

**Report of Joint Inspection Team to Review of NHM and other  
Central Scheme of Horticulture for Punjab  
(Dated: 6<sup>th</sup> September 2010 to 13<sup>th</sup> September 2010)**



### **JIT Team members to evaluate Horticulture support programmes.**

The Joint Inspection Team was Constituted of Dr R.C Upadhyaya Chief Consultant NHM; Dr.Y. R. Chanana (retired) Ex- Head Department of Horticulture PAU, Ludhiana and Dr. K.G. Singh Sr. Research Engineer, Department of Soil & Water Engineering, PAU, Ludhiana and Dr.Rakesh Sharda, CFDC, PAU, Ludhiana for the evaluation of the ongoing projects in the State of Punjab. The team visited a no. of sites in Firozpur (Abohar,Fazilka),Bhathinda and Ludhiana districts from 6<sup>th</sup> Sep, 2010 to 13 th Sept, 2010.

### **Meeting with state level of NHM officials**

On 6<sup>th</sup> Sept, 2010 a meeting was held in the office of the Director Horticulture, Govt. of Punjab, Chandigarh with the deputy Directors and District Horticulture Officers of the visiting districts and discussed the scheme progress of their districts. Official of Dept. of Soil conservation also invited to discuss the progress of micro-irrigation scheme and Assistant Director, NHB was also present in the meeting to provide the details of beneficiaries of NHB. The team also reviewed the progress of work done including financial details. The field visit programme of few selected sites at Abohar,Fazilka,Bhatinda and PAU,Ludhiana.

#### **Agenda of Meeting:**

- Crop specific cluster at district level.
- Spawn production unit for Mushroom Production.
- Flowers and vegetable production under protected conditions.
- Timely release of budget for better and timely utilization
- Micro irrigation scheme and use of plastic in mulching, irrigation and precision farming.
- Financial support on non recurring expenditure.
- States is in services shortage of Staff at Management Level and also at field Level.

## **Details of visit to farmer's field:**

### **Firozpur District**

- Mr Gurbir Singh, Dodawali Kharanj ,Abohar---Kinnow Farmer
- Maj. Manmohan Singh, Jamedwala, Fizilka---Water tank and drip irrigation for Kinnow(15 Ha.)
- Mr. Surinder Singh,Ghallu,Fazilka---Water tank and drip irrigation for Kinnow(2.5 Ha.).
- Mr. Gurjeet Singh, Pattrewala (Abohar), Kinnow (15Ha.) with drip irrigation.
- Mr. Suravant Kumar,Panch Koshi(Abohar)---Water Tank for 10 Ha. Kinnow.
- Mr. Ram Singh, Khippawali (Fazilka) 10 Ha. Kinnow and community tank (195' x95'x10').
- Mr. Sardar Kala Siagh Khippawali (Fazilka) 2.5 Ha. Kinnow.
- Mr. Shidhartt Pediwal Khippawali (Fazilka) 11 Ha. Kinnow.
- Mr. Jasbiender Singh, Pattrewala (Abohar)
- Mr. Vishal Satia, Sapparwali (Abohar)
- Mr. Sahib Ram Siag, Dhingawali
- Mr. Pradeep Sharda, Baugarkhura Abohar
- Mr. Narendra Singh, Gidhrawali
- Mr. Sardar Dalbir Singh, Kabbar wala,

### **Bhathinda District**

- Mr. Gmchara Singh, Tongwali Bhathinda
- Mr. Kulvender Singh, Bhathinda
- Mr. Mahender Singh, Bhathinda
- Mr. Malkait Singh, Bhathinda

### **Jalandhar District on 9/9/09**

- Mr. Rattan singh & his family of Kahanpur.
- Mr kuldeep Singh Dhillon of Sanura
- Mr. Lica CA storage for apple of Nasola

### **Hoshiarpur District on 9/9/09**

- Mr.Rachpal kaur W/o Varinder Singh of Bhiowal
- Baldev Singh of Haryana Bhunga
- Mohinder Singh of Takhni
- Sohan Singh of Kinnow Rejunation
- Sadhu Ram of Bohan

- Satnam Singh of Naugrawan
- Ragbhir singh of Boothgarh
- Sardar Satwant Singh, Panchkoshi have 10 ha. Land and entire area is planted with kinnow in cluster and also received subsidiary of Rs.10 lakhs for community Pond of 200'x180'x11' size.
- Maor Manmohan Singh, Jhandwala Bhome Shah of Fazilka received subsidiary for community Pond of 180'x180'x12' size along with drip irrigation facilities for their Kinnow orchard of 10 ha. area.

