

Report of the Joint Inspection Team on their inspection visit to (Kullu, Bilaspur and Mandi) Districts of Himachal Pradesh during September, 2015 (21.09.2015 to 26.09.2015)



**Department of Agriculture, Cooperation & Farmers Welfare
 Ministry of Agriculture & Farmers Welfare, Government of India**

Report of the Joint Inspection Team on their inspection visit to (Kullu, Bilaspur and Mandi) Districts of Himachal Pradesh during September, 2015 (21.09.2015 to 26.09.2015) to review progress of Mission for Integrated Development of Horticulture (MIDH), OFWM, RKVY.

The Joint Inspection Team (JIT) comprising of the following members visited Himachal Pradesh during 21st Sep. to 26th Sep., 2015 to review the progress under the central and centrally sponsored particularly Mission for Integrated Development of Horticulture (MIDH), On Farm Water Management (OFWM) and RKVY. All the team members joined at Kullu for on spot monitoring and verification of NHM and RKVY activities of Kullu, Bilaspur and Mandi districts of Himachal Pradesh.

Members:

1. Dr. R.C. Upadhyaya, Chief consultant (NHM), DAC, Krishi Bhawan, New Delhi.
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3. Dr.R.K.Rana, SMS, KVK, Kullu, HPKV, Palampur.
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Components of MIDH, RKVY, OFWM, and other programme:

- Crop specific cluster at district level.
- ☐ Nurseries management and progress including accreditation of nurseries.
- ☐ Vermin compost units under SHM.
- ☐ Flowers and vegetable production under protected conditions.
- ☐ Use of plastic in mulching, irrigation and precision farming.
- ☐ Placement of technical Staff at Management and also at field Level.
- ☐ Other activities and KVK, s support including Financial Progress.
- On Farm Water Management (OFWM).

Physical and Financial progress:

year	Action Plan Submitted	Action Plan Approved by GOI	Funds received	Funds
2003-04	650.00	650.00	650.00	650.00
2004-05	1300.00	1300.00	1300.00	1300.00
2005-06	1100.00	1100.00	1100.00	1100.00
2006-07	5321.00	4000.00	4000.00	4000.00

2007-08	2825.00	2400.00	2400.00	2400.00
2008-09	8694.67	3000.00	2100.00	2100.00
2009-10	893.15	2000.00	1589.00	1589.00
2010-11	4122.43	2950.00	1500.00	1407.00
2011-12	5193.90	3700.00	3700.00	3200.00
2012-13	7370.59	3000.00	2755.41	2260.59
2013-14	8330.93	3200.00	2618.59	2276.59
2014-15	10100.00	6839.00	4241.66	3789.01
total			27954.66	26072.19

General Observations/Issues:

1. Establishment of new cluster of Apple and Pomegranate along with the convergence of other schemes like OFWM for supplementation of drip irrigation deserves great appreciation. State Horticulture Department needs diversification with other fruit crops (Pear, Walnut, Plum and Perssimon) by ensuring technological support and marketing.
2. High density plantaion of Apple and pomegranate needs proper canopy management, integrated disease and pest management and cleancultivation practices.Specialized trainings and exposure visits of farmers may be organized.
3. Farm ponds supported should have reasonable catchment area to ensure better harvesting of rain water.
4. Beneficiaries availing support under OFWM need adequate training to ensure post installation maintenance. Training on fertigation scheduling and application is also required.
5. Implementation of schemes for protected cultivation to be reviewed in terms of structure used; crops recommended etc. Cconstruction of polyhouses should have tripite ageement with farmers, department and party for maintenance of polyhouses initially for 2 years with bank guarntee.
6. Kunal Tissue culture unit established at private sector at, Mandi needs to have all the infrastructural facilities and it is observed that production of tissue culture plantlets has not yet commenced at commercial level. SHM may ensure that unit may be made functional at the earliest.
7. Tissue culture lab, small nursery and plant health clinic subsidy provided during 2005-06 to Dr. Mohan singh is not in operation and units are non functional.JIT suggested to investigate the case in detail and proper action may be initiated at nSHM level.

8. JIT observed that subsidy is provided for more than four or five components to same farmer beneficiary and to say that subsidy may be restrict to the related components only, so that more farmers gets subsidy benift of MIDH.
9. The tissue culture units of Rajat Biotech and Nishant biotech at Bilaspur found working on commercial level and deserves appreciation. Nishant biotech Tissue culture unit is crcredited by DBT. Unit is producing root stock plants of M & MM series for grafting of spur and non spur varieties of Apple and supplied to the farmers at reseasonable rates..
10. Sh Sant Ram S/o Sh Govind Ram village Diggar, Block Sadar Bilaspur installed drip irrigation and plastic mulch in high density pomegranate orchard. JIT suggested placing drip laterals under the mulch to avoid water wastage.
11. Planting material should be procurred from accredited nurseries or accredited tissue culture units of latest recommended cultivars for high density plantation on dwarf rootd stock.

General Horticulture Scenario in HP

Total cultivable area	6.15 Lac Hect.
Total irrigated area	10217 Hect.
Per capita cultivable area	0.10 Hect.
Total number of operational holdings (2000-01)	9,13,914
Average size of land holdings	1.07 Hect.
Total number of orchadists (1989 Census)	4.64 lakh
Small and Marginal farmers	96%
'Horticulture Card' holders	112192 Nos.
Annual employment generation through Horticulture	900 lakh man days
Total area under Horticulture (2013-14)	2,20,706
Record Fruit Production level achieved (2010-11)	10.28 Lakh MT
Total fruit Production 2013-14	8.6 MT
Apple Production (2013-14)	7.39 Lakh MT
Area under Floriculture (2013-14)	823.34 Hect.
Mushroom production (2013-14)	6313 M.T.
Honey produced (2013-14)	1515.3 M.T.
Area covered under Medicinal & Aromatic plants (up to 2014)	813 Hect.
Annual Gross Domestic Income from Horticulture	Rs. 5000 Crore
%age of irrigated area to total cultivable area (1997-98)	20%
Total area under Horticulture as percentage	32% of total cultivable area
Other temperatur fruits	
Nuts & dry fruits	3478 MT
Citrus	22273 MT
Mango	25408 MT
Other sub Tropical Fruits	10329 MT
Gross value of the fruit Produce (Rs.) 2013-14	4831.71 crore
Per capita Income from Fruit Produce (Rs.) 2013-14	7039
Employment Generation in the Fruit Production activities	900 lakh Mandays
Total Average of Apple Boxes exported from the state /year	1.50 CRORES
Total production of honey (2013-14)	1515.29 MT

Horticulture Infrastrucutre in the State:

I	Horticulture Units	
1	Progeny-cum Demonstration orchards & Nurseries	94
2	Private Registered Nurseires (as on 31-03-2008)	677
3	Floriculture Nurseries	7
4	Walnut Development Stations	1
5	Olive Development Stations	3
6	Fruit Plant Nutrition Laboratories	3
7	Pesticides Sales Centers	338
8	Bee keeping Stations	32

9	Fruit Canning Units (Departmental)	8
10	Mushroom Compost Units	2
11	Hops Drying Units	6
12	Hops Pellet Manufacturing Units	1
13	Honey Grading Laboratories	2
II	Post Harvest Management Infrastructure	
1	Packing and Grading Houses	11
2	Cold Storages In Production Areas At Parwanoo Terminal Markets	5 (each of 1000MT Capacity) 1 (3000 MT) 3 (Total 8250 MT Capacity)
3	Transit Ware Houses	3
4	Total Processing Capacity Out of which HPMC Departmental Coop. Sector/Private/Joint Sector	83160 mt 29000 MT 1300 MT 52860 MT

Area and Production under Different Fruits

S. no.	crop	Year				
		2003-04		2012-13		2013-14
		A	P	A	P	(Production)
1	Apple	84112	459492	106440	412395	738723
2	Plum	8316	13113	8546	12107	15991
3	Peach	4861	11943	5159	11276	6271
4	Apricot	2897	3582	3577	3263	3165
5	Pear	7519	10938	7283	25212	35214
6	Cherry	292	171	456	412	1183
7	Kiwi	105	238	117	555	114
8	Pomegrante	495	254	1968	1351	2539
9	Olive	54	11	46	15	8
10	Persimmon	307	148	402	209	519
11	Strawberry	27	116	55	348	840
12	Almond	5715	392	5473	226	929
	G. Almond		1019		1134	579
13	Walnut	4651	2410	4557	1482	2390
14	Picannut	562	141	860	191	159
15	Hazelnut	11		12	1	0
16	Orange	7844	14242	8609	13214	11010
17	Malta	909	2844	1538	1930	1946
18	k. lime	9132	4777	10354	6030	5327
19	Galgal	2322	6130	2255	3060	3277

20	Other Citrus	54	128	53	82	113
21	Mango	35144	22110	39828	50001	25408
22	Litchi	3107	2354	4742	3059	3275
23	Guava	2194	1368	2233	2761	2502
24	Aonala	615	780	2158	2308	1782
25	Jack fruit	284	191	654	600	448
26	Papaya	204	813	215	1175	1280
27	Loquat	67	66	64	122	104
28	Others	641	206	649	1189	1008
	Total	182441	559977	218303	555708	866344

Achievements under Horticulture Mission since its inception (Oct. 2003-March 2015)

