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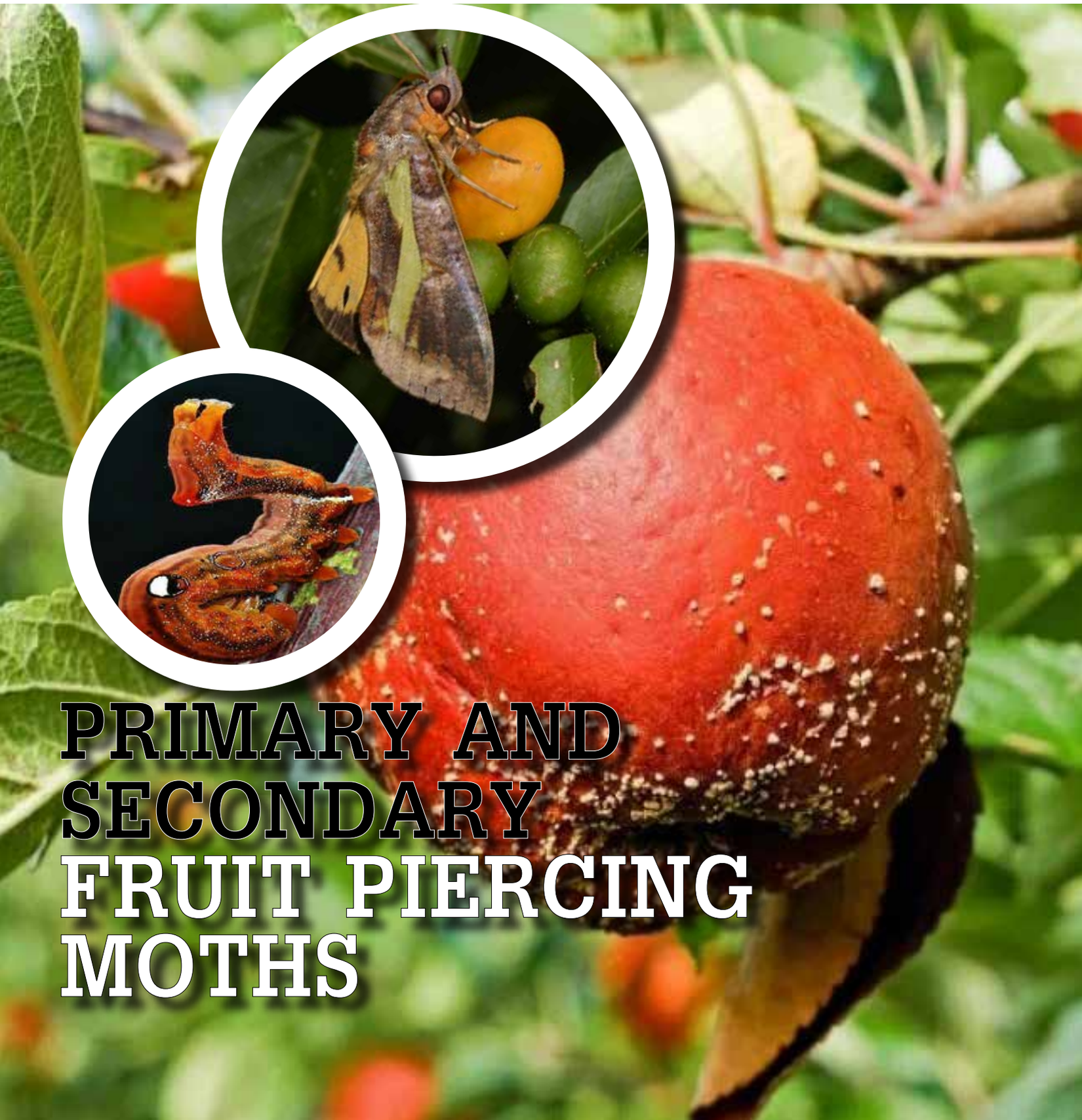