### **Punjab Agriculture University, Ludhiana**

Team visited PAU, campus at Abohar, Bhatinda and KVK, Bhatinda during their field visits to evaluate the programmes supported at these centres. JIT also visited university at Ludhiana to assess over all progress of the projects supported under NHM. The detail discussion was held with the faculty members regarding progress of the projects. It was recorded that university took lot of time in procurement of instruments and equipments for the projects. Unprecedented delay was observed for construction works which are yet to be initiated. Project wise progress is given below:

#### **Biological Control Laboratory: Progress Report**

- The survey conducted regarding and predators of important pests of horticulture crop.
- The predators encountered during survey are collected, identified and mass rearing of promising ones will be initiated.
- During survey, the immature as well as mature stages (or cadavers, if found) of different pests brought and reared in the laboratory for record the parasites emergence or death due to different micro organism (fungi, bacteria and viruses etc.). The pathogen isolated will be multiplied on suitable medium and tested for its efficacy under laboratory condition.
- The promising pathogens as well as predators are to be multiplied under laboratory condition and further evaluated under field conditions.
- The evaluation of bio pesticide formulation carried out against different insect pests along with local isolates on important pests of vegetable crops.

### **Plant Health Clinic: Progress Report**

The Plant Health Clinics is a unique service to the fruits growers of the central zone of Punjab in particulars and home Gardner in general. The information about the establishment of Plant Health Clinics is regularly given in Horticulture Newsletter published in the Department of Horticulture, PAU, Ludhiana, in the vernacular newspapers and other Medias. The services of District Extension Specialist (Hort.) posted in Farmers Advisory Service Scheme of PAU in the different District, Assistant Professor Horticulture of Krishi Vigyan Kendras of PAU and Horticulture Development Officers of the State Department Horticulture in the various blocks and district are advised about the disease and pest surveillance. Efforts are made to diagnoses enough plant and fruit samples for nutrient deficiencies, pests, diseases and physiological disorders in the fruit crops of the region.

### **Tissue/Leaf analysis laboratory: Project Report**

Instruments are procured for analyses of the leaf samples and to identify disorder due to nutritional deficiencies in fruits plants, so to enhance productivity and fruit quality through judicious nutrient management. Farmers are supported in advisory services in effective adapting precision farming techniques.

### **Forecasting Units for Late Disease Blight of Potato (2008 to, 2010): Progress Report**

Based on the model standardized and prevalent weather conditions in potato growing district as obtained through automatic weather stations (AWS), daily advisory will be issued to the farmers whether or not to apply fungicides against late blight media and also on the website. This will be a regular feature during successive crop seasons. The project is initiated recently.

### **Training of Supervisors in Horticulture for One Year: Progress Report**

Twenty four (24) Trainees were awarded the One year HSTC certificate.

- Rs. 10.0 lakh have been deposited with Estate Officer cum Chief Engineer for the construction work will be completed with two months.
- Rs. 5, 12,383/- has spent for the strengthening the infrastructure.
- During 2009-10, Twenty five (25) Trainees were awarded the One year HSTC certificate.

## **Certifying of Citrus Nursery against Plant Pathogens: Progress Report**

Regular monitoring and indexing of each mother plant is desirable for ascertaining the presence or absence of virus and virus like diseases. This work can be done at different times of the year during the month of June, September and March so as to get the clear picture of these pathogens that may occur under certain conducive environmental conditions.

### **Expert Observations:**

- Most of the nurseries inspected had no separate Mother block as a bud-wood sources and were taking bud-wood from commercial kinnow orchard. Very few nurseries complied with this most important criterion of having separate, well maintained mother blocks for bud-wood and rough lemon rootstock. These included Govt. nursery, Khiala Bulanda and Farmer's First Nursey, Maujgarh in district Ferozepur.
- Govt. nursery, Khiala Bulanda (district Hoshiarpur) and Farmer's First Nursey, Maujgarh have well maintained mother plants in screen houses and a drip irrigation system for nursery plants at Khiala bulanda under Net House.
- Nurserymen do not have their own rootstock plants of rough lemon raised under proper phyto-sanitary conditions. This is important to raise true-to-type rootstock for vigorous growth of citrus plants and avoid any bud union problem.
- It was found that nurseries are situated in close proximity to the commercial orchards. However, it is very important that the nurseries should be established at least 2 km. away from the citrus orchards.
- Containerized nursery system should be adopted so as to avoid the contact of plant roots with the soil in the field. Moreover, soil and farm yard manure mixture should be properly soil sterilized and treated with Basamid to prevent the nematode.

### **SEMINARS:**

## **Insect Pests and Disease Problem of Fruit Crop in Punjab and their**

### **Management held on 24.4.2009.**

#### **Recommendations:**

- More demonstrative seminars on plant protection of fruit crop must be held in the state.
- Need based application of recommended pesticide and with proper spraying equipments.
- To reduce the pesticide load/residues, bio-control agents must be encouraged but the farmers must set be ready to bear the initial losses.

## **Advances in cultivation of Temperate Fruits in Sub-tropics held on 4.2.2010**

### **Recommendations:**

- Varieties of different crops having potential for table and processing purpose should be evolved /introduced and after testing may be released for commercial cultivation.
- The Rootstock which is more tolerant to biotic and a biotic stresses should be tested and released.
- Eco-friendly approaches should be followed to control diseases, insect-pests and nematodes.
- Post-harvest management practices should be fine tuned.

## **Fruit Nursery Production and Management held on 16.3.2010**

### **Recommendations:**

- The movement of plant material across the states should be regulated and it should be done through some nodal agency so as to check the entry of poor quality and diseased plant material from other states by private players.
- Nursery act should be enforced in the true spirit so as to.

