

Transformation of traditional agriculture into successful IFS Model

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Zeal to acquire knowledge and its application under real farm situation has completely changed the scenario of farm of Shri Pukh Raj, a resident of village Balarwa in Jodhpur district. A massive change at his farm can be seen as he has started growing new varieties and hybrids of crops and adopted IPM in vegetables with growing seedlings in net house. In a farmer-scientist interaction arranged at his farm under FFP, he was apprised with protected cultivation, rain water harvesting and floriculture. He adopted all these ventures perfectly and at present he is earning 10-12 lakhs of additional income by growing cucumber under protected cultivation and Pusa Narangi marigold as new crops. The quality of dried leaves of mint grown at his farm has been improved, as drying is done in high walk-in tunnel facilitated at his farm under FFP. He is regular buyer of mineral bricks for his animals from CAZRI Jodhpur. All these practices have increased his income by 35-40%. His is now a team leader and the GAP adopted by him are spreading rapidly in the nearby farms.

Key words: Farm income, High walk in tunnel, Marigold, Organic nutri-garden

SHRI PUKH RAJ, resident of Balarawa village holds 15.0 ha of land with a joint family of three brothers. Before the intervention of Farmer FIRST Programme FFP, he was growing traditional crops like: Pearl millet, Greengram, Moth bean and Cluster bean in *Kharif* and Wheat, Mustard and Onion in *Rabi* season along with some vegetable and fodder crops for his milching animals. In spite of all efforts, he was not getting satisfactory income from these ventures as he was facing problems of

quality seeds, depleting soil fertility and water table, un aware about new agro-techniques, scanty rainfall, unstable market prices, shortage of man power, increasing salinity in soil, etc. He became FFP farmers with the launch of Farmers FIRST Programme (FFP) in 2016-17. Looking to his endeavour and cooperative attitude, he was motivated to adopt new agro-techniques for enhancing his farm income.

Crop Husbandry: Demonstration of improved hybrid/ varieties of Pearl

millet (MPMH-17), Chillli (RCh-1), *Kharif* Onion (NHRDF-3 and Pusa Riddhi) and Wheat (RAJ-4083), Mustard (PM-26), Garlic (G-50) and Tomato (Arka Rakshak and Arka Samarat) were laid out at his farm and field days were organised to motivate other farmers. Performance of all these varieties was satisfactory and the yield was improved by 20-28% over locally grown crops. The wheat variety RAJ-4083 is tolerant to terminal heat stress which is common in area, resulting increase in yield from 30 to 35 q/ha



Fig. 1. Onion var. NHRDF Red 3 demonstration at farmers field.



Fig. 2. Chillli var. RCh 1 demonstration at the field of farmers.

during 2019-20. Similarly, Pearl millet hybrid MPMH-17 was proven superior hybrid, awns at spike protects bird feeding and straw remains green till maturity. The performance of Pearl millet hybrid MPMH-17 (13 to 16.5 q/ha under rain fed condition) was highly admired by Pukh Raj and other farmers.

Introduction of IPM in vegetables and net house for nursery: This farmer was facing severe problem of sucking pest in chilli and borers in brinjal and okra. The IPM practices developed at ARS, Mandor were demonstrated at his farm and results were very encouraging. Due to these problems farmers in the area, farmers have stopped growing chilli crop. They are again started growing chilli and other vegetables and earning good profit. Along with other farmers, Shri Pukh Raj was also motivated to grow seedling of tomato, brinjal, cabbage and cauliflower in net house raised with 40 mesh nylon net. Seedlings grown in these net houses remains virus free for a very long duration.

Organic Nutri-garden for home consumption: Organic nutri-garden was established at his farm along with 100 other farmers by providing seed kit of different vegetables with papaya var. red lady-786, Moringa var. PKM-1, Ber var. Thai apple, Spinach, etc. for house hold use. He was advised to purchase vegetable saplings from the nursery of ARS, Mandor on cost basis.

