

Livelihood security through integrated farming systems: A novel approach for farmers under Haroti region

J P Tatarwal*, Rakesh Kumar Yadav, Baldev Ram, Mahendra Singh, B L Dhaka and Pratap Singh

Agricultural Research Station, Ummedganj, Kota, Rajasthan 324 001

Ghanshyam Yadav a conventional farmer having 3.25 ha of land was practicing an aged-old-traditional crop-based farming, viz. cereals, oilseeds and pulses for the livelihood of his family. Through on-farm trainings and demonstration of IFS model, he adopted Integrated Farming System approach in his own field. Gradually, he has shifted from conventional crop-based farming to IFS with the components, viz. high value field crops (soybean, wheat, potato), two-tier horticulture system (guava + papaya + vegetables) and livestock (buffalo, cow) and other complementary/supplementary enterprises (vermicomposting, diversified green fodder) under the close supervision of multi-disciplined scientists of Agriculture University, Kota. By adopting IFS model, he earns manyfold income instead of traditional farming. He is generating more employment and regular income as compared to conventional practices on the same piece of land. Moreover, in future, he is expecting more returns through this approach and inspiring other rural youth and farmers of his own and nearby villages in the Haroti region of Rajasthan.

Keywords: Employment generation, High value crops, Income and livelihood security, Two tier horticulture system

INDIAN economy is agriculture oriented and small, and marginal farmers are the core of the Indian rural economy, constituting about 85% of the total farming community. The operational farm holding in India is still declining. The declining trend of per capita land availability poses a serious challenge to the sustainability, profitability and livelihood of the farming community. Practically there is no scope for horizontal expansion of land for agriculture and allied activities. Only vertical expansion is possible by integrating farming components which requires lesser space and time, ensuring reasonable returns to farm families. The integrated farming systems (IFS) therefore, assumes greater importance for sound management of farm resources to enhance the farm productivity and reduce the environmental degradation,

improve the quality of life of poor farmers and maintain sustainability and livelihood security. Farming system is a mix of farm enterprises (crops, livestock, agro-forestry, agri-horticulture and other supplementary/complementary enterprises) in which the farm families allocate resources for efficient utilization of the existing enterprises for enhancing productivity and profitability of the whole farm. Integrated farming system approach is not only a reliable way of obtaining fairly high productivity with considerable scope for resource recycling, but also the concept of ecological soundness leading to sustainable agriculture. Integrated farming system (IFS) is a novel approach to improve household food and nutritional security, income security, employment generation to the rural youths and livelihood security of the

Haroti region of Rajasthan.

Mr Ghanshyam Yadav is a 52 years old graduate farmer of Village Suhana, block Sultanpur, district Kota, Rajasthan, encasing various benefits of IFS since 2019–20. As a progressive farmer, he is happy to provide his family a nutritious food, regular income and employment opportunity for other rural farm women and youths. Earlier, he was practicing conventional crop-based farming system. He has 3.25 ha of farm land on which he used to grow soybean, urban, wheat, mustard, chickpea, etc. for livelihood. Due to lack of technical knowledge of modern agricultural technologies and practices, he couldn't get better yield and economic return. The year 2019 was the turning point in his life. Agriculture University, Kota, Rajasthan adopted a village, namely Suhana under 'Mira Gao Mera Gourav' and he was selected as

one of the beneficiaries. He visited Agricultural Research Station (Agriculture University, Kota), Ummedganj, Kota so many times for the guidance on new technologies related to agriculture for enhancing the productivity and profitability. In 2019, he got training on the aspects of integrated farming systems of crop production with high value crops, two-tier horticulture system, livestock and other supplementary/complementary enterprises at this station under Rastriya Krishi Vikash Yojana project. After completion of training, he started various inter-related IFS enterprises, viz. high value crops (soybean, wheat, potato), intensive horticulture (fruits, vegetables, nursery raising), livestock (buffalo, cow) and other complementary/supplementary enterprises (vermicomposting, diversified green fodder) etc. (Table 1).

Achievements

- Through on-station trainings and demonstration of the IFS model at Agricultural Research Station, Kota, he got inspired to adopt an integrated farming system model in his own field. Gradually he has shifted from conventional crop-based farming to the integrated farming system.
- He is also practicing various inter-linked enterprises, viz. recycling of crop residues, seed production, nursery raising, use of bio-pesticide, round the year green fodder production, pressurized irrigation to reduce the cost of production, enhancing input use efficiency and quality production as well.
- By adopting the IFS model, presently he earns ₹5 lakh/annum instead of ₹2 lakhs, and also generating more employment and regular income as compared to conventional practices on the same piece of land.