## **Main Observations of JIT for Punjab**

- **Punjab has done good work for the component of area expansion programme of Kinnow Mandarin, Kinnow Nursery management at public and private sector, and bee keeping as pollanizer agent.**
- **Private nursery was established providing disease and virus free plants of Kinnow at Mauzgarh, Abohar, and District Firozpur with one time production capacity of one Lakh plants. Similarly PAU has also established a good modern nursery at Ludhiana and at their KVKs for the production of virus free plants. The entire established nurseries should mandatory be accredited either by PAU or National Horticulture Board.**
- **Joint Inspection Team visited the new area expansion cluster of Kinnow orchards established under NHM in the state. It was observed that some of kinnow orchards need to be supervised and field functionaries looking after the orchards are to be properly trained and farmers should also follow the spray schedule as per scientific recommendations.**
- **It is high time to introduce high density plantation to get higher per unit return and heavy feeder intercrops may be avoided. It was observed that farmers are taking intercrops of Cotton or Guar which are not recommended and also not desirable to grow such crops even in new plantations. Legume intercrops may be grown avoiding the canopy area of the new plantations .The fields should not be ploughed till the root zone of the orchards.**
- **There has been slow progress for development of clusters of mandate fruit crops other than Kinnow under area expansion programme. Districts may be identified for specific fruit cluster as per location specific recommendations, so that the technology may be transferred and end to end support may be provided to the farmers which includes post harvest management, marketing and value edition.**
- **It has been observed that mostly beneficiaries for area expansion programme are large holding farmers. The specific effort should be made to include more small and marginal farmers to provide support of NHM activities.**



- **The programme of Post Harvest Management and Marketing is needed to give priority. There is urgent need to provide more support for grading and waxing units for value addition of Kinnow fruits in Firozpur and Bhatinda Districts.**
- **Farmers of Punjab may be provided more support for high tech horticulture (Protected Cultivation) near the cities especially at Ludhiana, Jullandher, and Amritsar. Good progress has been observed in Potato seed production and more support be given for quality micro-tubers production in large scale (GPS) at Jullandher.**
- **Farmers are innovative and needs regular trainings on latest technologies on high tech. horticulture i.e. technology for management of green house, poly house, shade net, plastic tunnel, mulching in respect of higher productivity of horticulture crops. Unemployed youths may generate self employment with the management of high tech horticulture with the limited area of land.**
- **Front line demonstration may be organized to convince the farmers about the role of bees as pollinator which will help to increase the yield of various fruit crops. The farmers may also be trained in the art of handling bees, transferring the hives and extraction of honey.**
- **It was observed that Vermi-compost units supported under NHM were not properly managed and layout plan was faulty .Therefore, training may be provided to the growers on this component along with proper layout design.**
- **Punjab Agriculture University, Ludhiana/KVKs are implementing large number of projects to provide technological support to the farmers. Financial and physical progress of each project was submitted. It was observed that projects are progressing properly of Bio Control Lab, soil and leaf tissue analysis, Construction of Poly house under FLD programme at KVKs. During the meeting faculty members indicated continuous support to run the programme for subsequent years, whereas NHM provide one time support only. It was made informed that NHM support was given for infrastructure development to help the farmers to increase their production and productivity. Abohar center of PAU is facing serious shortage of experts and needs to be strengthened immediately, So that the projects progress is made as per objective of the components.**

- **There is acute shortage of expert technical personnel as only one is available against six required strength in the department. The vacant post may be filled on priority basis.**
- **Consultancy may be provided by engaging retired experts under NHM for serious persisting problems of horticultural crops for technological support. The PFDC at PAU should organize trainings on water management for officers of the state department of horticulture.**

## **Introduction**

The State of Punjab is the northwest state of India situated at 29- 32' to 32 -32' North latitude and 73 -55 to 76-50' East longitude. It is bordered to the north by Jammu and Kashmir, to the nearest by Himachal Pradesh, to the south and southeast by Haryana and to the southwest by Rajasthan. Temperature is an important factor that influences the crop production and determines the kind of crops that could be sown. June is the hottest month and temperature ranges 40-45 degree Celsius. January is the coldest month. The frosts occur during December and January that damages fruits and vegetables crops like mango, litchi, guava and potato etc. The total rainfall varies from 122 MM in South-Weston districts to more than 863 MM in the Sub mountainous districts. About 75 % of total rain is received during monsoon from July to September months. The soils of the state though alluvial in nature, show a wide range of variations. The chief sources of irrigation in the Punjab State are canals and Tube wells. The geographical area of the state is 5033 thousand hectares. Out of which about 4200 thousand hectares is not sown area. About 45-50 % area is irrigated by canals where as the remaining is irrigated with tube walls. Geographical area of the state is 5033 thousand hectares. Out of which about 4200 thousand hectare are in net sown area. Cropped Area is about 7932 thousand hectares and Cropping Intensity is about 189%. Out of the total net sown area of approx 42.00 lac ha, Horticulture crops are grown on an area of 2.53 lac ha up to January 2010 which is 6.02% of the net sown area. The area under fruit crops up to January 2010 is 0.70 lac hectares (ha) with a production of 13.50 lac MT and 1.83 lac ha is under vegetable crops with production of 35 lac MT. Fresh and cut flower are grown over 1100 ha area with production of 8640 MT. Whereas Flower seed is produced on 700 ha area and with production of 60 MT. Besides this spices and aromatic plants are being grown on an area of 24550 ha with a production of 76897 MT.

