

Off-season high value vegetable production

under low cost poly-house in Chotanagpur plateau in Jharkhand

Bhoopendra Singh¹ and Devi Singh²

S. H. Institute of Agriculture, Technology and Sciences, Allahabad (Uttar Pradesh) 211 007

Farmers of Jharkhand are facing the problems of fluctuating monsoon, resource poorness, and small and scattered land-holdings. However, the agriculture is the main source of livelihood of rural population but reduction in productivity day-by-day is forcing them to migrate in search of job. Majority of farmers are practising crop cultivation in traditional way, which is not so remunerative. The district forms the northern edge of the Chotanagpur plateau. Its climate is moderately hot and humid. The average rain fall is 1,192 mm and the temperature ranges between 4°C in winter and 42°C in summer. The Chotanagpur plateau region offers opportunity for production of off season vegetables cultivation under low-cost poly-house.

Key words: Farmer, High value, Poly-house, Production, Vegetable

THE recent advanced plastic has been a unique gift to the agriculture and its manifold used in the form of poly-house. polythene sheet made poly-house as favourable micro-climate for off season vegetable production due to its unique attributes like light weight, easy to handle, resistant to hail, frost and cheaper in cost. It has been attaining popularity for production of off-season vegetable production with better quality.

Construction of low-cost poly-house

The low-cost poly-house of 100 m² area constructed by bamboo/angle iron are the common materials used for the framework and tied with the help of wire of a poly-house which is a framed structure covered with ultra-violet stable polythene film of 150 to 200 μ thicknesses the commonly used covering materials. The common shapes are gable and gothic. During summer there is a need to use 60-75% shading net for the protection against scorching sunlight. The total estimate

cost for 100 m² area will be about ₹ 25,000. There is no need of heating and cooling system for low-cost poly-house.

Advantage of low-cost poly-house

The advantages of low-cost poly-house are: Early off season nursery production, Shortening of the nursery period, Off season production of high value vegetable, Higher productivity and superior quality of the produce, Effective utilization of different resources like seed, fertilizers, water, labour etc. Vegetable crop can be grown under adverse climatic condition when it is not possible to grow them in open

condition, Vegetable cultivation can be grown round of the year in the particular place, organic farming of vegetable is easier in poly-house, Easy to perform plant-protection measures, Farmers can earn better price for their produces comparative to traditional method, and Saving of water and energy due to high efficiency of irrigation method (drip irrigation) and supply of water by gravitational force.

Choice of vegetable crops under low cost poly-house cultivation

The choice of the vegetable crops dependent upon the resources available, size, structure of poly-house



Fig. 1. Nursery raising under low-cost polyhouse



Fig. 2. Tomato cultivation under low-cost polyhouse



Fig. 3 Capsicum cultivation under low-cost polyhouse



Fig. 4. Cucumber cultivation under low-cost polyhouse

and local market demand of vegetable. The generally high value vegetable are preferred for poly-house growing the three major crop cultivation under low cost poly-house in the Chotanagpur plateau region in Jharkhand i.e. tomato, cucumber, capsicum in sequence and summer vegetable production i.e. leaf vegetable like *palak*, *dhaniya* etc.

Training and pruning: Tomato plant requires proper training and pruning for good qualitative yield, right from few day after transplanting 25 to 30. The main stem should be trained on bamboo support or plastic binder twine with over head support wire run about 2.4 to 3 m above the surface. The side shoot should be removed properly without injury of main stem all the leaves below the cluster to be picked up should be removed. In capsicum scaffold, branches should be removed and only two primary branches and with two secondary branch each should be kept and the remaining should be removed. The cucumber plant is trained vertically with the help of nylon thread and all primary branches are pinched of two nodes at regular interval and fruits are allowed to set only on main branches.

Nutritional management: Fertilizers dose of 250 kg farmyard manure 3.5 kg N, 1.2 kg P, 3.9 kg K, are optimum for protected vegetable cultivation

for 100 m² area. Full dose of farmyard manure, P, K, and half-dose of N should be applied at the preparation of bed and rest of the N should be applied in two split dose, first one month after transplanting and second at flowering.

Insect and pest control

Fruit worm: The moths and caterpillar damaged fruits and made unfit for consumption and fetch/marketing. The moths are brown to yellowish-brown and measure about 4 cm in length with slight stripes. The caterpillars are greenish with dark brown grey line along the side of the body.

Control: Deep ploughing after harvesting the crop to expose the pupae for natural killing afford good protection and give three spray at 3-week intervals starting from the initiation of flower with any of the following insecticide using 250 litre water/ha 2 kg carbaryl 50 WP or 500 ml cypermethrin 10 EC.

Aphid: They suck the sap from the leaves, petioles and young shoots and cause considerable damage to the plant. They also transmitted mosaic disease.

Control: Spray 1 litre malathion 50 EC or 1 kg of carbaryl 50 WP in 250-300 litre dissolve of water/ha. at 15-20 day interval.

Bacterial wilt: It is common disease of tomato and capsicum which is caused by *Pseudomonas solanacearum*. Its typical symptoms are wilting, stunting and yellowing of the foliage and finally collapse of the entire plant.

Control: Proper crop rotation with cereal, pulses crops will check the incidence of the

disease chemical control of spray of spectrocyline.

Leaf curl: The characteristic symptoms curling, rolling twisting and puckering of leaves and deformation of flowers. Newly developed leaves show chlorosis and old become leathery and brittle.

Control: Soil application of carbofuran @1.25 kg ai/ha and at the transplanting of root and its treatment with fungicide.

SUMMARY

In Jharkhand the productivity of vegetable crop is very low due to divers climate conditions and number of factors like abiotic stresses (rainfed conditions, moisture stresses during summer, poor in soil nutrient due to gravel soil) and biotic stresses (bacterial wilt of tomato and capsicum etc). The protected cultivation provides, best alternate for the regulation /modification in the above factors as per the requirement of crop to realize its maximum potential.

¹Subject Matter Specialist (Horticulture), Krishi Vigyan Kendra (National Rice Research Institute, Cuttack) Koderma, Jharkhand and

²Associate Professor, Department of Horticulture, SHUATS, Allahabad. Corresponding author's e mail: bhoopendraakola@rediffmail.com



*Plant trees,
Conserve water,
Protect environment.*