Crops	Base line Data 2002-03	Increase in area thorough Mission's activity	Targets for 2015-16
Fruits	1,76,206	25919	1961
Vegeables	35,220,	5565	200
Flowers	244.90	751	45
Aromatic plants	17.30	220	0
Spices	NA	1548	55
Mushroom Units	NA	11	36
Nurseries	115	99	35

omponents	Base line Data 2002-03	No. of units established from 2003 to 2014-15	Targets for 2015-16
Community Tanks (No.)	NA	2250	2
Tube wells (No.)	NA	2167	600
Greenhouses (Sq m)	67,058	11,10,618	20,47,914
Anti Hail Nets (Sq m)	3,26,000	38,48,422	20,00,000
IPM (ha)	NA	2169	249
Vermi Compost Units & b HDPE Vermi Bed	NA	824	1000
Power operated Machines and Power Tillers	6,167	17,780	11970
Training of Farmers including women within State and Outside State	3,320	27,384	15250

Physical and Financial Progress 2014-15:

Components	Physical Target	Physical Achievement	Financial Target (In Rs. Lakh)	Financial Achievement (In Rs. Lakh)
Plantation Infrastructure Development (Nurseries/Tissue Culture Labs)	1728.7	908.73	253.244	139.4159
Area Expansion (Ha)	94	56	84.6	55.92
Creation of Water resources (No.)	699332.15	495905.83	714.07	671.41
Protect Cultivation (Sqm)	11.5	0.5	250.018	187.598
Promotion of INM/IPM (ha)	230	200	91.9	25.6
Organic farming (VCU)	310	200	3.2	2.8
Pollination through Beekeeping (No. of bee colonies)				
Mechanization (No. of equipment)	317	173	159	115.98334
Food processing units			545.537	545.537
Integrated Post Harvest management			2039.47	2039.47
Human Resources Dev.	1451.5	229	16.319	5.275
Mission management			5.45137	0
Total Financial			4241.66	3789.01

Himachal Pradesh:

Himachal Pradesh is a state in Northern India. The word "Himachal" means the abode of snow. Referred to as dev bhoomi or "Land of God", Himachal Pradesh is bordered by Jammu and Kashmir on the north, Punjab on the west and south-west, Haryana and Uttarakhand on the south-east and by the Tibet Autonomous Region on the east. The Geographical Location of Himachal Pradesh is 30' 22' 40" North to 33' 12' 40" North latitude and its longitudinal extent is 75' 45' 55" East to 79' 04' 20" East. Himachal Pradesh occupies an area of 55,673 sq km. The capital of the state is Shimla. The total population of Himachal Pradesh as per Census 2011, is 68,64,602 . It is divided into 12 districts namely, Kangra, Hamirpur, Mandi, Bilaspur, Una, Chamba, Lahaul and Spiti, Sirmaur, Kinnaur, Kullu, Solan and Shimla. Himachal Pradesh is a part of western Himalayas. Covering an area of 55,673 square kilometres. State is a mountainous state and lies on the foothills of The Dhauladhar Range.

The Himachal Pradesh region can be categorized into the following Geographical Divisions.

- The Shivaliks or the outer Himalayas

- The central zone or the lesser Himalayas
- The northern zone or the great Himalayan and Zaskar

Climate and soil:

Himachal Pradesh lies in the lap of Himalayas. Its climate is largely conditioned by that single factor. It varies from mild to cold with area under snowing winters. The normal rainfall is 1278 mm. The maximum rainfall is in Kangra district. Due to extreme variation in elevation, there is great variation in the climatic conditions of Himachal Pradesh. The climate varies from hot and sub-humid tropical in the southern tracts to, with more elevation, cold, alpine and glacial in the northern and eastern mountain ranges. The state has areas like Dharamsala that receive very heavy rainfall, as well as those like Lahaul and Spiti that are cold and almost rainless. Broadly, Himachal experiences three seasons: summer, winter and rainy season. Summer lasts from mid April till the end of June and most parts become very hot (except in the alpine zone which experiences a mild summer) with the average temperature ranging from 28 to 32 °C (82 to 90 °F). Winter lasts from late November till mid March. Snowfall is common in alpine tracts (generally above 2,200 metres (7,218 ft) i.e. in the higher and trans-Himalayan region).

Soils: The soils of Himachal Pradesh can be broadly divided into nine groups on the basis of their development and physiochemical properties. These groups are alluvial soils, brown hill soils, brown earths, brown forest soils, grey wooded or podzolic soils, grey brown podzolic soils, plansolic soils, humus and iron podzols and Alpine humus mountain skeletal soils.

Rivers: Rivers which flow through this State are Beas in Kullu, Mandi and Kangra districts, Satluj in Kinnaur, Shimla and Bilaspur districts, Yamuna has its tributaries in Shimla and Sirmaur districts, Chenab (Chander Bhabha) flows through Lahaul-Spiti and Chamba districts and Ravi through Chamba district. All these rivers are snow-fed and hence perennial. Besides the natural reservoirs and the large drops available in the river courses provide immense potential for hydel power generation at a low cost. The drainage system of Himachal is composed both of rivers and glaciers. Himalayan rivers criss-cross the entire mountain chain. Himachal Pradesh provides water to both the Indus and Ganges basins. The drainage systems of the region are the Chandra Bhabha or the Chenab, the Ravi, the Beas, the Sutlej and the Yamuna. These rivers are perennial and are fed by snow and rainfall. They are protected by an extensive cover of natural vegetation.

Horticulture Status:

Himachal Pradesh has emerged as the 'Horticultural State of India'. Apple is the major horticultural crop, the production of which was 412.36 lakh tonne during 2012-13. Bulk

of the apple is produced in five districts viz. Shimla, Kullu, Mandi, Kinnaur and Chamba. The Horticulture industry of Himachal Pradesh has emerged as an important sector of the State's economy with an annual turnover of more than Rs. 2000 crores accounting for about 6.2 per cent of the Gross State Domestic Product. Varied agro-climatic zones; subtropical to high altitude cold deserts of Himachal Pradesh enable the farmers of the state to do successful cultivation of a wide range of horticultural crops viz. Fruits, Vegetables, Flowers. Medicinal & Aromatic plants.

Himachal Pradesh produces about 2.56 m MT OF horticultural crops form an area of 0.32 m ha. The horticulture production comprises fruits (33.8%) and vegetables (63.8%).

- During 2013-14, 1.95 lakh MT of fruits have been traded in organized markets with average price of Rs. 49.0/kg.
- Similary, 2.19 lakh MT of vegetable have been traded in organized markets with average price of Rs. 16.41/kg.

FRUITS

Apple

- Himachal Pradesh is the second largest producer of apple after Jammu & Kashmir and accounts for 29.6% of the total production of apple the country.
- State produces 0.74m MT of apple from an area of 0.11 m ha with productivity of .9 MT/ha.
- The recommended varieities of apple in the State are Tideman's Early worcestor, Red Delicious, Vance Delicious, Top Red, Red Chief, Golden Spur, Redspur, Red, Gold, Golden Delicious, Granny Smith, Skyline Supreme Gala, Top Red, Organ Spur, Royal Declicious, Ric-e-Red, Bright-n-early, Sliver Spur, Fuji, Anna, Well Spur and Star Krimpson.
- The production of apple is concentrated in shimla, Kully, simour, Mandi, Chamba, Kinnaur and Kangra regions of the State.
- During 2013-14, 1.77 lakh MT of apple have been traded in organized markets with average price of Rs. 59.83/kg.

VEGETABLES

Peas

- Himachal Pradesh is the fourth largest peas producing State and accounts of 7.0% of the total production of peas in the country.
- State produces about 0.27 m MT of peas from an area of 0.024 m ha having productivity of 11.3 MT/ha.
- The major peas producing belts in the State are Shimla, Kinnaur regions of the State, Lahul & Spiti and Sirmour.

- Recommended varieties of peas in the State are Bonneville, Arkel Kashi Nandini, Pant Matar- 2,3,4,5 and Pusa Pragati.

Tomato

- Himachal Pradesh produces about 0.41 m MT of tomato from an area of 0.010 m ha and forms 27.2% of the total vegetable production in the State.
- The major tomato producing belts in the State are Sirmour, Kullu and Solan.
- Recommended varieties of Tomato in the State are Pusa-120, Pusa Ruby, Pusa Sheetal, Pusa Hybrid-2, Arka Vardhan, Arka Vikas, Arka Abha, Arka Saurabh, Arka Alok, Kashi Vishesh, sharad, Hissar HS 101, Hissar Lalit, Hissar Arun, Pant Bahar, Pant t-3, Pant Poly House-1 and Poly House Hybrid-1.
- During 2013-14, 1.21 lakh MT of tomato have been traded in organized markets with average price of Rs. 1.12/kg.

FLOWERS

1. Himachal Pradesh is one of the leading flowers producing state in the country. State accounts of 2.0% of cut flowers and 1.6% of loose flowers to the total production of flowers.

Kullu District:

Kullu district is located in the northern part of Himachal Pradesh. District lies Between 31.58 degree north latitude and 77.64 degree east longitude. On the north and north east, it is bounded by Lahaul Spiti and Kangra district. On the east and south east by Kinnaur and Shimla districts and in the south by Mandi district. The total geographical area of the district is 5503 Sq. Kms. and its population as per the census of 2011 is 4, 37,474 persons. The density of 2 population is 79 persons per sq. km. Out of the total population of the district about 90% of the population lives in rural areas which clearly means that the district has a rural base. The literacy rate in the district is 70%.