NHM role in the overall economic prosperity of the Punjab is important in the coming years. Past interventions in the sector have enabled to harness some of the existing potential in horticulture and the State has emerged as a major player for the production of Kinnow in the The State of Punjab is the northwest state of India situated at 29- 32' to 32 -32' North latitude and 73 -55 to 76-50' East longitude. It is bordered to the north by Jammu and Kashmir, to the nearest by Himachal Pradesh, to the south and southeast by Haryana and to the southwest by Rajasthan. Temperature is an important factor that influences the crop production and determines the kind of crops that could be sown. June is the hottest month

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With an annual growth rate of 6%, horticulture contributes about 29.5 per cent to agricultural GDP, from 8.5% of the area. The challenges ahead are to have sustainability and competitiveness and to achieve the targeted production of 300 million tons (Fruits 81 million tones, vegetables 185 million tones, spices 5.50 million tones, coconut 20 million tones, cashew nut 1.70 million tones, cocoa and others 6.80 million tons) at the end of XI plan from the current level of 169.83 million tons (Fruits 49.30 million tones, vegetables 101.44 million tones, spices 5.11 million tones, coconut 8.40 million tones, cashew nut 0.54 million tones, cocoa and others 5.04 million tons), in the environment of dwindling land and water resources. Productivity of many of horticultural crops continues to be low, while the quality of produce needs improvement and resources use efficiency requires up gradation. Post-harvest losses are also high (6-26%) and there is growing regional disparity in production

and use of technologies. National Horticulture Mission for Integrated Horticulture Development has created awareness across the region, to address the issues of livelihood security, nutritional adequacy, employment opportunities and environment concerns.

The National Horticulture Mission (NHM) has been launched w.e.f. 2005-06 for holistic development of horticulture sector, duly ensuring horizontal and vertical linkages, with the active participation of all the stakeholders. The thrust of the Mission is on area based regionally differentiated cluster approach for development of horticultural crops.

Activities undertaken in the project are production and distribution of planting material( model nursery, small nursery, tissue culture units), area expansion (through establishment of new gardens), rejuvenation of existing gardens, production of vegetable seed, seed infrastructure, protected cultivation, IPM/INM, organic farming, bee keeping, integrated development of Mushroom, development of marketing infrastructure (modern and terminal markets, rural markets, flower markets, functional infrastructure etc), Post Harvest Management( pack houses, multi chamber cold storages, C A storages, refrigerated vans, mobile processing units etc), Human Resource Development and Mission Management.

### **Climate**

Temperature is an important factor that influences the crop production and determines the kind of crops that could be sown. June is the hottest month and temperature ranges between 40 –45 degree Celsius. January is the coldest month. In peak winter temperature at Amritsar and Adampur falls below zero degree level. The frost occurs during December and January that damages fruits and vegetable crops like mango, litchi, guava and potato etc. The State of Punjab is in the sub tropical belt and is situated in the North-West of Indian sub continent. It lies over 1600 K.M away from the Bay of Bengal. The south eastern current of summer monsoon brings rain from mid June to September. Rainfall also occurs in December, January and March. The rainfall is beneficial for Rabi crops. The total rainfall varies from 122 MM in South-Weston districts to more than 863 MM in the sub mountainous districts. About 75% of the rain is received during monsoon from July to September months. The soils are alluvial in nature. The soil pH varies from 8 to 8.7. Generally, the soils are low in Nitrogen, Zinc, low to medium in phosphate and rich in Potash. The soils of the state is alluvial in nature, show a wide range of variations. The soils in North-Eastern belt of the state are alluvial in nature (sand to sandy loam). The plains of Ravi, Beas, Satluj and Ghaggar rivers medium to heavy soils in texture and are very fertile.

### **Agro climatic Zones**

1. Sub-mountain zone.
2. Central zone.
3. Arid-irrigation zone.
4. Special Areas
  - a) Kandi Area
  - b) Wet Area

### **Irrigation**

Irrigation is a major input for agriculture sector. The chief sources of irrigation in the Punjab State are canals and Tube wells. The geographical area of the state is 5033 thousand hectares. Out of which about 4200 thousand hectares is net sown area. About 45 – 45% area is irrigated by canals where as the remaining area is irrigated with tube wells.

### **Availability of Credit/ Subsidies**

There is a three tier co-operative credit system in the state. The Punjab state co-operative bank is at the apex level, the central co-operative banks at district level and the Agriculture Cooperative Credit Society at the village level. These banks provide loan to the member farmers. The Commercial banks also provide short-term and long-term loans to the farmers. The subsidy is also provided to the farmers under other State Government schemes and RKVY for various inputs or activities with a focus on holistic growth of this sector.