PRIMARY AND SECONDARY FRUIT PIERCING MOTHS

HI-TECH HORTICULTURE IN MAHARASHTRA

A SUCCESS STORY OF PROTECTED CULTIVATION

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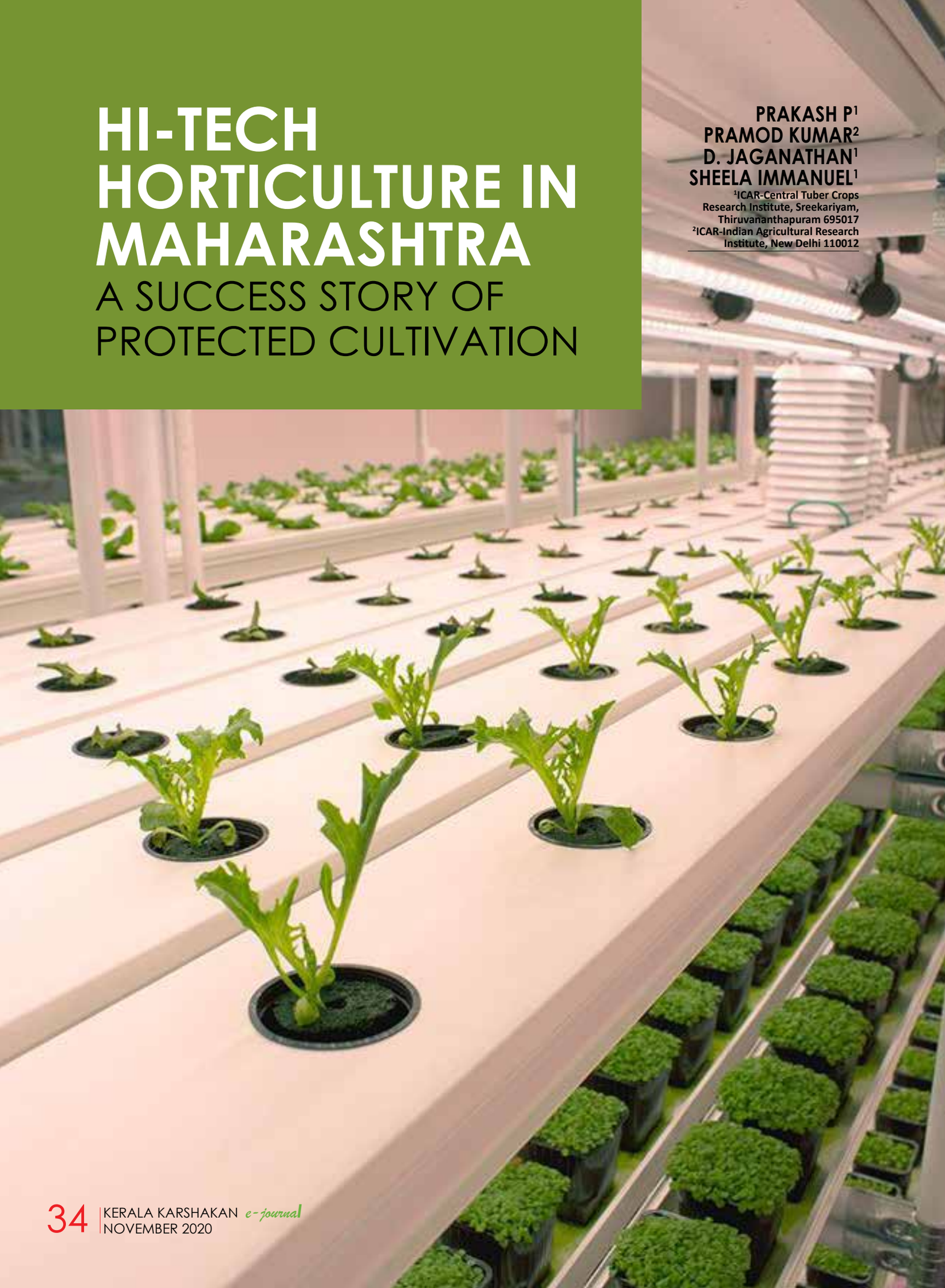