The district of Kullu forms a transitional zone between the lesser and Greater Himalayas and presents a typical rugged mountainous terrain. The district has high mountains, rivers, rivulets and valleys. The altitude of the district ranges from 1500 meter to 4800 meter from the mean sea level.

Kullu town has an average elevation of 1,278 m or 4,193 ft). It lies on the bank of Beas River. A major tributary, Sarvari, (derived from "Shiv-Baardi") leads to the less explored and steeper Lug-valley on the west. On the east of Kullu lies a broad mountainous ridge having the village-temples of Bijli Mahadev, Mounty Nag and Pueed. Beyond the ridge lies Manikaran valley, along the Paarvati River which joins Beas at sangam in Bhuntar.

To the north lies the famous town of Manali, which through the Rohtang pass leads onto the Lahaul and Spiti Valley.

Climate:

December and January during winter observe lowest temperatures ranging from 4°C to 20°C, with some snowfall. Annual highest temperature in summer ranges from 25°C to 37°C during May to August. Months of July and August are rainy because of Monsoon, having around 15 cm rainfall monthly. Climate is pleasant in October and November.



Horticulture Status in Kullu District:

The mountainous territory of Kullu district strongly influences both techniques and crops. Most agriculture takes place in the form of terrace cultivation, with small strips of the mountain slopes having been more or less levelled out to allow cultivation. The quality of the soil is less than optimal with few nutrients and many small stones and rocky patches. Further, the altitude leads to a harsh climate. While in the valleys with an altitude of around 1500 m above sea level the cultivation can still take place most of the year; it is reduced in the summer months in regions above 2500 m. Yet, the people there particularly depend on agriculture for survival, largely because the remote locality of their villages denies opportunities in other fields. The area is purely rain-fed, which creates difficulties if the monsoon and snow fall turn out weak. Problems of accessibility and transport are further crucial aspects of the farming in Kullu district.

Horticulture plays an important role in the economic life and prosperity of the people of Kullu. During the last three decades, Kullu has made tremendous progress in the field

of Horticulture. Greater emphasis is being laid on this sector because the geographical features and climatic conditions prevailing in the district are ideally suited for fruit farming. Among all the fruits grown in Kullu, apples are most widely grown and represent commercially the most important fruit crop. The cultivated apple area is 18,524 hectares. The annual apple production usually lies between 80,000 to 90,000 metric tons. This represents about 9,000 truck loads of apples every year.

Apart from apples other varieties of fruits grown in Kullu are plum, peach, apricot, pomegranates and kiwi as well as nuts, especially almonds. These fruit plantations cover an area of 3065 hectares and the annual production is approximately 20,000 metric tonnes.

The following table shows the plantation area of different fruits in Kullu district as well as their harvesting season.

India being a tropical country has few regions with a moderate climate. The hilly regions along the Himalayas like Himachal Pradesh, Jammu and Kashmir profit from this situation and have proven beneficial for fruit growers. Apples fetched a good price in the past, especially the variety 'Red Delicious' which appealed to the Indian masses as they were obsessed by its bright red color.

The farmer's preferred to grow this variety mainly for economic reasons and consequently other varieties like Granny Smith, Golden, and Wynter etc. served more and more as polanizers resulting in great yield of apples year after year.

Things started changing in the 1970's and 80's as people cut down excessively older apple plantations and started growing 'Red' and 'Royal Delicious' varieties. The cutting down of older trees resulted in vast stretches of 'Royal Delicious' but the new variety failed to produce apples in the wake of adequate pollen source. Wreckless spraying of insecticides killed bees and other polanizing agents, further worsening the problem.

Rising temperatures and decreasing forest areas shortened the chilling hours required by the apple trees during winter. This resulted in low yields and lower qualities, especially in the fruit growing area below 1,400 m.

Factors responsible for the low yield of apples are:

- Heavy dependence on seedling root stock.
- Lack of research work on dwarf and cloned root stock.

Other factors responsible for lower income from horticulture are:

- High cost of transportation.
- Lack of a sufficient road network to fruit growing areas.
- Manual and mule transportation resulting in heavy losses due to breakage of boxes.
- Substandard quality of carton & packing materials.
- Lack of good cold storage and pre-cooling facilities.
- Lack of technical knowledge.

- Obsolete and outdated pesticides and insecticides.
- Lack of research work in the field of pest management.
- The unrestricted apple imports pose a threat to the lower quality domestic varieties.
- New varieties of fruits have only been marginally introduced in Kullu during recent years.

Horticulture as an avocation has played a vital and indispensable role in the economy of the people of the district because horticulture helps in sustainable & higher production and income per unit of area as compared to that of the ordinary agriculture crops and means for the utilization of the area unsuitable for growing agriculture crops.

District Kullu the valley of Gods nestles in the Pir Pangal range of the western Himalayas . The high reaches are bestowed with magnificent snow peaks and Glaciers. The altitude vary from 915 to 2472 mt amsl. The average rainfall varies from 100 cms at Kullu and Seraj, 137 cms at Manali. The texture of soil ranges from sandy loam to clay loam and colour of soil also varies from dark to brown . The soil is acidic in nature and depth of the soil varies from 50-150 cms.

The Kullu District. occupies 2nd position in horticultural crops in the state. The total area under different fruit plants in the district is 30023.15 ha. Apple is the major fruit crops which occupies 25823 ha. area which constitutes 86% of the total area under fruit plants followed by Plum, Pears, Pomegranates, Apricots, Cherry & Persimon fruit. The production of various fruits during the year 2014-15 was 140637.5 mt ton out of which production of Apple was 122400 mt tons.

Land use pattern

1. Total area of the District	=	5,50,300 ha
2. Net cultivated area	=	65,376 ha
3. Area under forests	=	43,1435 ha.
4. Area under Hort. Crops	=	30023.15 ha.
5. Production (2014-15)	=	140637.5 mt ton

Block wise area under different fruits upto for the year 2014-15 in hectares

S.No	Name of fruit	Naggar	Kullu	Banjar	Anni	Nirman d	Total
1	Apple Standard	9265.62	5857.9 1	4137.1 4	3441.6 2	1360.00	24062.2 9
2	Apple-spur	511.66	591.20	228.30	290.30	139.46	1760.92
3	Plum	859.53	948.92	320.19	20.65	29.50	2178.79
4	Peach	14.44	21.67	11.60	3.53	5.00	56.24
5	Apricot	57.87	65.49	98.25	6.35	18.00	245.96
6	Pear	201.03	153.40	92.18	19.75	6.40	472.75

7	Cherry	15.39	9.77	11.35	2.00	1.21	39.72
8	Kiwi	9.00	21.16	5.00	0.00	0.91	36.07
9	Pomegranate	85.41	242.56	49.25	3.33	5.00	385.55
10	Olive	1.00	0.50	4.00	0.00	0.00	5.50
11	Persimmon	27.46	61.71	53.65	1.00	23.40	167.22
12	Strawberry	4.18	2.00	2.00	0.00	0.00	8.18
13	Almond	44.60	31.00	49.00	27.00	36.00	187.60
14	Walnut	19.09	39.96	23.09	0.90	5.00	88.04
15	Pecan nut	25.67	27.07	26.07	0.90	2.76	82.47
16	Mango	0.00	0.00	0.00	72.86	81.51	154.37
17	Litchi	0.00	0.00	0.00	1.78	2.28	4.06
18	Guava	0.00	0.00	2.50	3.74	4.47	10.71
19	Jack fruit	0.00	0.00	0.00	0.00	1.00	1.00
20	Grapes	1.00	3.00	2.00	0.00	0.00	6.00
21	Anola	0.00	0.00	0.00	1.31	0.00	1.31
22	Orange/Kinnow	0.00	3.00	9.50	0.50	5.00	18.00
23	Malta/Musambi	0.00	0.00	0.00	1.00	0.00	1.00
24	K.Lime	4.00	12.00	8.00	4.85	12.01	40.86
25	Galgal	0.00	2.00	1.00	2.65	2.89	8.54
Grand Total:		11146.95	8094.31	5134.07	3906.02	1741.80	30023.15

Block wise & fruit wise final estimated/ actual Production of different fruits grown in district Kullu during the year 2014-15 (In metric ton).

S.No.	Name of fruit	Kullu	Naggar	Banjar	Anni	Nirman d	Total
1	Apple	20500	65000	10400	15000	11500	122400
2	Plum	3200	1500	800	8	10	5518
3	Peach	1.0	46	320	9	5	381
4	Apricot	6.0	34	700	14	20	774
5	Pear	2451	6000	1500	35	45	10031
6	Cherry	1.0	14	0.5	1	-	16.5
7	Kiwi	4.5	55	-	1	1	61.5
8	Pomegranate	760	98	1.0	1	1	861

9	Persimmon	28	395	32	12	5	472
10	Strawberry	2.50	4.5	-	-	-	7
11	Almond	6.0	1.5	-	8	14	29.5
12	Walnut	1.5	48	10.5	1	1	62
13	Mango	-	-	-	6	5	11
14	Guava	-	-	-	1	1	2
15	Aonla	-	-	-	1	-	1
16	Banana	-	-	-	-	2	2
17	Musambi	-	-	-	1	1	2
18	Lime	-	-	-	1	1	2
19	Galgol	-	-	-	2	2	4
Grand Total:		26961.5	73196	13764	15102	11614	140637.5

Dr D P Banghalia, Director Horticulture (Additional Charge), Govt of Himachal Pradesh; Dr H R Sharma, Mission Director, MIDH, HP; Dr R S Spehia, PI, Precision Farming Development Centre, Solan; Dr Ramesh Rana, SMS, KVK, Bajaura (nominee from CSKHPKVV, Palampur) visited 8 farmers (list attached) in addition to ICAR- IARI Station, Katrain where the assistance in the form of subsidy/project has been provided. The JIT was accompanied by Deputy Director Horticulture (Kullu) and his team.