### **Current NHM Status of Punjab**

Advances in the production of potato, cucurbits, chilies, tomato and brinjal amongst vegetables is equally important. In Jalandhar and Hoshiarpur production of seed potato is quite significant whereas in Ludhiana and Patiala potato is grown mainly for table purpose. Chilies, Tomato, Brinjal and Onion crops have also witnessed sharp progress in production in the recent past. In case of Chilies and Tomato productivity has substantially increased because of the adoption of hybrids. Beside this, there is ample scope for the cultivation of flower, spices and aromatic plants.

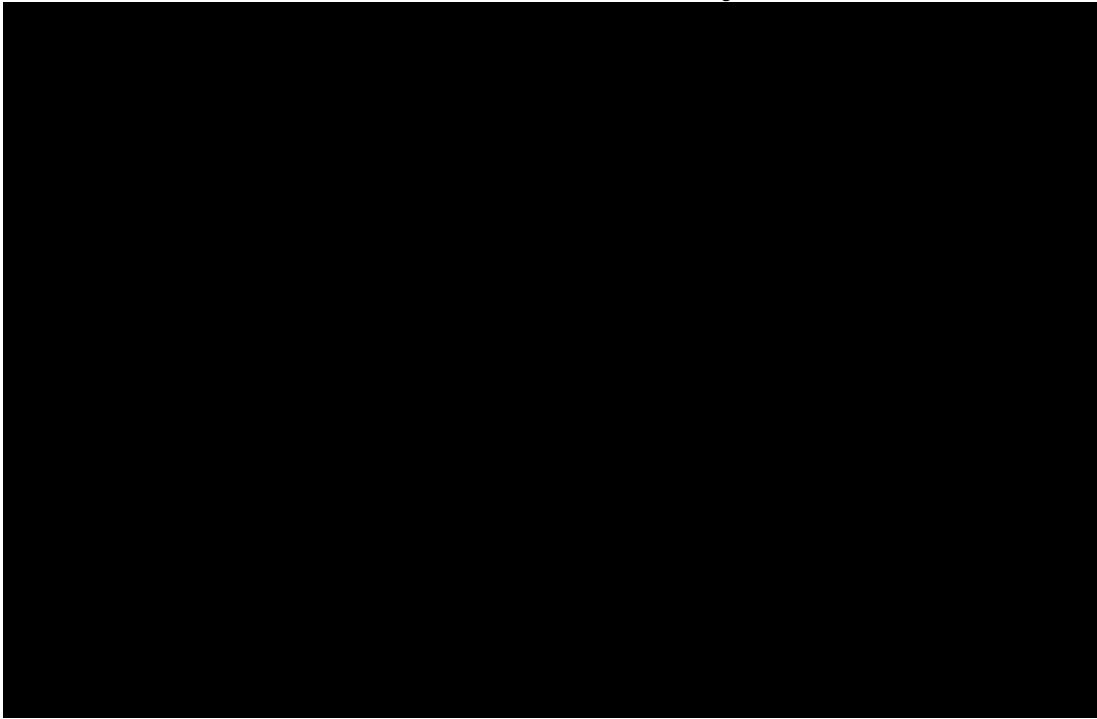
Annual Action Plan 2008-09 was approved with the outlay of Rs.7802.28 lakh out of which Rs.1412.48 lakh were released against this approved plan. The expenditure incurred up to March 2009 is Rs. 3573.92 lakh. The balance amount Rs. 408.39 lakh is needed to be

revalidated for the expenditure during the financial year 2009-10. The proposed outlay for the FY 2009-10 is Rs. 4396.89 lakh.

**Year-wise details of Outlay, Funds Released and Expenditure under NHM in Punjab (Rs. In lakh)**

Year	Outlay	Releases	Expenditure	Unspent Balance
2005-06	6074.20	2868.82	0.00	
2006-07	5974.00	1150.00	2299.08	
2007-08	6853.69	2409.99	1791.61	
2008-09	7802.28	1412.48	3573.92	408.39
2009-10	4396.89	1178.00	0946.39	

**Area and Production of Fruits in Punjab**



### **Production of major Horticultural Crops:**

Out of the total net sown area of approx 42.00 lakh ha, horticulture crops are grown on an area of 2.67 lakh ha which is 6.36 % of the net sown area. The area under fruit crops is 0.66 lakh hectares (ha) with a production of 11,55,000 MT and 1.78 lakh ha is under vegetables crops with production of 30,26,000 MT. Fresh and cut flower are grown over 1050 ha area with production of 8190 MT. Whereas Flower seed is done on 650 ha area and with production of 41 MT. Besides this spices and aromatic plants are being grown on an area of 21,200 ha with a production of 47,297 MT.

### **Crop Clusters for Punjab Fruit**

Punjab	Cluster 1:- Aonal, Ber, Citrus, Grapes, Guava, mango, Peach Cluster 2:- Citrus, Guava, Litchi, Pear, Banana Cluster 3:- Floriculture, Medicinal & Aromatic Plants, Spices, Veg Seed Production
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The main fruit crops of the Punjab are kinnow, Mango, Litchi, pear, Peach and Guava, Kinnow and pear are marketed to other States in India and neighboring countries. Presently the total area under fruit cultivation is 0.66 lakh ha, with the production of 11.55 lakh MT (metric tons). Kinnow is the most prevalent citrus covering an area of 31,800 hectares with a production of 6.00 lakh tonnes, there is further scope to increase the area and production in the coming years.

