoa in Baster Plateau**. All cocoa plants were in full bearing and free from disease and pests.

RAIPUR DISTRICT

Raipur district is centrally located in the state and constitutes the major part of Chhattisgarh plain. It is surrounded by Bilaspur in the North and by Bastar and some part of Orissa state in the south. Raigarh and some part of Orissa, standing in part which Durg district is situated in the west. It occupies the South eastern part of upper Mahanadi valley and the bordering hilly in south and east. Thus the whole district is divided into two major physical divisions, viz. the Chhattisgarh plain and the hilly area.

Agro climatic conditions of Raipur are tropical to semi tropical and arid to semi arid. The average Rainfall of the district is 1352 mm and Maximum temp. in the district goes up to 45⁰ C. Farming in hilly area mostly depends upon rain. In Plane area Tube well, wells, Tanks, Canals and lift irrigation from River & Nala are the major source of irrigation. The Main Rivers of Raipur are Mahanadi, Kharun, Paire and Jonk.

There is a great scope for the promotion of horticulture crops in the district due to availability of cultivable waste land (1, 01,000 ha.) in majority.

Strength for Supplementing NHM in the district

S.No.	No. of DDA	No. of Technical Staff	No. of Clerical Staff	No. of field consultant (Mission intervention)	Remark
1	01	14	06	08	

District Profile

- Geographical area 13,44,600 ha.
- Net sown area 5,47,800 ha.
- Total horticulture area during 2008-09-0.39 lakh ha. (7% of its net sown area)
- Proposed horticulture area (after 5 years 2014-15)- 0.42 lakh ha (7.72% of its net sown area).
- Percentage increase from 2008-09 to 2014-15-10%.
- Forest cover 5,26,200 ha
- Average rainfall 1352 m.m.

- Farm families 4,12,805.
- 57% marginal farmers own 11% land.
- 22% small farmers own 24% land. 79% Small/Marginal Farmers own 33% land
- 24% others own 67% land.
- Average land holding 1.4 ha.
- Under fruits, Mango is a major crop which occupies 2240 ha. of the total cropped area of fruits (12 437.70 ha.). Under Spices Chilli is major crop which occupies 1340 ha. of the total cropped area of spices (3222 ha.). Under vegetables Brinjal is major crop which occupies 3554 ha. of the total cropped area of; vegetable (22684 ha.).
- Net irrigated area 367381 ha. (27%).
- Cropping intensity 136%.

Agro-climatic Zones-

Agro-climatically, Raipur district comes under “Chhattisgarh plain” which is dominant over other agro-climatic conditions. Very small portion of the district comes under hilly section which is spread in some blocks of the district like Kasdol, Gariyaband, Mainpur & Devbhog.

Present Irrigation Scenario-

In the district the net irrigation area is 3.69 lakh ha. which constitutes 67.45% of net sown area. Most important sources of irrigation being surface water where irrigation by Canals and Tank which constitutes 85.3% of the net irrigation area.

About 56% area under kharif crop and 31% of area under Rabi crop comes under assured irrigation.

In the district approximately 7% cultivated area is under horticulture crops (38891 ha.), out of which 66.6% area is under vegetable and spices cultivation (about 25906 ha.).

In Raipur district Fruits, Vegetables and spices produced are mostly consumed locally. But due to lack of marketing information and access to the organized markets farmers are often compelled to sell the surplus produces to the middlemen at the local market. Thus they are not getting the optimum return of the produces. As the fruits and vegetables are perishable in nature and due to lack of storage facilities often they sell the surplus products at a lower cost. In some major horticulture crops like Papaya, Water melon, Brinjal, Cauliflower, Cabbage, Tomato, Okra, Bottle guard, Bitter guard & Chilli, 20-30 percent of the produce is exported to near-by districts and other state also.

SWOT Analysis-

Strength	
New possibilities in horticulture-	Expansion of Flower Market and A.E.Z. for floriculture, market for fruits, vegetables and organic produce
Credit facility	Better awareness, coordination between farmers and landing institutions
Transport facility	Good road, rail and air facilities for transportation of perishable horticulture crops and distant marketing
Technical institutions	I.G.K.V.V., Raipur, Government Fruit Preservation Centre Raipur Horticulture College, Raipur and Chhattisgarh Mushroom Processing Unit
Supply of inputs	Network of supply of various inputs in public and private sector
Weakness	
Adoption rate and receptivity	Comparatively slow due to low literacy and poor exposure
Irrigated area	Horticulture crops are commercially grown in assured irrigation
Supply of quality planting material	Inadequate and timely supply of quality planting material in distant rural areas
Extension services	No extension personnel available at panchayat or village level. Resulting in inadequate technology transfer
Value addition	Absence of appropriate PHM, processing and marketing arrangements
Opportunities	
Diversification of horticulture	Sufficient culturable fellow land available with congenial agro climatically condition
Huge demand for horticulture produce	Big demand driven market available at the