LIST OF FARMERS VISITED ON 21 AND 22nd SEPTEMBER, 2015

S.N o.	Name and Address	Component of MIDH?HMNEH	Area (ha)	crop
1.	Sh Hukum Ram Vill. Jia PO Bhuntar, Teh and Distt Kullu	Area Expansion, Drip irrigation	1.5	pomegranate
2.	Sh Om Parkash, Vill Jarad, PO Bhuntar, Teh and Distt Kullu	Area Expansion, Drip irrigation, water storage structure	2 ha	pomegranate
3.	Sh Daljeet Singh, Vill Jarad, PO Bhuntar, Teh and Distt Kullu	Area Expansion, Drip irrigation, water storage structure	1.8	Pomegranate, Kiwi fruit
4.	Sh Het Ram, Vill Kalehli, PO Bajaura, Kullu	Area Expansion, Drip irrigation	0.8	Pomegranate
5.	Sh Alam Chand, Vill Jwani Ropa, Seobagh, Kullu	Area Expansion, Borewell	0.5	Pomegranate
6	Sh Rahul Sood, Seobagh,	Area Expansion,	2.0	Pomegranate,

	Kullu	Borewell, drip irrigation, RCC water storage structure		apple
7	Sh Salil Upadhyay, Vill Seobagh, Kullu	Polyhouse	500 sq.mt.	Flowers
8	Sh Krishan Kumar, Vill Kalehli, Bajaura, Kullu	Area expansion	0.5	vegetables

Field visit to District Kullu:

1. Sh Hukam Ram S/ o Sh Funa Ram, Village Jia, Blunter, Block Kullu has planted pomegranate orchard in an area of 1.56 ha during 2011 under the assistance from NHM through Department of Horticulture, H.P. Orchard has come in fruiting. Drip irrigation was also laid in with the financial support from NHM but lying of drip need improvement.
2. Sh Om Prakash S/ Sh.Kanhiya Lal village Jarad, Block Kullu has established pomegranate orchard of cultivar Bhagwa in 2.4 ha area during 2012 under the area expansion scheme of NHM. Drip irrigation in 2.4 ha for pomegranate, a water storage tank of 70000 liter capacity is also funded under NHM. Orchard has come in fruiting; however he was advised not to take fruit in initial years.
3. Sh. Daljeet Singh S/o Sh Roshan Lal village Jarad, Block Kullu has planted kiwifruit orchard last year under area expansion component of NHM. He is also maintaining pomegranate orchard, nursery and vermicomposting unit.
4. Team also visited a private nursery (Roma Nursery) at Shamshi, Block Kullu. The assistance was provided for small nursery production. He is producing grafted plants of latest cultivars of apple, pear, persimmon and pomegranate.
5. Chunju Ram S/o Sh Janku Ram village Kalhali, Block Kullu has established pomegranate orchard under area expansion scheme of NHM. The orchard has been nicely maintained. He is also growing cauliflower as an intercropping in pomegranate orchard.
6. Sh Alam Chand village Jiwni Ropa , Kullu has planted apple under area expansion scheme in an area of 0.35 ha and also maintaining Pomegranate orchard. He has been provided assistance for establishing Grading and Packing house and bore well. The Grading and packing unit has not come in operation. He was advised to make a platform for grading and packing.
7. Sh. Rahul Sood village Chanjal in Kharal valley of Kullu is maintaining pomegranate orchard in 2.0 ha area out of which 0.82 ha is planted under the area expansion scheme of NHM. He has also installed drip irrigation in 2.0 ha area, constructed water storage tanks and bore well with the assistance of NHM.
8. Sh. Salil Upadhyay is doing very nice work on chrysanthemum cultivation and propagation. He was supported by providing financial assistance for construction

of mist chamber for propagation of chrysanthemum planting materials.

9. Team also visited IARI Regional Research Station Katraien, Kullu and interacted with the scientific staff of the station and also discussed the project proposal submitted by Dr M. R Dhiman on floriculture under NHM.
10. Sh. Vijay Singh Gupta village Haripur of Naggar Block has initiated rejuvenation of his old and senile orchard through replanting new cultivars through the assistance from NHM. He has planted Vance Delicious cultivar and was demanding the planting materials of latest cultivars.

Beneficiary -1

Area Expansion / Rejuvenation



Sr. No.	Details	Remarks
1	Name & address of Beneficiary whose field visited.	Hukum Ram, VPC- Jiya kullu
2	Total land available with the beneficiary (ha).	3.5 hec
3	Crop Cluster under which covered.	Pomegrante
4	Name & variety of crop planted.	Kondhari, Sindhari
5	Source of planting material.	Dept. Nursery
6	Number of planting material.	1379
7	Number of plants planted/ rejuvenated.	1300
8	Date of plants which survived (also indicate percentage survival).	90% 1200
9	Total amount of subsidy assistance due to the beneficiary as (Rs.)	38100/-
10	Amount paid and date of payment.	38100 3/2011
11	Mode of payment.	Through cheque
12	Source of Irrigation Water (Bore well/ Tube well/ Canel)	Bore well
13.	Whether Drip/ Sprinkle System in use.	Drip
14.	Other inputs provided.	Power fillter, Bore well
15.	Whether assistance available for Organic Farming	No
18.	Available marketing facility for the crop.	APMC Local Market

Beneficiary -2
Area Expansion / Rejuvenation



Sr. No.	Details	Remarks
1	Name & address of Beneficiary whose field visited.	Chhunju Ram Village- kalheli. PO- Bajaures
2	Total land available with the beneficiary (ha).	2 hec.
3	Crop Cluster under which covered.	Pomegrante,Kiwi
4	Name & variety of crop planted.	Pomegranti , Sindhari
5	Source of planting material.	Dept. Nursery
6	Number of planting material.	250
7	Number of plants planted/ rejuvenated.	240
8	Date of plants which survived (also indicate percentage survival).	95%
9	Total amount of subsidy assistance due to the beneficiary as (Rs.)	7200
10	Amount paid and date of payment.	7200
11	Mode of payment.	Through cheque
12	Source of Irrigation Water (Bore well/ Tube well/ Canel)	Bore well
13.	Whether Drip/ Sprinkle System in use.	Drip
14.	Other inputs provided.	Power fillter
15.	Whether assistance available for Organic Farming	No
18.	Available marketing facility for the crop.	Local Market
19.	Other infrastructure available in the vicinity.	No

Beneficiary -3
Area Expansion / Rejuvenation



Sr. No.	Details	Remarks
1	Name & address of Beneficiary whose field visited.	Harbans Lal Vadiya
2	Total land available with the beneficiary (ha).	4 hec
3	Crop Cluster under which covered.	Apple, Peach, Pomegrante
4	Name & variety of crop planted.	Super Chief, organ Spur, Scarlct spur, Reel Hawen,
5	Source of planting material.	Dept. Nursery
6	Number of planting material.	2500
7	Number of plants planted/ rejuvenated.	2500
8	Date of plants which survived (also indicate percentage survival).	95%
9	Total amount of subsidy assistance due to the beneficiary as (Rs.)	61942
10	Amount paid and date of payment.	61942
11	Mode of payment.	Through cheque
12	Source of Irrigation Water (Bore well/ Tube well/ Canel)	Bore well
13.	Whether Drip/ Sprinkle System in use.	Drip
14.	Other inputs provided.	Power fillter, vermi Compost
18.	Available marketing facility for the crop.	APMC Local Market

Beneficiary -4
Area Expansion / Rejuvenation



Sr. No.	Details	Remarks
1	Name & address of Beneficiary whose field visited.	Harbans Lal Vadiya
2	Total land available with the beneficiary (ha).	3 hec
3	Crop Cluster under which covered.	Pomegrante
4	Name & variety of crop planted.	Kodhari & Sinhari
5	Source of planting material.	Dept. Nursery
6	Number of planting material.	1375
7	Number of plants planted/ rejuvenated.	1375
8	Date of plants which survived (also indicate percentage survival).	95%
9	Total amount of subsidy assistance due to the beneficiary as (Rs.)	72000
10	Amount paid and date of payment.	72000
11	Mode of payment.	Through cheque
12	Source of Irrigation Water (Bore well/ Tube well/ Canel)	Bore well, water storage tank
13.	Whether Drip/ Sprinkle System in use.	Drip
14.	Other inputs provided.	Water storage tank
15.	Whether assistance available for Organic Farming	No
16	If so, area covered	-
17.	Assistance available	-
18.	Available marketing facility for the crop.	APMC Local Market
19.	Other infrastructure available in the vicinity.	Nil
20.	General upkeep of the plot; Very good/ Good / Average/ Poor.	
21.	Any other relevant observation by the JIT.	