Impact on other farmers

- Mr. Ghanshyam attributes his success as technical inputs to other rural youths and farmers

in the vicinity.

- He whole heartedly shares his experience and information in the Kisan goshthi farmer fairs and training programmes organized by KVKs (Krishi Vigyan Kendra), Department of Agriculture, Govt. of Rajasthan, NGO's to help and motivate other farmers and rural youths.
- In the vicinity of his village Suhana and surrounding villages, many farmers are getting inspired and shifting towards an integrated farming system approach.

Recognitions

- He received many awards and appreciations by KVK and other agricultural agencies.
- His IFS model is recognized by various agricultural agencies and organizations.
- He is also a member of the various leading farming societies, committees and groups.

Economic benefits

Farmer under conventional farming systems (crop-based farming systems) having whole area in field crops (3.25 ha) with the livestock for family needs, fetched net return of ₹1.8 lakhs from field crops and ₹0.20 lakhs from livestock/annum, contributing 90

and 105% net return, respectively. While improved farming systems (integrated farming systems) allotted the land area in different components as per available resources and market needs. So, he fetched net returns of ₹0.90 lakhs from high value field crops (1.0 ha area), ₹3.0 lakhs from two-tier horticulture system (2.0 ha) and ₹1.10 lakhs from livestock and other based enterprises 0.25 ha/annum. The two-tier horticulture systems contributed maximum net returns (60%) followed by livestock and other based enterprises (22%) and high value field crops (18%). Thus, farmer fetched 250% more economic returns in integrated farming systems compared to the conventional farming systems in the same land area.

Way forward

The integrated farming systems are not new as natural integration of components in the form of mixed systems, viz. crop + dairy, crop + dairy + horticulture, crop + goatary + poultry, agroforestry + Sheep/camel, etc. However, due to natural integration, complementarity among components or enterprises could not be maximized leading to low productivity and profit from these systems. In order to overcome the above lacunae in the present system, Integrated farming

Table 1. Technology details

Particular	Conventional farming system	Integrated farming system
Land area	3.25 ha	3.25 ha
Component	Field crops-soybean, urdbean, wheat, mustard, chickpea/coriander Livestock-Two Buffalo	High value field crops (soybean, wheat, potato)-1.00 ha, Two-tier horticulture system-2.00 ha (guava + papaya + vegetables/onion seed and other guava based intercropping production with pressurized irrigation system Livestock and other enterprises-0.25 ha Three buffaloes and two cows Vermicompost unit-Six beds Green fodder unit-Napier grass, Rye grass, Fodder beat Nursery unit-Vegetables/fruits
Net income	2,00000/year (Two times in year)	500000/year (Regular income)
Employment generation	300 mandays/annum	₹850 mandays/annum



Pulses production for nutrient security



Two-tier horticulture system (guava + onion seed production)



Vegetable production (potato) for income enhancement



Livestock unit as an integral part of IFS



Farmer to farmer dissemination of IFS approach



Technical support by multi-disciplinary scientist's team of Agriculture University, Kota at farmer's field



Exhibition of IFS stall (Mr Ghanshyam) at Krishi Vigyan Mela



Appreciation certificate for IFS approach

systems with location specific, need-based integration of components/enterprises are essential to meet the very basic objectives of IFS. Integration of components such as crops, horticulture, dairy, poultry, goatary, aquaculture, apiary etc. can be done for improving the production, profitability, employment in a sustainable way.

SUMMARY

Based on the experience of Mr Ghanshyam, Integrated farming systems approach proved to be an effective tool in enhancing productivity, profitability as well as nutritional security through diversification and intensification of enterprises with the adoption of improved component technologies for optimum utilization of resources. The holistic approach also aided in meeting household requirement in terms of providing food and nutritional security to the farmers. Farmers experienced, that IFS is a novel approach for more employment generation, regular source of income and reducing cost of production, fetching higher economic returns as compared to conventional practices on the same piece of land. Thus, farmers of the Haroti region of Rajasthan have been gradually shifting from conventional crop-based farming to Integrated farming system approach for food, nutrition, income and livelihood security.

*Corresponding author's e-mail: jptetarwal@gmail.com

Source: All the photos were captured by scientist team or provided by the farmer.

Share your experiences with

Indian Farming

Write to:

Editor

INDIAN FARMING

Directorate of Knowledge Management in Agriculture

Indian Council of Agricultural Research

Krishi Anusandhan Bhavan I,

Pusa, New Delhi 110012

indfarm@icar.org.in