	capital level and whole sale market can be developed..
Great potential for export of vegetables	Off season vegetables can be grown through out the year
Establishment of Agri-business / research activities	Availability of finance opportunity by banking network.
Increasing demand for hybrid seeds	Private entrepreneurs could join seed production programme of new local varieties.
Scope for protected cultivation of high value crops	Farmers are showing interest.
Threats	
Heavy rain fall	Low lying area is submerged affecting horticultural crops.
Excessive use of pesticides	Causing water soil/water pollution, ecological imbalance.
Excessive withdrawal of ground water.	Depletion of underground water source
Excessive area expansion without PHM activities	Unrest among farmers

National Horticulture Mission at-a-glance

Area, production & Productivity of the Crop-

Sl. No.	Crop	2004-05			2011-12		
1.	Fruit	4984	55512.42	11.14	15128	185213	10.35
2.	Vegetables	16380.40	165274.20	10.09	37207	506707	11
3.	Spices	625.95	4419.15	7.06	6612	38354	6.49
4.	Flowers	84.38	249.76	2.96	1099	3655	4.61
5.	Medicinal & Aromatic	789.80	117.38	1.49	700	26648	4.48
	Total	22153.53	225572.91	10.18	60747	760577	10.30

J.I.T. visited the following beneficiaries of Raipur District

S. No.	Name of the Beneficiary	Address	Crop	Year of Plantation	Area in Hect.	Nos. planted	Nos. survived as on date of inspection	%age of survival	Remark
1	Smt. Anamika, Choudhari	Village Tarra, Dharsiwa	Rose & Gerbera	2010-11	4000 sq m	-	-	-	Under protected cultivation, 4000 sq. m, green house constructed with NHM subsidy amounting Rs. 18.70 lakhs given to beneficiary.
2.	Mohm. Billal	Village Joraundha, Dharsiwa,	Chilli & Banana Drip.	2010-11	4.00	-	-	-	Under MIS 2.0 ha. are covered under chilli and got 90% subsidy under MIS and 4.0 ha. area covered under Banana and got subsidy under MIS/ NHM.
3.	Shri Obrai	Village Saragaon, Dharsiwa,	Banana Drip/ Mango	2011-12	4.00	-	-	-	Under MIS, 4.0 ha area covered under Banana and mango got subsidy under MIS/NHM, termite problem noticed.
4.	Shri Bharat Sahu	Village Raveli, Abhanpur	Vegetables	2012	0.4	-	-	-	Under VIUC, 0.4 ha area taken for brinjal

									cultivation, meeting conducted with FIG's farmers at Raveli/Paragaon.
5.	Shri Gurpreet Singh, Chandhok	Village Rawabhata, Dharsiwa	Cold storage (5000 MT) Cap.	2011-12					Cold storage, 5000 MT capacity is about to complete and got Rs.60.00 lakh subsidy.
6.	Wholesale market	Village Dumer Tarai, Dharsiwa	Whole sale mandi	2011-12	5 Acre				Meeting held with Traders and discussed the method of operation of mandi.

Activities visited

1. Multi chamber cold storage.
2. Area expansion of perennial / non perennial fruit crops/ floriculture / vegetable
3. Vermi compost.
4. Micro-irrigation.
5. VIUC.
6. Local private Whole sale Mandi.

Observations

1. Termite problem in mango was noticed and beneficiaries were advised to use chloropyriphos drench around mango basin, and irrigate the fruit plants frequently.
2. Inter crop under fruit crops was not given due importance.
3. In banana, 2-3 side suckers were encouraged in few banana plantations.
4. Board with NHM logo was not displayed at many sites.
5. Visited National Vegetable initiative programme, at village Paragaon / Raveli, under Raipur Block where FPO's formation process is under way. Discussed with official of Indian Gramin Service, Raipur, a reputed NGO has been given the task by the NHM, Chhattisgarh to make FIGs/FPO for VIUC. Discussed with the FIG farmer's at Paragon village where about 50 participants including farmers, Officers from the department of Horticulture and Sri Sunil Dubey, Nodal Officer, VIUC programme, NGO representative engaged in promotion of VIUC were participated. I myself and Nodal Officer gave brief account about the project. The meeting ended at about 8 PM. As per report the following works have been completed upto May, 2012 by the NGO. Team was informed that the Project was also monitored by Sri Pravesh Sharma, MD, SFAC and Sri Ashok Pillai during their visit to Chhattisgarh.