**Beneficiary -5
Micro Irrigation**

Sr. No.	Details	Remarks
1	Name & address of beneficiary visited.	Om prakash, Village- Tarad, P.o.- kalheli, District- Kullu
2	Total land available with the beneficiary (ha).	3 hec.
3	Type of MI system availed Drip/ Sprinkler	Drip irrigation
4	Crop(s) covered	Pomegrante, 2 hec.
5.	Total area covered (ha)	2 hec.
6	Crop Spacing (for drip)	3x3 mtr
7	Year of establishment	2014
8	Name of Manufacturer/ Supplier	Phinulex, plasson
9	Total subsidy paid & date of payment	73102, june, 2014
10	Mode of payment	Through cheque

**Beneficiary -6
Micro Irrigation**

Sr. No.	Details	Remarks
1	Name & address of beneficiary visited.	Thari Lal, Vill- Bagicha P.O. Bajarua District- Kullu
2	Total land available with the beneficiary (ha).	4 hec.
3	Type of MI system availed Drip/ Sprinkler	Drip irrigation
4	Crop(s) covered	Pomegrante
5.	Total area covered (ha)	1.576 hec.
6	Crop Spacing (for drip)	3x3 mtr
7	Year of establishment	2014
8	Name of Manufacturer/ Supplier	Finolex plasoon, India Pvt. Ltd
9	Total subsidy paid & date of payment	57605, 8/2014
10	Mode of payment	Through cheque
11	Status of crop	
12	General upkeep (Very good/ Good/ Average/ Poor)	
13.	Any other relevant observation by JIT.	

Beneficiary -7
Micro Irrigation

Sr. No.	Details	Remarks
1	Name & address of beneficiary visited.	Chhunju Ram, Vill- Kalhali P.O. Bajarua District- Kullu
2	Total land available with the beneficiary (ha).	2 hec.
3	Type of MI system availed Drip/ Sprinkler	Drip irrigation
4	Crop(s) covered	Pomegrante
5.	Total area covered (ha)	0.64
6	Crop Spacing (for drip)	3x3 mtr
7	Year of establishment	2014
8	Name of Manufacturer/ Supplier	Finolex plasoon Pvt. Ltd
9	Total subsidy paid & date of payment	23392, may 2014
10	Mode of payment	Through cheque
11	Status of crop	Good
12	General upkeep (Very good/ Good/ Average/ Poor)	
13.	Any other relevant observation by JIT.	

Beneficiary -8
Micro Irrigation



Sr. No.	Details	Remarks
1	Name & address of beneficiary visited.	Krishna Gopal Khullar, V.P.O Raison
2	Total land available with the beneficiary (ha).	6 hec.
3	Type of MI system availed Drip/ Sprinkler	Drip irrigation
4	Crop(s) covered	Apple
5.	Total area covered (ha)	1 hec.

6	Crop Spacing (for drip)	3x3 mtr
7	Year of establishment	2015
8	Name of Manufacturer/ Supplier	Jain Irrigation Pvt.Ltd
9	Total subsidy paid & date of payment	36551
10	Mode of payment	RTGS order process
11	Status of crop	
12	General upkeep (Very good/ Good/ Average/ Poor)	
13.	Any other relevant observation by JIT.	

Beneficiary -9
Micro Irrigation

Sr. No.	Details	Remarks
1	Name & address of beneficiary visited.	Harbans lal Vadiya, vill.- Kalheli, PO- Bajoura
2	Total land available with the beneficiary (ha).	4 hec.
3	Type of MI system availed Drip/ Sprinkler	Drip irrigation
4	Crop(s) covered	Apple, Peach, Nectrine
5.	Total area covered (ha)	3.59 hac
6	Crop Spacing (for drip)	3x3 mtr
7	Year of establishment	2013
8	Name of Manufacturer/ Supplier	Jain irrigation
9	Total subsidy paid & date of payment	73415, 2013
10	Mode of payment	Through cheque
11	Status of crop	Good
12	General upkeep (Very good/ Good/ Average/ Poor)	Good
13.	Any other relevant observation by JIT.	

Beneficiary-10
Protected Cultivation



Sr. No.	Details	Remarks
1	Name & address of Beneficiary whose field visited.	Naresh Chand, Vill- Prem Garah, P.O. – Neuli, Kullu
2	Total land available with the beneficiary (ha).	5 bigha
3	Type of Protected cultivation activity (Hi-tech / Normal GH, Shade net, Plastic tunnel)	Normal G.H.
4.	Year of establishment	2015
5.	Size of Structure (Sq. m)	165 m ²
6.	Total cost	1698051
7.	Agency involved in fabrication and installation	Global agritech, Bilaspur H.P.
8.	Total subsidy paid and date of payment.	1,31134
9.	Crop being grown	Capsicum, tomato
10.	Condition of Structure	Good
11.	Condition of Crop	Good
12.	Tie up with market	Yes
13.	General upkeep (Very good/ Good/ Average/ Poor)	Good
14	Any other relevant observation by JIT.	

Beneficiary-11
Post Harvest Management
Pack House/Cold Storage

Sr. No.	Details	Remarks
1	Name of the project	Pack house
2	Year of Implementation	2015
3	Project Period	2014-15

4	Name of Beneficiary	Sh. Alam Chand, Vill- Jndnirupa, P.O. Neoli, Kullu
5	Location of Project	Kullu
6	Total Project Cost	346413
7	Amount Released & date	
8	Expenditure incurred	
9	Status	
	Capacity of unit	9x6 mtr 189 m3
	Commodity	Apple , pomegrante
	Equipments purchased	Nil
	Condition of infrastructure	Good
	Whether NHM logo displayed	Yes
	Whether funds disbursed to agency	

Beneficiary-12
Post Harvest Management
Pack House/Cold Storage/Ref Van/ Primary processing

Sr. No.	Details	Remarks
1	Name of the project	Pack house
2	Year of Implementation	201
3	Project Period	2013-2014
4	Name of Beneficiary	Sh. Satish Kumar, VPO-Raison
5	Location of Project	Raison
6	Total Project Cost	315000
7	Amount Released & date	15000/- may 2014
8	Expenditure incurred	315000
9	Status	
	Capacity of unit	9x6 mtr
	Commodity	Apple ,
	Equipments purchased	Nil
	Condition of infrastructure	Good
	Whether NHM logo displayed	
	Whether funds disbursed to agency	

Kullu Photos:



Pome granate cv.phagua with caulifower inter crop. Pome granate fruiting at farmers field in kullu



Pome granate orchard area expansion programme field

Pome granate cv.kandhari in fruiting at farmers



Water harvesting tank to support drip igation



Drip irrigation system for pome granate orchard



Director horticulture also visited farmers field



Kiwi orchard at farmers field at kullu



Director horticulture also visited Kiwi orchard at farmers field in fruiting



Aerial view of Apple cluster at Nagaur village



Apple nursery supported from MIDH at Kullu



Mandi for apple marketing at road side near Katarian



Apple Red Delicious as pollinizer in fruiting



Japanese persimmon tree in fruiting flower



Chrysanthemum nursery in poly house for cut

Bilaspur District:

Bilaspur is located at 31.33°N 76.75°E.^[2] It has an average elevation of 673 metres (2208 feet). It lies at foot of Bandla Hills. It lies near the reservoir of Govind Sagar on the Sutluj River. It is first major town after entering himachal on way to manali. The district has an area of 1,167 km², and a population of 382,056 (2011 census). Bilaspur has a hilly terrain. Whole district is situated in shivalik range of lower Himalayas. It is surrounded by hills on all sides. In south and west, it is bordered by Punjab. Summers are hot and winters are cold, with fog along banks of river satluj. Rainy season lasts from early July to mid September. Summer is hottest in month of May and June.

Climate:

It is hot in summer as it is situated in valley at lower altitude while surrounding mountains top experience pleasant weather and cold in winters. Monsoon brings plenty of rain from July to September. Best time to visit is October to November, during this time Lake is completely full and weather is also pleasant. Hottest months are May and June when temperature usually hover around 37-38 degree Celsius and sometimes for few days jumping to above 40 degree Celsius, although unlike North Indian Plains nights are comparatively cooler and comfortable.

Geographical Area

Total area(In Hectares)	:11776
Forest Area	:14013
Cultivated Ares	:56011
Unusable Area	:72423
Altitude	:610m(above sea level)
Major River	:Satluj

Climate

Rainfall	: Max 62mm Min 1.5mm.
Temperature	: Max 37°C Min 5°C.



The team comprising of Dr R C Upadhyay, Chief Consultant, Ministry of Agriculture, GOI, Dr D P Banghalia, Director Horticulture (Additional Charge), Govt of Himachal Pradesh; Dr H R Sharma, Mission Director, MIDH, HP; Dr R S Spehia, PI, PFDC, Solan; Dr Ramesh Rana, SMS, KVK, Bajaura (nominee from CSKHPKVV, Palampur) visited 6 farmers (list attached) where the assistance in the form of subsidy has been provided. The JIT was accompanied by Deputy Director Horticulture (Bilaspur) and his team.

JIT conducted visit to the farmer's field wef 25.9.15 to 26.9.15.

