

DEPARTMENT OF HORTICULTURE, HARYANA

Best Practices - 1

For increasing production & productivity of horticulture crops

A Success Story of Centre of Excellence for Vegetables at Gharaunda (Karnal) and its impact on promotion of protected cultivation.

1. Background

In Haryana total area under horticultural crops is 4.37 lacs hectare in the year 2012-13 out of which the area under vegetables is 3.60 lacs hectare which is around 83% of the total area under horticulture. Vegetables in Haryana were traditionally grown and with little technological inputs, therefore, new technologies are to be brought to increase production and productivity. A Centre of Excellence for Vegetables was established and inaugurated on 17th January, 2011. This Centre was established under Indo-Israel work plan, under Indo-Israel bilateral agreement with the following objectives:

- Intensive crop cultivation farm by demonstrating latest technologies
- High quality vegetables production systems for domestic and export market
- To achieve potential productivity per unit area
- LEAD THE FARMERS with technology

2. Initiatives

A) Technology Demonstration at the Centre

Number of initiatives have been taken at this Centre since its establishment. The technologies introduced and demonstrated at this Centre since 2011 are as under:

1. Vegetable nursery/seedling production in soil less media under High-tech Green House.
2. Demonstration of different varieties of different vegetables and viz. tomato, capsicum, cucumber, chillies, brinjal etc. under different structures namely polyhouse, net house, walk-in-tunnels and low tunnels.
3. Open field cultivation with mulching and micro irrigation system.
4. Post-Harvest Management technologies.

B) Front Line Demonstration Centre

1. 14 Front Line Demonstration Centre (FLDC) were established at farmers field in 14 different districts of the State for transfer of technologies developed at Centre to grass root level.

3. Milestone achieved at the Centre and facilities provided to the farmers

- a) The Centre has achieved the potential productivity of 302 MT per ha in Tomato, 211 MT in Capsicum & 151 MT in Cucumber.
- b) Providing hybrid vegetable seedlings that can be grown under polyhouses: for the last three years (2011 to 2013) 115.98 lacs seedlings have been sold to the farmers on subsidized rates.
- c) Since 2011, 85 hybrids of tomatoes (45 cherry & 40 regular hybrids), 30 hybrids of capsicum (7 colours), 20 hybrids of cucumber alongwith Brinjal, Green Chillies, Summer Cabbage, Muskmelon in winter etc. were demonstrated and tested at the Centre. Most successful hybrids were recommended to the farmers.
- d) Regular trainings are conducted to the growers, extension workers and corporate managers. Every week farmers training on practical aspects conducted for 2 days.
- e) High Level Officers & Experts from Israel, Holland, U.S., Afghanistan, Rwanda & Nepal have visited this Centre during last one year.
- f) To mark the occasion, 1st Vegetable Expo was organized during 17th – 19th January, 2012, 2nd Expo on 17th February, 2013 and 3rd Expo on 16th February, 2014. In these Expo every year more than 15000 farmers have participated and seminar was conducted & private sector companies were invited to show case their product.

4. Impact

After the inauguration of the Centre in January, 2011 a lot of farmers from the State has visited the Centre and see the technologies demonstrated there. The status of protected cultivation was insignificant before the setting up of the Centre in Haryana State. After seeing the technologies at the Centres, the farmers got confidence and started adoption of technologies at their farm.

- 1) Impact on area under protected cultivation: Upto 2010, an area of 42.5 hectare was under protected cultivation which increased to 63.46 hectare upto 2011-12, 217.71 hectare upto 2012-13 and 398.01 hectare upto 2013-14. The adoption rate of these technologies is very high and the main focus of state is towards the vertical and protected cultivation to increase the quality and per unit productivity. For the next five years it is proposed to cover 2500 hectare under protected cultivation with capital investment of Rs. 2500 crore.
- 2) Impact on productivity and income of farmers: On an average yield increment in crops grown under protected structures than that of open field is 4 to 5 times in case of tomato, 3 to 4 times in capsicum and cucumber. NABARD has made bankable projects on protected cultivation and income was worked out which is Rs. 17.20 lacs per hectare in case of tomato, Rs. 20 lacs per hectare in case of cucumber, Rs. 19.30 lacs per hectare in case of rose flowers and Rs. 14.90 lacs in case of gerbera flower.