Initiation of floriculture: Pusa Narangi marigold was managed from IARI, New Delhi and it was introduced at his farm in 0.1 ha area along with nine other farmers. Improved and attractive flowers of this variety has huge demand in the local market.

Establishment of protected cultivation structure, rain water harvesting and micro irrigation system: He was motivated and guided to establish protected cultivation structure at his farm at subsidised rate through Department of Horticulture, Government of Rajasthan. He managed this with the help of FFP scientists and he is growing cucumber and other vegetables under protected environment and within two years, the cost of establishment of structure has

Table 1. Net income earned by farmer from various components of IFS set up at his farm

Enterprises and intervention	Area (ha)	Before FFP (₹)	After FFP (₹)
Pearl millet- MPMH 17	1	15,000	21,000
Wheat-RAJ 4083	1	35,000	42,000
Groundnut- White grub management	3	1,00,000	1,50,000
Chilli-RCh-1 with IPM	2.5	1,00,000	1,35,000
Garlic-G 50 1	1,10,000	1,30,000	
Onion-NHRDF Red 3	0.5	40,000	65,000
Marigold- Pusa Narangi	0.4	30,000	50,000
Mint – Drying mint leaves in high walk-in tunnel	0.5	75,000	1,10,000
Coriander- ACr-1 and GDLC-1	1	40,000	60,000
Animal Husbandry- Improved mineral mixture and Fodder- Napier variety Co-4	1 unit of 4 cows and 2 buffaloes	1,00,000	1,40,000
IPM in brinjal	0.1	10,000	18,000
Total		6,55,000	9,21,000
Protected cultivation-Cucumber and other high value vegetables	2 unit each 0.4 ha	-	8,00,000
Marigold- Pusa Narangi	0.1 ha	-	25,000
Grand Total		6,55,000	17,46,000

been recovered by him. He also established one rain water harvesting system of 30 × 30 m size with 5 feet depth towards the low lying end of his farm. The water collected in the pond during rainy season is utilised by mixing it with moderate saline water of his tube well for irrigating crops through drip and sprinkler system.

Post-harvest processing of mint/ chilli: One high walk in tunnel was established at his farm with the objective to improve quality of dry mint leaves and chilli grown at his farm. This high walk in tunnel was raised at an appropriate place by fixing U shape GI iron pipes of 0.5 inch size at a fix interval in tunnel shape. The height of the tunnel was kept 8 feet. These shape iron pipes were covered with white polythene sheet of 200 micron and both the opening of the tunnel were closed with the white polythene sheet with provision of ventilators. The products to be dried in these high walk in tunnel were spread inside the tunnel on a black polythene sheet of 20 micron. The total inside area of tunnel is 50 M² for spreading the freshly harvested products. The total initial cost of the high walk in tunnel was ₹ 20,000 per unit.

Compost unit: He was motivated to make compost through a training given under FFP programme. He is presently making compost and utilising all his farm waste in compost making by constructing compost pits.

Animal Husbandry: The farm

ladies were given training on new techniques of dairy husbandry under FFP. The dairy unit consisting of 4 cows and 2 buffaloes at the farm of Pukh Raj were vaccinated against the common diseases and deworming was also done through medicines. The improved mineral mixture bricks developed by CAZRI, Jodhpur was introduced for milching cattle and results are very encouraging. These intervention improved the milk yield by 7-10% resulting increased income from this unit. Improved variety of Co-4 Napier grass was also planted at his farm for providing green fodder during summers. He is feeding chopped napier grass along with dry fodder of pearl millet and other crops.

The net income of different interventions introduced at the farm of Shri Pukhraj indicates 40% increase in income. However, with the cultivation of cucumber in 2 units of protected cultivation each having area of 0.4 ha, he is earning additional income of ₹ 8-10 lakh per year. The farmer scientist interaction organized at his farm motivated the students to appear in JET and one from his family succeeded in getting admission in B.Sc. Agri. degree course from constituent College of SKRAU, Bikaner (Rajasthan).

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