LIST OF FARMERS ON 25 AND 26th SEPTEMBER, 2015

S.No.	Name and Address	Component of MIDH/HMNEH	Area (ha)	crop
1.	Sh Sant Ram vill Diggar, PO Beri, Bilaspur	Polyhouse, borewell, area expansion	0.3	Pomegranate/capsicum
2.	Sh Hariman Sharma, Vill Panyala, Ghumarwin, Bilaspur	Area Expansion, small nursery	0.5	Apple plants
3.	Rajat Biotech and Nishant Biotech Tissue culture unit, Vill Padyalag, Dadhol, Bilaspur	Tissue culture lab	-	Apple plants
4	Sh Suresh Kumar Vill Baddu, Bilaspur	Polyhouse	1000 sq.mt.	carnation
5	Sh Gian Singh, Vill Gandhir, Bilaspur	Polyhouse	630 sq.mt.	Carnation
6.	Sh Mahipal Singh, Vill Noa, Bilaspur	Polyhouse	1000 sq.mt.	papaya

During the visit following observations were made:

Field visit to District Bilaspur:

1. Sh Sant Ram S/o Sh Govind Ram village Diggar, Block Sadar Bilaspur is growing capsicum under polyhouse(1000 m²) and also planted pomegranate orchard in 0.3 ha. and used black polythene mulching in the orchard. He has mixed plantation of litchi and kinnow which should be avoided.
2. Sh Hariman Sharma village Panyala, Bilaspur is growing low chilling apples. He was provided financial assistance for small nursery, Bore well and vermin composting, Area expansion in mango and grading and packing house through NHM. The nursery unit is satisfactory.
3. Team also visited the Govt. Progeny cum Demonstration Orchard (PCDO) of the Department of Horticulture in Gumarwin block.
4. Vinod Soni village Padyalag, Dadhol is running tissue culture unit, and a small nursery with the help of financial assistance from NHM. Team visited Rajat Biotech and Nishant biotech tissue culture unit and observed that both the units has been maintained and operated to commercial level. Rajat biotech is

producing 3.0 lakh clonal rootstocks and 10000 grafted plant per year and Nishat biotech is producing 7.0 lakhs rootstocks and 50000 grafted plants. The owner was asked to supply the information on beneficiaries and increase the production of planting materials as per the NHM guidelines.

5. Sh Suresh Kumar S/o Sh Krishnu Ram village Baddu received financial assistance of Rs 7, 94,750 for polyhouse (1000 m²) and planting materials of carnation cut flowers through Department of horticulture under NHM.
6. Sh Gain Singh S/o Sh Gheber Ram Village and P.O. Ghandir planted 430 plants of pomegranate and also maintain a polyhouse of 600 M² with the financial assistance from NHM through Department of Horticulture. Polyhouse has been nicely maintained.

Field Observations:

- Farmer had installed drip irrigation and plastic mulch in high density pomegranate orchard. JIT advised to keep the drip laterals under the mulch so that proper utilization of the water can be made.
- JIT suggested the farmer should not grow different fruit plants in the same orchard.
- One farmer was growing low/no chilling apples, to which JIT suggested to first get the apple plants tested at different locations and examine commercial feasibility under no chilling conditions. Variety of the apple could not be verified; JIT suggested getting the DNA tested for confirming the variety.
- The proprietor had undergone six month training on Tissue culture practices at IHBT, Palampur and was qualified to undertake production of tissue cultured plants. The staff was also well trained and the lab was functioning smoothly and was producing 3.0 lakh plants annually. The plants were being hardened properly. The plants were being sold at Rs. 60/plant.
- JIT asked the proprietor to supply list of beneficiaries to whom the plants have been supplied. Precision Farming Development Centre, Solan, will undertake survey of the plants performance at farmer's fields.
- Farmers were using polyhouses to grow carnation and earning good profit. Some farmers were using polyhouses to grow dwarf papaya. JIT suggested that care should be taken so that the plants don't get infected with the viral diseases that could be disastrous.

Beneficiary No.-1

Adoption of Organic Farming

Sr. No.	Details	Remarks
1	Name of the project	Vermi compost unit under HTM

2	Year of Implementation	2004-05
3	Project Period	2004-05 to 2015-16
4	Name of Implementing Agency	Deptt. of Horticulture
5	Location of Project	Vill- Panyala D.O. Kothi, Teh. Gurarimin Dist.- Bilaspur
6	Total Project Cost	Rs. 32000
7	Amount Released by DAC	
8	Expenditure incurred Status	Rs. 31000
9	Status	
	• Crops covered	Mango, seasional vegetables, etc.
	• No of farmers involved	Individual
	• Name & address of certifying agency	Deptt. of Horti.
	• Whether any certificate issued	

Beneficiary-2
Protected Cultivation

Sr. No.	Details	Remarks
1	Name & address of Beneficiary whose field visited.	Sh. Suresh Kumar S/o Sh. Krishna Ram Vill- Baddle P.O. Bari Majherwan, Teh. Ghumarritor Distt.-Bilaspur
2	Total land available with the beneficiary (ha).	5.0 bighas
3	Type of Protected cultivation activity (Hi-tech / Normal GH, Shade net, Plastic tunnel)	Tubular structure (Nationally vertiled system)
4.	Year of establishment	2013-14
5.	Size of Structure (Sq. m)	1000m2
6.	Total cost	Rs. 9,37,217/-
7.	Agency involved in fabrication and installation	Green agri-tech Vill-Gawaon, P.O. Barthien D.O. Jhandutla, Distt. Bilaspur
8.	Total subsidy paid and date of payment.	Rs. 7,94750/- Date 30..2015
9.	Crop being grown	Carnation
10.	Condition of Structure	Very good
11.	Condition of Crop	Good
12.	Tie up with market	delhi
13.	General upkeep (Very good/ Good/	

	Average/ Poor)	
14	Any other relevant observation by JIT.	

Beneficiary-3
Production of Planting Material/Tissue Culture

Sr. No.	Details	Remarks
1	Name of the project	Tissue Culture Lab under HTM
2	Year of Implementation	2006-07
3	Project Period	2006-07 to 2015-16
4	Name of Implementing Agency	Department of horticulture
5	Location of Project	Vill- Padyalag P.O. Dadhat Teh. Ghumarwin Distt. Bilaspur
6	Total Project Cost	Rs. 20.0 lakh
7	Amount Released by DAC	
8	Expenditure incurred	Rs. 22.00 lakh
9	Status of Project	
	• Name of crops for which seeds produced	Apple root stock
	• Quantity produced	1800000 no's
	• Quantity sold	1800000 no's (Primary hardened plant)
	• Rate	Rs. 6/- per plant
	• Amount realized through sale	Rs. 90.0 lakh
	• Whether NHM logo displayed	yes

Beneficiary-4
Production of Planting Material/Tissue Culture

Sr. No.	Details	Remarks
1	Name of the project	Starting up of new Tissue culture (TC) Unit under HMNEH
2	Year of Implementation	2012-13
3	Project Period	2012-13 to 2015-16
4	Name of Implementing Agency	Department of horticulture
5	Location of Project	Vill- Padyalag P.O. Dadhol Teh. Ghumarwin Distt.

		Bilaspur
6	Total Project Cost	Rs. 100.0 lakh
7	Amount Released by DAC	
8	Expenditure incurred	Rs. 111.00 lakh
9	Status of Project	
	<ul style="list-style-type: none"> Name of crops for which seeds produced 	Apple, Pear, cherry & Kiwi root stock
	<ul style="list-style-type: none"> Quantity produced 	1300000 no's
	<ul style="list-style-type: none"> Quantity sold 	500000 nos's
	<ul style="list-style-type: none"> Rate 	Rs10-12 per plant
	<ul style="list-style-type: none"> Amount realized through sale 	Rs. 5500000/-
	<ul style="list-style-type: none"> Whether NHM logo displayed 	yes

Beneficiary-5
Post Harvest Management
Pack House/Cold Storage/Ref Van/ Primary processing

Sr. No.	Details	Remarks
1	Name of the project	Pack house under HTM (grading & packing Houses/on farm)
2	Year of Implementation	2008-09
3	Project Period	2008
4	Name of Beneficiary	Sh. Hari man sharma S/o Dya Ram Sharma
5	Location of Project	Vill- Panyala P.O. kothi Teh. Ghumarinin Dist. Bilaspur CHO
6	Total Project Cost	1,00000
7	Amount Released & date	Rs. 50,000/- 5/6/2008
8	Expenditure incurred	Rs. 199446
9	Status	
	Capacity of unit	30x15ft ² = 45096
	Commodity	
	Equipments purchased	
	Condition of infrastructure	Good
	Whether NHM logo displayed	Yes
	Whether funds disbursed to agency	Yes

Beneficiary-6
Production of Planting Material
Tissue Culture

Sr. No.	Details	Remarks
1	Name of the project	Small nuusery under HTM
2	Year of Implementation	2009-10
3	Project Period	2012-132009-10 to 2015-16
4	Name of Implementing Agency	Department of horticulture
5	Location of Project	Vill- Padyalag P.O. Dadhol Teh. Ghumarwin Distt. Bilaspur
6	Total Project Cost	600000
7	Amount Released by DAC	
8	Expenditure incurred	6,43,998
9	Status of Project	
	<ul style="list-style-type: none"> Name of crops for which seeds produced 	Hariman nusery, Mango, Kiwi, Pomegrante, Apple etc.
	<ul style="list-style-type: none"> Quantity produced 	About 3.5 lakh
	<ul style="list-style-type: none"> Quantity sold 	About 3 lakh
	<ul style="list-style-type: none"> Rate 	Mango-Rs. 12-25/ Pomegrante-22 plant, K lime- Rs. 6-10 plant Apple -30-50
	<ul style="list-style-type: none"> Amount realized through sale 	yes
	<ul style="list-style-type: none"> Whether NHM logo displayed 	

Beneficiary-7
Production of Planting Material/Tissue Culture

Sr. No.	Details	Remarks
1	Name of the project	Small nuusery under HTM
2	Year of Implementation	2007-8
3	Project Period	2007-08 to 2015-16
4	Name of Implementing Agency	Department of horticulture
5	Location of Project	Vill- Padyalag P.O. Dadhol Teh. Ghumarwin Distt. Bilaspur
6	Total Project Cost	600000
7	Amount Released by DAC	

