Vegetable Cultivation with Pandals

Background & Objectives

India's diverse soil and climate, comprising several agro-ecological regions, make it conducive to grow a wide variety of horticulture crops comprising of fruits, vegetables, root and tuber crops, flowers, ornamental plants, medicinal and aromatic plants, spices, condiments, plantation crops and mushrooms, which form a significant part of aggregate agricultural produce.

Cultivation of horticultural crops provides an important source of livelihood and generates substantial employment on account of being labour- intensive for the rural population of India. Fruits and vegetables are also rich source of vitamins, minerals, proteins, carbohydrates, etc., which are essential to ensure nutritional security of the people. Thus, cultivation of horticultural crops plays a vital role in the prosperity of a nation and promotes the health and happiness of its people.

India is next only to China in vegetable production with an annual production of 87.53 million tons from 5.86 million hectares, which is 14.4% of the world production. Adoption of high yielding cultivars and FI hybrids and suitable production technologies has largely contributed to higher production and productivity. With changes in incomes and consumption patterns, demand for vegetables has also increased, with per capita consumption of

vegetables increasing from 95 grams to 175 grams per day over the last decade. More than 40 kinds of vegetables belonging to different groups, namely cucurbits (cucumber, gourd, bitter melon, pumpkin), Cole crops (cabbage, cauliflower, broccoli, turnip), solanaceous (eggplant, pepper, tomato, chilli), root and leafy vegetables are grown in different agro-climatic situations of the country.

Andhra Pradesh being endowed with diversified agro-climatic conditions has a vibrant horticulture sector which has been identified as one of the growth engines for increasing overall agriculture growth. Andhra Pradesh produces 4% of the country's vegetable production with the area under vegetable production increasing steadily since last two decades. Small and marginal farmers account for 83 per cent of land holdings and 46% of operated area in Andhra Pradesh as per agriculture statistics of the Department of Agriculture in the state. Irrigation covers 35% of net sown area while the remaining 65% of net sown area is rain-fed. The agricultural production system in the state of Andhra Pradesh is multi-cropped with diversified systems of both agricultural and horticultural crops, separately and together. The state has an area of 203 thousand hectares under vegetables cultivation with a production of around 3.4 million tons in 2009-10.

Andhra Pradesh took up a major programme under Rashtriya Krishi Vikas Yojana (RKVY) to boost production of the major horticulture crops across the State. The intervention comprised of construction of permanent *pandals* and trellises for protected cultivation of horticulture crops through a cluster approach, duly considering local agro-climatic conditions/needs/crops/priorities, and providing market linkages for ensuring remunerative prices to the farmers. Boosting the horticulture sector would not only ensure additional income to farmers but also meet the demands of changing nutritional requirements of the people.

Intervention

The major vegetables grown in the state are tomato, onion, tapioca, brinjal and okra. The main vegetables grown across different production clusters are shown in the table below:

Main Production Clusters - Vegetables in AP	
Vegetables	**Main Production Clusters**
Tomato	Kurnool, Chitoor, Rangareddy, Prakasam
Onion	Kurnool, Medak, Cuddapah, Mahabubnagar, Rangareddy
Tapioca	East Godavari
Bhendi	Kurnool, Krishna, Warangal, Vizag, Nalgonda
Brinjal	Vizag, East Godavari, Nizamabad, Rangareddy, Anantpur, Krishna
Beans	Vizag, Medak, Nizamabad, Rangareddy

Cultivation of these vegetables was adopted in a cluster approach in 232 potential *mandals* of various districts. Thereafter, producers' hubs and collection centers to support the farmers in the entire value chain was systematically developed to ensure reasonable price for their produce.

The Department of Horticulture introduced the system of cultivation of vegetables on *pandals*, both permanent and semi-permanent to increase productivity of twining vegetables and trellis system for indeterminate type of tomato hybrids in 2008-09 under RKVY Programme.

In general, such vegetables need proper support for their growth and development. *Pandals*/trellises are special structures used for twining vegetables. The weak climbers utilize this support, which protects the produce from soiling and increases exposure to sunlight and aeration, thereby increasing the number of flower buds, ultimately resulting in more fruit of superior size and quality.

In the 3 years from 2008-09 to 2010-11, permanent *pandals* were erected for gourd clusters covering 4696

acres at 50% assistance not exceeding Rs 6000 per acre, at a total cost of Rs 17.46 crores benefitting more than 5200 farmers. For tomatoes, trellises were set up 2844 acres with 50% subsidy, not exceeding Rs 7500 per acre, covering almost 3200 farmers at a cost of Rs 2.20 crores.

Outcome

On an average, farmers have realized yield of 30 T/acre of tomatoes by growing under trellis method, with added advantage of superior quality of the crop. Through semi permanent pandals the yield of gourds recorded per acre is 11.25 metric tonnes; on an average, additional yield of 2.5 T/acre has been obtained in comparison to normal method. The fruit colour and quality is also improved, making it less susceptible to pests.

This intervention has helped in increasing vegetable production of the State, which has increased from 53.11 Metric Tonnes in 2007-08 to 61.60 Metric Tonnes in 2010-11.

Case Study

Name of the Farmer:		Akkabatla Veera Ganeswararao
Village and Mandal	:	Penakanimetta Savaram, Kovvur.
District	:	West Godavari District
Crop	:	Tomato
Area	:	1 acre
Subsidy Pattern	:	50% subsidy, not exceeding Rs.7500/acre.

The farmer earlier used to grow tomato hybrid varieties through traditional methods and over a period, realized lesser profits, and waited for an opportunity to access the latest technologies to multiply the net profits. At this juncture the Horticulture department took him to Raipur for an exposure visit on trellis method of cultivation of vegetables during 2008-09. This motivated him to adopt trellis method to grow tomato crop over an area of 1 acre in his land.

The farmer was provided with a subsidy of Rs.7500per acre to meet the expenditure for erection of trellis and he was encouraged to install drip irrigation to further increase yields. Subsequently, by using fertigation he has not only increased efficiency of fertilizer usage and minimized the cost on fertilizers, but also benefitted on account of saving time and labour.

The farmer today is satisfied with the harvest of 15 T/acre by cultivating tomato with trellis method, as against his earlier yield of 7-8 T/acre under the traditional method.

His gross income is Rs.1.40 lakhs, with the expenditure of Rs.70, 000/- incurred

towards cultivation and installation of Drip Irrigation System. The net income is Rs.70,000/acre. The farmer has expressed his confidence to increase the net returns in the ensuing seasons, when he would no longer have burden of paying for the installation of drip irrigation system.

The farmer today is a role model to other farmers for taking up modern technology and cultivation methgods.

Case study

Name of the Farmer: Chukka Sambashiva Rao
Village : Gundavaram
Mandal : Chebrolu, Guntur District
Crop : Bottle gourd
Area : 1 acre
Subsidy : Rs. 30,000

Under RKVY scheme by erecting of semi-permanent *pandals*, the farmer cultivated bottle gourd in an area of 1

acre in 2009-10. The total cost incurred by the farmer was Rs.65835 towards various components like bamboo poles, G.I. pipes, twine, etc., required for erection of semi-permanent *pandals*. The growth of bottle gourd vines was luxuriant and promoted vigorous flowering. The yield recorded per acre is 11.25 T/acre, with an average increase in yield of 2.25 T/acre in comparison to normal method in the previous years. The farmer can maintain the semi-permanent *pandals* for a minimum period of three years, cultivating 3 crops per year on the same structures. Even though the erection charges are more in initial stages, substantial net profit will accrue in the next two crops.