Sl. No.	Name of Work	Target	Achievement
1.	Selection of farmers	3000	2371
2.	FIG	200	160
3.	FPO	3	1
4.	Farmers profile entry	3000	721
5.	FIG data entry	200	136
6.	FIG bank account	200	23

6. Visit to Private Mandi, Dumer Tarai (Dharsiwa) at Raipur

Local Mandi named as Ram Thok Upbhogta Samiti was started in May, 2011, spread over in 5 acre area with 77 shops. Each shop is having construct area of 2200 sq ft. and sold to Samiti members on payment basis costing 10 lakhs each. This is the daily market and functions on every day. The horticultural crops including vegetables, onion, garlic, banana, mango, aonla, papaya, coriander, chilli, cabbage, cauliflower, cow pea, okra, ginger etc. are traded in this market. The farmers from nearby villages around the city are being benefited by this market. The farmers are getting remunerative price for their produce. However, after this market become operational, the buyers come directly to the market and farmers are able to sell their produce directly to them after deducting 3.5% commission by the commission agent.

7. Visit to Floriculture Units at Raipur

Visited floriculture units of Sri Anamika, cultivating roses and gerbera in 1.5 ha poly house. The condition of roses was not good due high temperature. There was no fan system in poly house, for controlling the temperature. Foggers are being used which create maximum humidity, which is not suitable for the growth of roses/gerbera. In gerbera, yellowing of leaf and necrosis disease was severe, similarly die back/ wilt also noticed in roses. Advised to spray / drench pesticides for control of disease. Mr. Chaudhuri informed that floriculture growing farmers face stiff competition from the neighbouring State like West Bengal. The flowers from WB are available in local market at a much cheaper price in Raipur.

8. Visited M/s Chandok Cold Storage located on National Highway with total capacity of 5000 MT, is still under construction. SHM sanctioned Rs. 60.0 lakh as a subsidy. The cold storage has all modern facilities and likely to be completed by the end of July, 2012.

Discussion with Mission Director, Chhattisgarh

The JIT met Mr. Alok Katiyar, Director, Horticulture & Mission Director, appraised about the JIT visit in districts of Raipur, Baster, Rajnandgaon, Dhamtari and Kanker.

Team informed that the staff available for proper implementation and monitoring of SHM is not adequate. The staff deployed at district level is also inadequate. The insufficient staff strength is also one of the major reason for implementing the project in slow pace. On this issue SMD informed that SHM has done all codal formalities for filling up the vacant posts and hope the posts will be filled up soon.

In the absence of standard design of pack house the farmers are free to construct any type of structure. The same is being used for installing grading machine and balance supplied to beneficiaries by Agro CG / SHM under the component of pack house. The beneficiaries are being given assistance in material form (Grading machine and balance) which equals to subsidy provisions of 50% under the pack house component; it needs to be looked into. At one point JIT observed that the demonstration plot of banana was found in a very bad condition, showing 20% mortality for want of water although NHM has given subsidy for drip. Team also observed that under vermi compost, earlier the semi pucca vermi compost units with thatched roof and RCC poles were given to the farmers along with Earthworms by SHM to beneficiary and also got training from NGO / Department. Most of the vermi compost units (HDPE) are not in use due to lack of training and supply of earth worm. Mission Director informed that due to this reason, HDPE vermi beds are not given to the beneficiaries in the State of Chhattisgarh during 2012-13 onwards.

JIT also observed that under MIS, the implementing and supplying agency is the same. Hence there is a need to have a separate agency for monitoring the quality control and supply system.

JIT VISIT



New area expansion for banana in Rajnandgaon



JIT visit KERA Bhawan Kondagaon (Baster)



Coconut Nursery (Kera Bhawan)



Coffee Plantation (Kera Bhawan)



Mallika Mango in bearing at Kondagaon



Termite on Mango stem/ branch



Mango, AEP, Rajnandgaon



Installation of drip in Baster



Cow pea under drip



Mango under AEP programme



Installation of drip in Banana at Rajnandgaon



Root rote disease in cauliflower



Grading machine under pack house



Wilt disease in chilli



JIT Members



Drying of chilli in Baster



AEP of chilli under drip



Banana viral disease



Broken Banana leaf due to wind



Discussion with banana growers in Jagdalpur



Leading Banana grower at Jagdalpur



Mango propagation in Govt. Nursery at Bade
Morenga (Jagdalpur)



Close view of propagation



Orchid cultivation under Poly shed.



Gerbera cultivation under poly house in Baster.



Arecanut fruits at Govt. Nursery, Bade Morenga



Vegetables under MIS



Intercropping of vegetable with mango



Cow pea under drip.



Vegetable cultivation under drip (Cauliflower and cow pea)



Anthurium and orchids under protected cultivation in Baster