8	Expenditure incurred	678000
9	Status of Project	
	<ul style="list-style-type: none"> Name of crops for which seeds produced 	Shagun nusery, Pro. Anita Devi, Apple (low chilling varieties)
	<ul style="list-style-type: none"> Quantity produced 	40,000 plants
	<ul style="list-style-type: none"> Quantity sold 	35,000 plants
	<ul style="list-style-type: none"> Rate 	Rs. 30 to 50% per plants
	<ul style="list-style-type: none"> Amount realized through sale 	Rs/ 105,00000
	<ul style="list-style-type: none"> Whether NHM logo displayed 	

Bilaspur Photos:



Poly house for capsicum cultivation



Low chilling apple cultivation in farmers field



Apple nursery for low chilling apple





Nishant Bio tech. tissue culture unit at private sector for apple root stock production



Nishant Bio tech. tissue culture unit at private sector for apple root stock production



Carnation cultivation under protected conditions at farmers field at Bilaspur

Mandi District:

Mandi is almost at the geographical centre of Himachal, lying along the left bank of the river Beas in the foothills of Shivalik ranges. The town has an altitude of 760 metres (2,495 ft) from the sea level. Comprising the two erstwhile states of Mandi and Suket, Mandi derives its name 'mandi' or 'market' as it was a major trade route from Ladhakh to locations in Punjab such as Hoshiarpur and other places. As of 2011 it is the second most populous district of Himachal Pradesh and population is 900987 and total geographical area is 3951km².



Climate:

Mandi features a subtropical highland climate under the Köppen climate classification. The climate of Mandi is composite having hot summers and cold winters. Mandi generally experiences rainfalls during end of summer season. Mandi city falls in the lower most climatic zone of the Himalayas. These regions enjoys a Wet-sub temperate climate of the foot hills (450-900m) as against the Dry-cold alpine climate with snow fall at higher altitudes (2400- 4800mts). Temperatures typically range from 6.7 °C (44.06 °F) to 39.6 °C (103.28 °F) over the course of a year. The average temperature during summer is between 18.9 °C (66.02 °F) and 39.6 °C (103.28 °F), and between 6.7 °C (44.06 °F) and 26.2 °C (79.16 °F) in winter. Monthly precipitation varies between 25.4 millimetres (1 in) in November to 228.6 millimetres (9 in) in August. It is typically around 58.3 millimetres (2.29 in) per month during winter and spring and around 101.6 millimetres (4 in) in June as the monsoon approaches. The average total annual precipitation is 832 millimetres (32.76 in).

Climate data for Mandi													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	16.8	16.6	21	27.6	26.6	27.7	25.5	25.6	25.3	23.1	21.6	17.4	22.9
Average low °C (°F)	4	4.1	7.2	10.5	14.7	15.2	12.7	12.3	11.7	10	6.4	3.8	9.38
Average rainfall mm (inches)	30	30	22	15	15	85	240	220	130	25	10	10	832
Source : Meoweather													

Agriculture:

Mandi is the fastest developing city of Himachal Pradesh . Located on cross junction of National Highway-20, 21 and 70 , It acts as a gateway to Kullu, Lahaul, Leh Ladakh, area of Jammu & Kashmir. The economy of the region is predominately agrarian as around 79% of the total population is dependent on agriculture and activities allied to it, for earning their livelihood.

Balh Valley is known for producing quality wheat, paddy, and vegetable crop where the water drainage system and sprinkle system of irrigation have been adopted. The crops of corn maize, wheat, rice and vegetables are grown in other parts of the district, which cater to the demand of sizeable population. Many Hectares of land in Mandi is also under Apple production. Apple are generally planted during December every year. The area under fruit in Mandi is about 15 per cent of the total area under fruits in Himachal Pradesh.

The JIT comprising of Dr R C Upadhyay, Chief Consultant, Ministry of Agriculture, GOI, Dr D P Banghalia, Director Horticulture (Additional Charge), Govt of Himachal Pradesh; Dr H R Sharma, Mission Director, MIDH, HP; Dr R S Spehia, PI, PFDC, Solan; Dr Ramesh Rana, SMS, KVK, Bajaura (nominee from CSKHPKV, Palampur) visited 12 farmers (list attached) where the assistance in the form of subsidy has been provided. The JIT was accompanied by Deputy Director Horticulture (Mandi) and his team.

FARMERS WHERE JOINT INSPECTION TEAM VISITED ON 23 AND 24th SEPTEMBER, 2015

S. N	Name and Address	Component of MIDH/HMNEH	Area (ha)	crop
1.	Kunal Biotech, Nagwain, Mandi	Tissue culture lab	-	Apple plants

2.	Sh manoj Kumar, Vill Kigas, mandi	Area Expansion, small nursery, water storage structure	0.5	Apple plants
3.	Sh lal Singh, Vill Bagsiad, Jhanjehli, Mandi	Polyhouse	750 sq.mt.	Carnation
4.	Sh Ranjeet Singh, Vill Bagsiad, Jhanjehli, Mandi	Polyhouse	630 sq.mt.	Carnation
5.	Dr Mohar Singh, Vill Thunag, Jhanjehli, Mandi	Tissue culture lab, small nursery, plant health clinic	-	Apple plants
6	Sh Paras Ram, Vill Thunag, Mandi	Mushroom House	12x10m	mushroom
7	Sh Khem Singh, VPO Jhanjehli, Mandi	Polyhouse	500 sq.mt.	Carnation
8	Sh Devi Singh, Vill Kaulinaal, Jhanjehli, Mandi	Packing and Grading House	-	Apple
9	Sh Kamal Singh, Vill Kaulinaal, Jhanjehli, Mandi	Packing and Grading House, anti-hail net	-	Apple
10	Sh Khoob Chand, Vill Kalodhar, Karsog, mandi	Area Expansion, drip irrigation	0.4	Apple
11	Rajni Nursery, Vill Thandapani, Karsog, Mandi	Small nursery	0.4	Apple
12	Sh Hem raj Gupta, Vill Marothi, Karsog, Mandi	Area Expansion, drip irrigation, vermicompost unit, water storage structure	0.5	apple

Field visit to District Mandi

1. Team Visited Kunal Biotech Nagwain, Block Sadar Mandi who has been given assistance of 50.0 lakhs for tissue culture unit under MIDH. JIT observed that the tissue culture unit is not working as per the guidelines of MIDH. JIT observed that no trained person was placed at tissue culture unit and equipment were also not purchased as per MIDH guidelines. It was informed that unit has produced only 3.0 lakhs plants of clonal rootstocks of apple so far and the records for the beneficiaries were not available.
2. Sh. Manoj Kumar (Prop) Kesar Nursery village Kigus Sadar block Mandi, received financial assistance for establishing Small Nursery. The nursery is maintained nicely and producing plants of latest cultivars of apple, pomegranate and stone fruits. He has also established the mother orchard of latest cultivars of apple during last year.

3. Sh. Ranjeet Singh village Bagsaid, Janjhali block has maintained 600 m² polyhouse funded by NHM during 2009-2010. He is cultivating carnation cut flowers. Although the polyhouse was damaged during last winter season due to heavy snow fall, but he repaired it and maintaining it very nicely.
4. Sh. Lal Singh village Bagsaid, Janjhali block has also maintained a polyhouse in an area of 1000 m² and growing carnation cut flowers.
5. Team also visited tissue culture lab funded under NHM during 2005-2006 to Mohar Singh Thakur village Thunag, Block Janjhali. He was also funded to establish small nursery and a plant health clinic. It was observed that none of the unit was in working condition.
6. Sh. Paras Ram Village Thunag , Block Janjhali is maintaining a mushroom unit of 20 x 12 feet size funded under NHM during 2011-12. He is earning Rs 25000-30000 per year from this unit. The unit is working satisfactorily.
7. Sh Devi Singh S/ o Sh Beli Ram village Kauli Nala, Block Karsog has been provided assistance for Grading and packing House during 2015-16. It has started working and the average capacity of the grading machine is about 500 boxes per day. It is nicely established and has come in operation.
8. Sh Shoba Ram S/ o Sh Narotam village Kauli Nala, Block Karsog is also running Grading and packing House under the financial assistance from NHM. It is nicely established and working well.
9. Sh. Khub Chand Verma Kailon Dhar block Karsog has planted apple orchard (250 plants) of latest cultivars (Supper Chief, Red Vilox) on clonal rootstock M9 and MM106 as a HDP during 2014-15. It was observed that plantation is not in a compact block.
10. Team also visited a Private nursery i.e Rawat Nursery owned by Mrs Rajnee Rawat in Karsog block of Mandi district. The nursery was funded under NHM as small nursery unit in 2006-07. It is working very nicely and producing 40000-50000 plants of apple and pear.
11. Sh Rakesh Kumar Gupta block Karsog has planted HD orchard of apple and installed drip irrigation in 0.48 ha. with the financial assistance from the NHM. The plantation has been done very nicely but drip irrigation installation needs to be improved. He is also beneficiaries of power tiller, power sprayer, grass cutter and vermin compost unit under the NHM funding.

Observations:

- JIT visited two Tissue culture labs and established under subsidy through different schemes of department of Horticulture. Both the labs claimed to be producing nursery plants of apple but JIT observed them non functional. JIT observe that subsidy provided from TMNEH on installation of Tissue culture labs, the unit must be made operational at the earliest (within three months) so

that the farmers are benefitted with true to type disease free material for Area Expansion under apple. Proper hardening (different stages) procedures were not being undertaken which may lead to mortality of the plants at farmers fields. There must be properly trained technical staff for working in the tissue culture labs and the department may ensure with the help of technical experts.