### **Vegetables:**

Punjab is a leading state in the terms of production of vegetables. The total area under vegetable crop is 1.78 lakh ha. with the production of 30.26 lakh MT. Potato is the main vegetables crop of the state. The area under potato crop is about 81 thousand hectares which occupies 46 % of the total area under vegetables. There are 10 Government potato seed farms that produce high quality seed. About 300 M. T. seed is produced and supplied to the farmers. Some quantity of good quality seed is also exported to the other states as well as neighboring countries.



## **Spices and Aromatic Plants**

Some important spices like chilli, Garlic, Celery and Turmeric are grown in the state. In addition to this the aromatic plant, Mentha is also grown in the state. The total area under spices and aromatic plants is 21200 ha with the production of 47297 tonnes.

### **Potato:**

Production of seed potato is quite significant whereas in Jalandhar, Ludhiana, Hoshiarpur and Patiala potato is grown mainly for table purposes. Chillies, Tomato, Brinjal and onion crops have also witnessed sharp progress in production in the recent past. In case of chillies and tomato productivity has substantially increased because of the adoption of hybrids.

## **Area Under Major Horticulture Crops**

S. No	Description	Area in ha			
		2004-05	2006-07	2007-08	2008-09
1	Fruits	47087	57309	61618	66000
2	Vegetables	158641	168234	173340	178000
3	Flowers (Fresh & Cut)	315	950	1000	1050
4	Flowers (Seed Production)	300	550	600	650
5	Spices and Aromatic plants	14625	16706	20527	21200

## **Production of Planting Material**

To achieve the objective of NHM to escalate the area and production to double by 2011-12, good quality of planting material in sufficient quantity is required. In the previous years this demand had been met from the SAU, Department Nurseries and Private registered Nurseries. Keeping in view the quality of planting material, it has been made mandatory for the nursery owners to get the planting material certified from the SAU, Only then Nursery owner will be eligible to sell the planting material and obtain the financial assistance under NHM.

## **Rejuvenation/Replacement of Senile Plantation**

To increase the productivity there is need to rejuvenate the oil senile orchards for citrus fruits. During this financial year it is proposed to rejuvenate 1125 ha area of citrus orchards,

under this activity, 20 % gap filling in the orchards will be done. The pruning of old and productive parts, removing of dead wood/ diseased wood will be done to enhance productivity and plant health. Treatment of fungicide i.e. Ridomil/Aliette to check the fatal disease like phytopathora followed by the spraying of Bordeaux mixture and application of chemical fertilizer. Farm yard manure/vermi compost will also be supplied to unproductive and old senile orchards.

### **Creation of Water Resources**

Community water tanks on farm ponds / farm water reservoir – with use of plastics – Under the National Horticulture Mission activities, assistance is provided for creating water sources through construction of community tanks, farm ponds with plastic lining. In this financial year 100 community water tanks will be constructed in all districts of Punjab.

### **Protected Cultivation**

Activities like Green house construction, mulching, shade net and plastic tunnels will be promoted with assistance available under Mission. During this financial year it is proposed to carry following activities:-

- To bring an area of 50 ha under Mulching in Cluster –iii in Ludhiana and Jalandhar districts.
- To establish 32 units (of 500 sq. m each) covering 16 ha under shade net in Cluster- ii in Mohali district.
- To bring an area of 180 ha under Plastic Tunneling.

### **Promotion of INM/IPM**

#### **A) Sanitary and Phyto-sanitary (Public sector)**

##### **Survey and surveillance of maintenance of potato crop**

The objective of this activity is to meet the sanitary and phyto-sanitary quarantine requirement for export of potato to EU countries. A two years study by PAU also declared Punjab as **Pest Free Area (PFA)** for brown rot and ring rot for potato. Markfed being nodal agency for organizing the export of potato from Punjab in collaboration with PAU will carry out survey and surveillance of Potato crop for monitoring of quarantine pests on a year to year basis. This is sanitary and phyto-sanitary exercises entail an expenditure of Rs. 30 lakh for a period of three years. Hence Rs. 10.00 lakh is sought during this FY 2009-10.

## **B) Promotion of IPM**

### **SPS certification for Export of Potatoes**

Markfed proposes to register 250 progressive farmers for SPS/Europe GAP/ Global GAP certificate at an estimated cost of Rs.12, 000/- per farmers including training consultancy and certification at the total cost of Rs. 30 Lakh out of which Rs. 25.50 lakh is sought from Government of India.

### **Promotion of IPM**

IPM promoted among potato growers to improve quality of Potato Crop. Marked proposes to adopt 4000 ha area of potato in districts Jalandhar, Kapurthala, Hoshiarpur, Amritsar, Moga, Bhathinda, and Patiala. The objective of this component is to improve quality and productivity of Potato crop to meet exports standards. The total expenditure in this activity amounts to Rs. 80.00 lakh out of which 50 % assistance amounting to Rs. 40.00lakh is sought from Government of India.