Introduction

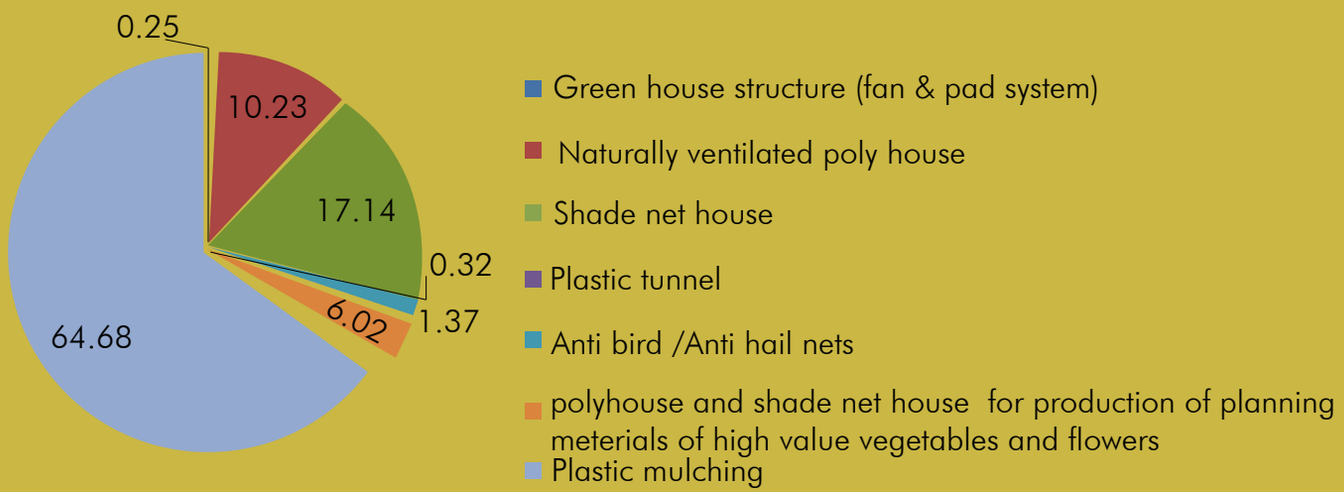
Hi-tech horticulture is a technology which is modern, less environment dependent, capital intensive and which has the capacity to improve the productivity and farmer's income. Some of the technologies which form the basis of hi-tech horticulture are protected cultivation, genetic engineering, micro irrigation, micro propagation, fertigation, precision farming, high density planting, tissue culture, use of bio inputs and use of remote sensing/GIS. Protected cultivation is a highly capital intensive technology,which creates a favorable environment for cultivating the commercial crops, offsetting the detrimental effects of the prevailing biotic and abiotic components.The various methods of protected cultivation are greenhouses (climate controlled, semi climate controlled, naturally ventilated, raised arch and rain shelters) and net houses (insect proof net houses, shade net houses and rain shelters cum insect proof net houses). In the context of climate change, shrinking of land holdings, water scarcity, incidence of pests and diseases, ever increasing population, low yield under traditional cultivation and changes in consumer preference are the major reasons for switching over to protected cultivation.To address all these challenges, the protected cultivation has been gaining importance in different parts of the country including Maharashtra. The state government of Maharashtra has been emphasizing protected cultivation to boost farmers income by realizing the advantages of protected cultivation viz., higher productivity, better quality of produce, nursery raising and hardening of plants, better pestand disease management, reduced use of pesticides, off season cultivation and efficient use of resources. Keeping this in view, a success story on hi–tech horticulture in Maharashtra is detailed below.

Status of protected cultivation in Maharashtra

The area covered under

Table 1: Area under protected cultivation in Maharashtra by NHM

Particulars	Area in ha
Green house structure (fan & pad system)	40.6
Naturally ventilated polyhouse	1639.1
Shade net house	2746.9
Plastic tunnel	51.0
Anti-bird / anti-hail nets	219.0
Polyhouse and shade net house for production of planting materials of high-value vegetables and flowers	963.9
Plastic mulching	10364.2
Total	16024.9



Particulars	Estimated unit cost(₹)	Pattern of assistance
1. Green houses (naturally ventilated system) a) 500 to 1008 b) 1008 to 2080 c) 2080 to 4000	 935 per sq.m 890 per sq.m 844 per sq.m	50% of the total cost limited to 4000 sq.m per beneficiary
2. Shade net house	710 per sq.m	50% of the total cost (tubular structure) limited to 4000 sq.m per beneficiary
3. Antibird /Anti hail nets	35 per sq.m	50% of the total cost limited to 5000 sq.m per beneficiary
4. Plastic mulching	32000/ha and 36800/ha for hilly areas	50% of the total cost limited to 2 ha per beneficiary

S.No	Name of the crop	Popular varieties	Economic life (years)
1	Rose	Goldstrike, Revival and Avalanche	Six
2	Gerbera	Prime rose, Intense and Salvadore	Four
3	Carnation	Baltico, Kiro, Gaudina and Penelope	Three
4	Capsicum	Inspiration, Budgetta and Indira	One

Name of the crop	Total cost (lakhs in in ₹./1000 sq.m)	Net income (lakhs in in ₹./1000 sq.m)	B:C ratio (%)	Pay back period(years)
Rose	4.49	1.64	1.58	2.34
Gerbera	4.59	1.63	1.60	2.03
Carnation	4.60	2.22	1.66	1.48
Capsicum	3.14	1.04	1.54	2.07

Fig 2: View of Floriculture park at Talegaon, Pune

protected cultivation promoted by National Horticulture Mission (NHM) in Maharashtra during the period 2005-06 to 2017-18 was estimated to be 16024 ha (Table 1), of which the share of plastic mulching was the highest (65%) followed by shade net house (17%), naturally ventilated polyhouse (10%), polyhouse and shade net house for production of planting materials of high-value vegetables and flowers (3.89%), anti bird/anti hail nets (1.23%) and green house structure (0.25%) (Fig 1).