- JIT visited two small nurseries for which the farmers had taken subsidy from the department. The farmer is producing apple nursery plants and selling to the apple growers at Rs. 40/plant. JIT suggested the farmer to include other plants also so that diverse group of farmers is benefitted. The farmer had installed drip tape which is not suitable for above ground irrigation of fruit crops. Farmer was suggested to install button drippers according to the canopies.
- JIT visited number of polyhouse farmers and observed that any small farmers have started taking benefit from the polyhouses by growing carnation. Some of the farmers have replaced the cladding material on their own and are not seeking any help from government.
- Farmers must install thermohygrometers inside polyhouse to keep tab on the climate under polyhouse. This will help farmer in taking care of the crop more efficiently.
- The gutters of the polyhouse should be connected to the water storage structure, most preferably, LDPE ponds so that rain water can be harvested for irrigation. The concerned block officers must encourage farmers to take benefit of the scheme of the government for same.
- The department should distribute the book entitled “Vibhinn jalwayu kshteron ke liye polyhouse ka rupankan” by Precision Farming Development Centre, Solan to each block level officers.
- JIT visited two Grading and Packing Houses for apple that have been provided subsidy. The unit had started functioning and provide support for proper grading ,so to get better price and save losses.
- JIT visited farmers planting apple trees under high density system of new varieties which are being introduced. JIT observed that farmers had installed drip irrigation with two drippers per tree but the drippers were spaced 50cm apart and the water was falling outside tree basin. Farmers were advised to reduce the spacing of the drippers.
- For irrigating and fertigating, farmers were advised to stick to irrigation and fertigation schedule for apple developed by Precision Farming Development Centre, Solan.
- Farmers were advised to go for soil testing at least once in an year.

- JIT visited the apple orchard with Anti-Hail nets. JIT observed that farmers are getting better return of anti-hail nets which control the damage of apple flowering and fruiting due to hail storms.
- Some farmers complained about reduced size of the fruits under anti-hail nets to which JIT explained that it was due to more number of fruits/plant which needed to be thinned. As without anti-hail nets, this occurred naturally.

Protected Cultivation

Sr. No.	Particulars	Detail
1	Name & address of Beneficiary whose field visited.	Sh. Lal Singh s/o Sh. Brestu Ram R/O Kharsi P.O Devidhar Distt. Mandi.
2	Total land available with the beneficiary (ha)	0.5ha.
3	Type of Protected cultivation activity (Hi.tech/ Normal GH, Shade net, Please tunne)	Normal Greenhouse
4	Year of establishment	2009-10
5	Size of Structure (Sq. m)	480m ²
6	Total cost	417984
7	Agency involved in fabrication and installation	Own
8	Total subsidy paid and date of payment.	156000 dt. 20-05-09
9	Crop being grown	Carnation
10	Condition of Structure	Good
11	Condition of Crop	Good
13	General upkeep	Very good
14	Any other relevant observation by JIT.	-

Proforma for use by Joint Inspection Team Protected Cultivation

Sr.N	Particular	Detail
1	Name & address of Beneficiary whose field visited.	Sh. Lal Singh s/o Sh. Brestu Ram R/O Kharsi P.O Devidhar Distt. Mandi.

2	Total land available with the beneficiary (ha0	O.5 ha
3	Type of Protected cultivation activity (Hi.tech/ Normal GH, Shade net, Please tunnel.....)	Normal Greenhouse
4	Year of establishment	2009-10
5	Size of Structure (Sq. m)	480m2
6	Total cost	417984
7	Agency involved in fabrication and installation	Own
8	Total subsidy paid and date of payment.	156000 dt. 20-05-09
9	Crop being grown	Carnation
10	Condition of Structure	Good
11	Condition of Crop	Good
12	Tie up with market	Group marketing to Gazipur
13	General upkeep	Very good
14	Any other relevant observation by JIT.	-

**Proforma for use by Joint Inspection Team Post Harvest Management
Pack House/Cold Storage/Ref Van/Primary Processing**

Sr. N	Particular	Detail
1	Name of the project	MIDH(Pack house)
2	Year of Implementation	2015-16
3	Project Period	
4	Name of Beneficiary	Sh. Devi Singh S/O Beli Ram R/O Kealinal P.O Sangalwara The.
5	Location of Project	Kealinal

6	Total Project cost	392300
7	Amount Released & date	150000
8	Expenditure incurred	392300/-
9	Status of project	-
10	Capacity of unit	9X6 m
11	Commodity	Apple
12	Equipments purchased	nil
13	Condition of infrastructure	Good
14	Whether NHM logo displayed	yes
15	Whether funds disbursed to agency	under process

**Proforma for use by Joint Inspection Team Post Harvest Management
Pack House/Cold Storage/Ref Van/Primary Processing**

Sr.N o.	Particular	Detail
1	Name of the project	MIDH
2	Year of Implementation	2015-16
3	Project Period	-
4	Name of Beneficiary	Sh. Kamal Singh S/O Sh. Bali Ram R/O keakinal P.O Sangalwara The. Thung Distt. Mandi H.p
5	Location of Project	Keolinal (Janjehli)
6	Total Project cost	375650/-
7	Amount Released & date	150000/-
8	Expenditure incurred	-
9		Status

10	Capacity of unit	9X6 m
11	Commodity	Apple
12	Equipments purchased	-
13	Condition of infrastructure	Good
14	Whether NHM logo displayed	yes
15	Whether funds disbursed to agency	Under process

Proforma for use by Joint Inspection Team Area expansion/rejuvenation

Sr.No	Particular	Detail
1	Name & address of Beneficiary whose field visited.	Sh. Hira lal s/o sh. Narotam ram Village Kigas PO Panarsa The Sadar Distt Mandi (H.P)
2	Total land available with the beneficiary (ha)	1.76 ha
3	Crop cluster under which covered	High Density
4.	Name and Variety of crop Planted	Pomegranate (Kandhari and Sinduri)
5.	Source of planting material	Pvt registered Nursery
6.	No. of planting material	-
7	Number of plant planted/rejuvenated	625 No.
8	Date of plants which survived	On 2.1.14 only 99% survived
9	Total amount of the subsidy due to the beneficiary(rs.)	30,000/-
10	Amount paid and date payment	18000/- on 6.2.14
11	Mode of Payment	Cheque
12	Source irrigation water(bore well tube	Canal

	well/canal)	
13	Whether drip/sprinkler system in use	No
14	Other input provided	nil
15	Whether assistance availed for the organic farming	Only for vermicompost unit
16	If so area covered	30X8X2.5ft
17	Assistance available	Rs.15000/-
18	Available marketing facility for the crop	Takoli markey 3 km away
18	Other infrastructure available in the vicinity	Community water tank
19	General upkeep of the plot very good /good average/poor	Very good
20	Any other relevant observation by the JIT	To replace sinduri with Kandhari

Proforma for use by Joint Inspection Team Production of planting material

Sr. No	Particular	Detail
1	Name of the project	Small nursery
2	Year of implementation	2005-06
3	Project period	2005-06to2014-15
4	Name of the implementing agency	Deptt of Horticulture
5	Location of the project	Kigas(Mandi)
6	Total cost of the project	Rs.6.25lakhs
7	Amount released by the DAC	3.00 lakhs
8	Expenditure incurred	7,16,754
9	Status of the Project	
	*Name of Nursery and crop for	Apple /rootstocks/plum

	which plants are produced	apricot/pomegranate
	*Name of crop for which seeds are produced	-
	*Quantity produced	4.92 lakhs
	*Quantity sold	4.92 lakhs
	*Rate	Apple spur Rs 32/- Apple root stock Rs45/- Plum Rs.25/- PearRs.25/- PomegranateRs.18/-
	*Amount realized through sale	145.22lakhs
	*Whether NHM logo displayed	Yes

**Proforma for use by Joint Inspection Team Production of planting material
Tissue culture**

Sr. No	Particular	Detail
1	Name of the project	Tissue culture
2	Year of implementation	2011-12
3	Project period	2011-12 to 2014-15
4	Name of the implementing agency	Deptt of Horticulture
5	Location of the project	At Nagwain in Distt Mandi(H.P)
6	Total cost of the project	Rs.100 lakhs
7	Amount released by the DAC	Rs.50,00,000/-
8	Expenditure incurred	12751713/-
9	Status of the Project	
	*Name of Nursery and crop for which plants are produced	Apple rootstocks MM106,M-7,MM111, M-9,and MM-793
	Quantity produced 2011-12 to 2014-15	3,00,000 No.
	Quantity sold	3,00,000 No.

	*Rate	Apple root stock Rs60/-
	*Amount realized through sale	1.80 crores
	*Whether NHM logo displayed	Yes

Mandi Photos:



Carnation cultivation under protected conditions at farmers field at Mandi and Bilaspur districts



Mushroom unit at farmers field Plant health clinic and tissue culture units of Dr. Mohan singh at Mandi districts



Apple cultivation alongwith pollinizers of Royal delicious variety of Apple in farmers field.



Apple cultivation of Royal delicious variety of Apple in farmer's field with sorting and grading unit



Local cultivar of pear late group



Apple orchard view at farmers field in clusters



Poly house for production of Apple nursery



Apple nursery in farmer's field



Late group of Apple pollinizer cultivars in farmer's field at Mandi for harvesting.