

Bamboo Polyhouse Project

Bamboo polyhouse is a type of protected cultivation. Here we give a “project Profile” for Polyhouse of size 128 sqm (1377 sq. ft). About 1.3 Guntha polyhouse project is conceptualized to help small and marginal farmers to grow vegetables year-round (at least 4 Cycles) in an entrepreneurial mode. Bamboo is used as structural material instead of Galvanized iron pipes because of its availability at lower cost. One of the drivers of this Project activity is to keep the capital cost of the playhouse as low as possible to make within the reach of small farmer.

Heavy rainfall and high velocity wind often damages the crops grown in open-fields. Use of polyhouse structure will reduce this damage and help farmers ensure production of farm-fresh marketable commodities. One more benefit of growing vegetables in polyhouse is enhanced photosynthetic efficiency because polyhouse enables accumulate the carbon dioxide from plants (greenhouse effect) inside the polyhouse which allows the plants to grow faster.

The Project activity can be disseminated through Skill development training to the unemployed youth engaging skilled and unskilled labour in the villages. This can also be promoted as an activity for “Secondary-income” to farmers. Seven units were recently constructed (2 in Palghar Dist, Maharashtra, 3 in Bhore taluka of Pune District and 2 at Panvel, Dist Raigad of Maharashtra) through M Tech students research engagements @ CTARA, IIT-Bombay

Total cost of construction of such polyhouse is around Rs 1.25 to Rs 1.40 lakhs.

Timeline and crop plan and revenue expected with 3 vegetable crops is given in Table 1 and Table 2 respectively as below:

Table 1: Cropping plan for the Polyhouse

Timeline in Months →	1 to 3	3 to 6	6 to 9	9 to 12
Area 1: 45 sqm	Tomatoes (5months)		Tomatoes (5 months)	
Area 2: 45 sqm	Capsicum (8 to 9 months)			Beans (3 months)

Table 2: Possible annual income from bamboo polyhouse (128 sqm area)

Sr. No.	Area	Crop	Productivity		Production per year		Market Rates*		Annual Income	
1	45 sqm	Capsicum	12.6	kg/yr/sqm	567	Kg/year	40	Rs/kg	22680	Rs/year
2	45 sqm	Tomato (2 cycles)	20.6	kg/yr/sqm	927	Kg/year	20	Rs/kg	18540	Rs/year
3	45 sqm	beans	3.25	kg/yr/sqm	146.25	Kg/year	25	Rs/kg	3656.25	Rs/year
Total production per year from Bamboo polyhouse					1640.25	Kg/year			44876.25	Rs/year

Fig 1 and Fig 2 provide photographs of Bamboo polyhouses constructed using two types of Shed-nets to evaluate effect of choice of Shednet material.



Fig 1: Polyhouse using Conventional Shed-Net



Fig 2: Polyhouse using ZnO₂ coated Shed-Net for Improved Photosynthesis

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