### **Plant Health Clinics**

Programme	Estimated Cost	Proposed assistance	Phy	Fin	GOI Share (85 %)	State share (15 %)
Promotion of INM /IPM						
A) Sanitary and Phyto-sanitary (Public sector)	Project based	Project based				
i)To carry out Survey and Surveillance for maintenance of PFA of Potato crop through PAU Ludihana	Project based. Rs.10 lakh per year basis for 3 years.	100 % Project based	1	10.00	8.50	1.50
Promotion of IPM						

i)SPS certification for Export of Potatoes	Rs. 12,000 per farmer	Project based	250 farmers	30.00	25.50	4.50
ii)Promotion of IPM	Rs. 2000 per ha	50 % of the cost subject to a maximum of Rs.1000/ha limited to 4 per ha beneficiary	1000 farmers with 4 ha each	40.00	34.00	6.00
E) Plant Health Clinics						
I) Public Sector	Rs. 20 lakh/unit	100 % Upto Rs. 20 lakh / unit	3	60.00	51	9
Sub Total				140.00	119.00	21.00

## **Organic Farming**

### **Adoption of Organic Farming**

There is huge demand of organic produce in the domestic and as a swell as global market for vegetables, spices, fruits, aromatic and medicinal plants. Consumers all over world are aware about the residual effect of toxic chemical in the fruits & vegetables. Due to this opportunity, the horticulture growers want to adopt organic farming to meet the market demand. The activities like use of organic manure, vermi compost, bio-pesticides, IPM will to be promoted under NHM so that organic horticultural crops could be produced.

The Proposed area to be brought during Financial Year 2009-10 under organic farming is 2000 ha at the cost of Rs. 200.00 lakh. The assistance sought is Rs. 170.00 lakh from Government of India.

### **Certification of Organic Farming**

Certification in a cluster 50 ha shall be done at Rs. 5.00 lakh per cluster. Besides this paramount importance will be given to certification so that the farmer may export their produce and can avail attractive prices. Certification on 40 clusters covering an area of 2000 ha will be done at the cost of Rs.200.00 lakh. The assistance sought for this activity is Rs. 170.00 lakh from Government of India.

### **Vermi- Compost Units**

Under this component, it is proposed to setup 433 Vermi-compost units out of which 50 units will be setup in Cluster-I, 234 units in Cluster – II and 149 units in Cluster – III approximately.

Programme	Estimated Cost	Proposed assistance	Phy	Fin	GOI Share (85 %)	State share (15 %)
Organic Farming						
Adoption of Organic Farming	Rs.20,000 per ha	50 % of the cost subject to a maximum of Rs.10,000/ha limited to 4 per ha beneficiary	2000ha	200.00	170.00	30.00
b) Certification	Project based	Rs.5 lakh in a cluster of 50 ha	40clusters	200.00	170.00	30.00
c)Vermi compost Units	Rs. 60,000	50% of cost max of Rs.30000 per unit	43units	129.90	110.42	9.48
<b>Sub Total</b>				529.90	450.42	79.48

## Pollination Support through Bee-Keeping

Honey bee enhances the pollination thus resulting in increase in yield of the horticulture crops. Besides the yields farmers also earn additional income from the sale of Honey and other by-products. Keeping in view the objective of NHM i.e. to double the production by 2011-2012, honey bee will play pivotal role. This activity envisages distributing 5800 bee colonies among the farmers.

Programme	Estimated Cost	Proposed assistance	Phy	Fin	GOI Share (85 %)	State share (15 %)
Pollination Support through Bee-Keeping	Rs.1600 per colony with hive	50 % of the cost subject to a maximum of Rs.800 per colony with beehive	5800 colony	46.40	39.44	6.96

## POST HARVEST MANAGEMENT

To strengthen the post harvest infrastructure to meet the present level of production as well as the anticipated increase in production volume, quality at the consumer level can be increased with the appropriate post harvest infrastructure facilities. Therefore, plan envisages establishing functional infrastructure like:

### Pack house

These pack house will be helpful in grading, packing, ripening and storage of fruits and vegetables to which will certainly increase the profitability of the produce and reduces the losses. 19 pack houses will be established out of which 14 in cluster-I and 5 in cluster-III in private sector (approximately).

### Cold Storage

Twenty cold storage units are proposed to be set up in private sector for storage of fruits and vegetables. The estimated cost is Rs. 200.00 lakh per unit and the assistance is credit linked back- ended subsidy @ 25 % of the capital cost of the project. It is also proposed to setup smaller units. The total cost of this component is Rs.800. 00 lakh and an assistance of Rs. 680.00 lakh (85 % of Rs.800.00 lakh) is sought from Government of India.

### **Kinnow Graders**

Grading of the fruit is the basic need of the marketing to fetch the remunerative price. Moreover the consumers are conscious about the quality of the fruit. They are ready to pay more for graded and quality produce. These Kinnow graders will help the growers to grade the fruits at the orchard premises as these are portable can be taken from one orchard to the orchards. This project is to provide 10 Kinnow Graders in Cluster-I at the cost of Rs. 1.50 lakh per grader. An

### **Mechanical Graders/ carrot washing Machine**

Washing and grading of the carrot can fetch the remunerative price for the produce and will increase market potential. This project envisages to provide 12 mechanical graders/ carrot washing machines for in cluster-II and III. These machines shall cost Rs.2.00 lakh per unit. An assistance of Rs.5.10 lakh (85 % of Rs. 6.00 lakh) is sought from Government of India.

