

Horticulture based farming system model

for income and livelihood

Poonam Kashyap¹, A S Panwar², A K Prusty¹, M P Singh³, Nisha Verma⁴, M Shamim⁴, Sunil Kumar⁴ P C Jat¹, Devendra Kumar¹ and Sumit Kumar⁴

ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut, Uttar Pradesh 250 110

The integrated farming systems approach is considered to be most powerful tool for enhancing profitability of farming systems, especially for small and marginal farm-holders. In fact, our past experience has clearly evidenced that the income from cropping alone is hardly sufficient to sustain the farmers' needs. With changing scenario, farmers' requirements for cash have also increased to improve their standard of living. In this context, horticulture provides excellent opportunities in raising the income of farmers even under abrasive conditions. The cultivation of fruit and vegetables under horticulture based farming plays an important role in the prosperity of nation along with health, happiness and prosperity. ICAR-Indian Institute of Farming Systems Research (IIFSR), Modipuram, Meerut has been undertaking research activities at farmers' field under Farmer FIRST Programme (FFP). Through horticulture based farming systems, the resources are effectively utilized, conserved well and improves environment.

Key words: Integrated farming system, Horticulture, Livelihood, Small-marginal farmers

A success story from Former FIRST programme (FFP), is being presented here where efforts have been undertaken to enhance the income of a marginal farmer through development of horticulture based farming system at his field. Shri Charan Singh, S/o Shri Harish Chand, adopted farmer of Bhangela village under FFP has been identified as a Farm innovator (Fig. 1). He is having only 0.4 ha of land with one buffalo and one cow, cultivating sugarcane-ratoon-wheat system for years which has not been able to give him the returns enough to meet the needs of his family. In his benchmark system, he has been able to get net returns of ₹ 60,075 from crops and ₹ 48,000 from animal component. He has been adopted under the FFP and is advised through the training, exposure visits and technical guidance to diversify his cropping system with cultivation of different exotic vegetables like broccoli, lettuce,

Chinese cabbage, cherry tomato, leek and fodder maize with boundary planation of papaya to minimize the risk of heavy dependence on single crop besides generating year round income. The land allocation of 0.4 ha has been reallocated as follows:

Besides bringing the improvement

in crop module, nutritional management of milch animals has also been done through mineral mixture supplementation for enhancing milk production. The improved system could gave net returns of ₹ 2,03,170 with cost of cultivation of ₹ 90,930. The Exotic



Fig. 1. A view of Shri Charan Singh's field.



Fig. 2. Dignitaries from ICAR along with team of scientists at adopted farmer's field.

Table 1. Improved horticulture based farming systems developed

Farming system	Component	Gross Returns (₹)	Cost of Cultivation (₹)	Net Returns (₹)
<i>Improved Horticulture based farming system</i>				
<i>Crop Module</i>				
0.15 ha	Broccoli_2 crops (Oct-April)-Maize (F) (June-Sept)	35,750	10,800	24,950
0.10 ha	Lemon Grass (Feb-Dec) + Leek (Sept-April)	61,250	4,200	57,050
0.03 ha	Lettuce-red (Sept-April)-Tomato (April-July)	12,300	3,360	8,940
0.03 ha	Lettuce-green (Sept-April)-Chilli (April-Aug)	13,500	2,310	11,190
0.03 ha	Chinees Cabbage (Sept-April)-Okra (May-Aug)	13,500	2,460	11,040
0.03 ha	Cherry Tomato-2 crops (Sept-July)	19,200	4,800	14,400
0.03 ha	Papaya Boundary Plantation at nursery area	18,000	3,000	15,000
	Total Returns	1,73,500	30,930	1,42,570
<i>Animal Module</i>				
	1 Buffalo + 1 Cow	1,20,600	60,000	60,600
	Total Returns from system (0.4 ha.)	2,94,100	90,930	2,03,170
	B:C Ratio	3.23		
<i>Benchmark Crop Module</i>				
	Sugarcane based system	82,575	22,500	60,075
<i>Animal Module</i>				
	1 Buffalo + 1 Cow	93,000	45,000	48,000
	Total Farm 0.4 ha	1,75,575	67,500	1,08,075
	B:C Ratio	2.60		

vegetable based cultivation technologies popularized by ICAR-Indian Institute of Farming Systems Research, Modipuram, have also spread to the adjoining blocks in the district, where large numbers of farmers have now started vegetable cultivation as an option for their income improvement (Fig. 2). As there is a huge demand of fresh vegetables in the nearby markets and well connectivity of roads to Haridwar and Dehradun, the farmer is supplying the produce directly to the markets in the nearby towns and fetching a good price in returns.

Economics

With adoption of diversified exotic vegetable based cropping system, the net returns from 0.4 ha has increased to 119 % (Table 1). The total net returns have been increased from ₹ 92,575 to ₹ 2,03,170 with only 9.5% increase in the cost of cultivation. The contribution from animal module to the net income has been enhanced by 26 % in the improved farming system while there was significant improvement of 219 % from the crop module solely due to diversification by exotic vegetables as compared to existing sugarcane based system. The benefit cost ratio was enhanced from 2.60 in the existing farming systems to 3.23 in the improved system. Thus, the potential of horticultural crops in enhancing the income of farmers has proved worthy at farmer's field.

¹Senior Scientist, ²Director, ³Principal Scientist, ⁴Scientist. Corresponding author's e-mail: directoriifsr@yahoo.com

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indfarm@icar.org.in