Promotion of protected cultivation

Pune district has emerged as a major producer of horticultural crops in Maharashtra. There are 6 government nurseries and 43 private nurseries in the district, which satisfactorily meet the requirement of planting materials both for protected and open field conditions. The district is blessed with conducive climate and other resources for growing various horticultural crops. The major horticultural crops grown in the district are rose, gerbera, carnation, capsicum, grape, pomegranate, custard apple, etc. Pune district has been identified as an Agri Export Zone (AEZ) for grape and grape wine, flower crops, pomegranate and onion. The presence of ICAR institutes in the district and its vicinity viz., National Research Centre for Grapes, Directorate of Onion and Garlic Research, Directorate of Floriculture and National Research Centre for Pomegranate have been the boon for horticultural based agri businesses. The Maharashtra State Agricultural Marketing Board has established a horticulture training centre at Talegaon-Dabhade, Pune for providing training to the farmers on greenhouse management with a focus on floriculture. Besides, Maharashtra Industrial Development Corporation (MIDC) has developed a Floriculture Park in 300 acres at Talegaon, Pune for meeting the demands of domestic and international markets.

Floriculture Park at Talegaon:

The Park consists of 102 grower units with an average landholding of 1.35 ha, 2 nurseries and 1 post-harvest technology centre. The MIDC has developed sufficient infrastructural facilities in the park for promoting horticultural business. Post harvest facilities such as grading, pre-cooling, cold storage and packing arrangements also encourage the horticultural business. Among all the plots, 75% of the plots have been developed for commercial floriculture units. 25% of the plots are developed with financial assistance from banks. The peak season for the export of flowers is September to March. In the domestic market the demand exists during April to June also. Lean season is during July to August when there is little /no demand. 'Berry roses' and 'Petals' are the companies located in MIDC floriculture park at Talegaon who export flowers to Japan, European and Gulf countries. Talegaon exports about 60% of the total flowers production and the remaining about 40% of the flowers are sold in the domestic market through traders in Pune, Nagpur, Mumbai, Hyderabad, Bengaluru, Delhi and Kolkatta.

Facilities available

- Assured water supply
- Maintenance of industrial areas
- Drainage systems
- Modern transporation facilities
- Electricity
- Fire station
- Cold storage units
- Post harvest treatment plants
- Market expertise and intelligence

Pune district flowers growers association play an important role in the production and marketing of flowers in the region. It helps farmers by providing knowhow and technology for producing flowers. The association not only provides inputs in the form of fertilizers and pesticides, but also support them for selling their produce both in the domestic as well as national and international markets.

Subsidy for promotion of protected cultivation

The Government of India is providing subsidy at 50% of the total cost as given below for adoption of this technology by the farmers with a maximum ceiling up to 4000 sq.m area per beneficiary under National Horticulture Mission (NHM).

Economics of protected cultivation

The produce from horticultural crops viz., rose, gerbera, carnation and capsicum are sold in the domestic as well as export markets (Fig 4). The investment in the protected cultivation is economical as reflected in the net income and benefit cost ratio. The net income realized from carnation

Fig 3: View of protected cultivation of horticultural crops Economics of protected cultivation

Fig 4: Marketing of flowers grown under protected cultivation

was ₹ 2.22 lakhs followed by rose (₹1.64 lakhs), gerbera (₹1.63 lakhs) and capsicum (₹1.04 lakhs) per year as given in the table.

The benefit cost ratio with 12% discount rate was estimated which was highest for carnation (1.66), followed by gerbera (1.60), rose (1.58) and capsicum (1.54). Overall, the cultivation of horticultural crops under protected cultivation was remunerative and profitable.

Conclusion

Government of Maharashtra has taken several initiatives for the promotion and development of protected cultivation in the state.

Pune district has emerged as the major producer and exporter of flowers in the country which is attributed mainly due to the establishment of MIDC floriculture park. The investment in protected cultivation was found to be economically feasible and profitable to the farmers and agri entrepreneurs.

Thus, there is a need to replicate similar models in other states where flowers are grown in large areas to meet the ever growing demand of flowers both at the domestic and international markets which would ultimately improve the socioeconomic conditions of farmers and other stakeholders.

To conclude, the coordination and linkages between research-extension-industry-farmer-market has to be strengthened to boost the horticulture industry in India in view of Atmanirbhar Bharat i.e. 'Self Reliant' and 'Make in India Mission'.