### **Integrated Unit for Grading, Sorting, Washing and Packing and cold Room/ Chain for fruits and vegetables.**

Integrated Unit for grading, sorting, washing and packing and cold Room may be establish cool chain for fruits and vegetables. This project envisage to procure farm fresh top quality produce harvested at optimum size and nutritional value, pre-graded at the farm level and brought to the pack house where they are washed, sorted, graded, packed as per market requirement and pre-cooled to enhance shelf life. The produce will then be sent out to the retail stores and distant markets through refer vans. a part of the premium produce will be stored in the cold storage and will be sold in the market in off season to fetch the remunerative prices. Cold chain will prolog the shelf life of the produce. This project will be set up in the districts Kapurthala with the estimated cost of 382.06 lakh out of which Rs. 95.52 lakh will be is sought from GOI as 25 % assistance under credit linked back ended subsidy.

### **Human Resource Development**

With the increasing area under horticulture crops, the need for trained/ semi trained manpower is growing. Also there is need to guide farmers about latest Know-how in the field of horticulture. Training would be imparted on the aspects like improved cultivation practices, IPM, INM, Post harvest Management practices and processing, export etc. Human Resource Development through trainings and demonstrations will be an integral part of the State Mission. Under this component, it is proposed to carry following activities.

### **Specialized training courses**

Specialized training courses will be under taken as:

- 200 farmers will be imparted training for production and marketing of high value Horticulture Crops. This training will be conducted by the National Institute of Post Harvest Technology (NIPHT), Horticulture Training Centre (HTC), Talegaon Pune (Maharashtra). To conduct 5 training courses to train 175 farmers at the cost of Rs. 1500 per farmer for post harvest handling of turmeric, Spices and honey. To conduct 2 nos. of one year training courses for gardeners. To conduct 1 nos. of one year horticulture supervisor training class for a batch of 25 participants.

### **Marketing**

- There are about 144 Markets in Punjab. These markets not only disposing the agriculture produce but also horticulture produce.
- Apni Mandi programme has also been introduced in Punjab State. Apni Mandi provides direct link between the growers and the customers. There are no middle men in the Apni Mandi
- Operative banks at district level and agriculture Cooperative Credit Society at the level. These banks provide loan to the member farmers. The subsidy is also provided to the farmers under other state Government scheme and RKVY for various inputs or activities with a focus on holistic growth of this sector.

### **Availability of Credit/Subsidies**

- There is a three tier co-operative credit system in the state. The Punjab state cooperative bank is at the apex level, the central co-operative banks at district level and agriculture Cooperative Credit Society at the Village level. These banks provide loan to the member farmers. The subsidy is also provided to the farmers under other state Government scheme and RKVY for various inputs or activities with a focus on holistic growth of this sector.



## Annual Action Plan 2010-11 Punjab

	<b>Components</b>	<b>Unit</b>	<b>Physical Target</b>	<b>Financial Target</b>	<b>Percentage (%)</b>
1	Plantation Infrastructure	Nos.	205	179.62	3.59
2	Establishment of New Gardens	Ha.	11098	1291.84	25.84
3	Rejuvenation/Replanting of Senile Plantation	Ha.	2000	300.00	6.00
4	Creation of Water resources	Nos.	115	680.00	13.60
5	Protected Cultivation	Ha.	21.58	500.49	10.01
6	Promotion of INM/IPM	Ha.	2000	74.00	1.48
7	Organic Farming	Unit	325	72.50	1.45
8	Certification of good Agriculture Practices	Ha.	428	21.40	0.43
9	Pollination support through Bee-keeping	Nos.	10003	90.50	1.81
10	Horticulture Mechanization	Nos.	56	79.25	1.59
11	HRD	Nos.	3	59.96	1.20
12	PHM	Nos.	63	1233.50	24.67
13	Market	Nos.	19	167.00	3.34
14	Mission Management			249.94	5.00
	<b>Total</b>			<b>5000.00</b>	

## Photos of NHM activities in Punjab:



Community Pond (Under Construction) at Abohar



Kinnow Orchard (Two years old plantation)



Vermi Compost unit at Abohar



Community Pond at Abohar



NHM Board with Logo at Pond Site



Intercrop in Kinnow Orchards



Kinnow Orchard Plantation with legume intercrop



Micro Irrigation system Installed with Pond



Kinnow affected by Disease



Newly Planted Kinnow with drip irrigation



Bearing of Kinnow Mandarin



Polyhouse of model nursery of Mauzgarh (Abohar)





Bearing orchard of Kinnow Mandarin in Bhatinda



Cucurbitaceous Intercrop in Kinnow orchards at Bhatinda



Organic Vegetables under poly House



Grading machine of Kinnow mandarin fruits



Packing for export of Baby Corn



Meeting with PAU officials to evaluate progress of components supported under NHM



Honey Production and packing in Ludhiana



Display of NHM subsidiary components in front DHO office