1. Centre of Excellence for Vegetable (IIP) at Gharaunda, Karnal



CEV Gharaunda outside view



Inauguration 17.01.2011

2. Vegetable Seedling Production & vegetable production at CEV



3. Training at CEV (IIP)



4. Production of vegetable and flowers at Farmer's Field



DEPARTMENT OF HORTICULTURE, HARYANA

Best Practices - 2

For increasing production & productivity of horticulture crops

Adoption of Water Conservation Techniques by water storage tanks and using drip irrigation system for making available water for 24 hours and to enhance fruit productivity & production

1. Background

In Haryana State around 70% rainfall is received during monsoon and its distribution is erratic and uneven which results into acute water shortage. In most of area canal water is not available in sufficient quantity and underground water table is going down due to low rainfall, its poor management and excessive pumping of underground water. The Southern part of Haryana is dry, its ground water is brackish, soil is sandy and barren land in some parts of the region.

Further, the source of irrigation is canal water which is available once or twice a month @ 9 minutes per acre, which is very less as compared to the actual requirement for fruit plants. In this situation water farm ponds become more essential and useful to promote the horticulture sector. Further, fruit plants being perennial in nature require water throughout the year but due to non-availability of water particularly in the month of May and June plants got dried. To combat these problems water tank is the only alternate to irrigate the plant throughout the year. Since water availability per acre is less, therefore, the tank is integrated with drip irrigation, so as to increase water use efficiency and to ensure the supply of water to plant against its demand. The water is stored in community tank from major water source, it may be canal water and rain water. The stored water is used to irrigate plants through drip irrigation system.

2. Initiative

Keeping this problem in view a water conservation model was formulated during 2006-07 with the launching of National Horticulture Mission. Under this model water storage tanks were constructed for the storage of canal and rain-fall water. The innovative idea of the

department of horticulture and with active involvement of progressive farmers the whole scenario has changed to fertile land with large scale successful plantation.

Under National Horticulture Mission there is provision of assistance on community tanks under component of water resource management @ 100% subject to limit of Rs. 20.00 Lacs. It is pertinent to mention here that under the scheme the assistance has to be given on community tank constructed with plastic lining. But it was observed that the community tank with plastic lining will not help the farmer for long time. Therefore, assistance on tanks with water leak proof brick lining was finalized on seeing the ground realities. There upon an estimate was prepared as per Haryana Schedule of Rates (HSR).

This innovative integrated model has gained popularity with the farmers of the state and around **3,139** nos. of community tanks have completed by the end of 2013-14 under National Horticulture Mission. This integration of schemes has emerged as a **MODEL INTEGRATION** under National Horticulture Mission.

3. **Impact**

This stored water is used for irrigation of crops through micro irrigation system. It was observed that the mortality of fruit plants was very high during month of May & June due to high temperature and less availability of irrigation water. The water conservation model reduced this mortality rate as farmers are able to irrigate the plants with the stored water during the water scarce period. This transformation helped the farmers to utilize barren land and unutilized land by converting into fertile tract full of orchards and the only factor responsible for it is water and its judicious use by way of latest technologies of micro-irrigation. Pucca (cemented/RCC/Brick work) Water Farm Ponds were constructed by the farmers themselves and these ponds were integrated with micro irrigation to irrigate fruit orchards.

1. **Employment generation:**

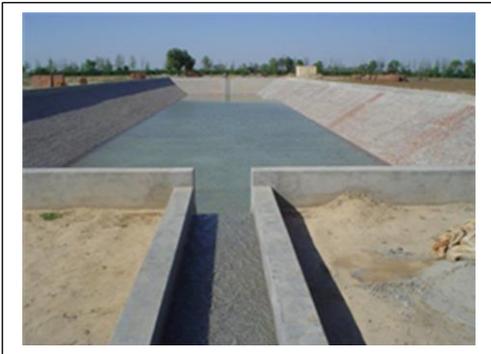
It is estimated that 1835 nos. of mandays are generated for construction of a community tank of 174788 cft. size. **Skilled labourer: 522 mandays** (Masons: 305 mandays,

Blacksmiths/Painters: 17 mandays, Tractor/Truck Driver: 200 mandays) and **Un-Skilled labourer: 1313 mandays** (Masons Helpers/Mazdoors: 1143 mandays, Bhisti/Water Sprayers: 160 mandays, Others: 10 mandays).

2. Increase in production and income and savings in water and labour:

A study was got conducted by the NABCON, a consultancy division of NABARD. It was reported that there is water saving of 53% in fruit crops and 48% in vegetables. The productivity increase was 16.5 tonne per hectare to 20.75 tonne per hectare in case of Kinnow and thereby the net income increase was 37%. Further, there was labour saving @ 90 mandays per hectare.

1. Type of Water Ponds



2. Irrigation through Drip Irrigation



3. Unproductive Barren Land changed to Productive Land

