

## Integrated Farming Systems Approach Proves Backbone for Doubling Income of Small and Marginal Farmers

Sarvesh Kumar\* and R. C. Sharma

Scientists, Jawaharlal Nehru Krishi Vishwa Vidyalay, Agricultural Science Centre-Harda (MP) 461331

\*Corresponding Author E-mail: sarveshkvkharda@gmail.com

Received: 24.06.2018 | Revised: 30.07.2018 | Accepted: 6.08.2018

### ABSTRACT

*The integrated farming approach leads to sustainable agriculture to increase farm yield and managing resources in order to address all three critical aspects of sustainability like economic, environmental and social with multiple objectives of sustainability, food security, farmer security and poverty reduction. It involves use of outputs of one enterprise component as inputs for other related enterprises wherever feasible, for example, cattle dung mixed with crop residues and farm waste can be converted in to nutrient-rich vermi-compost. The salient features of IFS include – innovation in farming for maximizing production through optimal use of local resources, effective recycling of farm waste for productive purposes, community-led local systems for water conservation, organic farming, and developing a judicious mix of income-generating activities such as dairy, poultry, fishery, goat-rearing, vermin-composting and others. Presently small and marginal farmers struggling for better economic progress from small piece of land which is quite difficult without making agriculture high tech and full of innovations which is again not be possible without investing good amount of money. And with this farmers should also get remunerative price of their produce then only agriculture may be profitable venture. But now economic boost of farmers may be possible by using multidimensional approach in agriculture. The integrated farming approach may play very crucial role in economic growth of farmers in general and for small and marginal farmers especially because this system provides farmers a platform to get income from many ventures at time, so income multiplication become possible by adopting agriculture with animal production as well simultaneously covering, dairy, poultry, goatry etc. The small enterprises also can be established with less investment. The Integrated Farming Systems /approach may be more suitable for small and marginal farmers for their economic upliftment.*

**Key words:** Nutrient-rich Vermi-compost, Poultry, Dairy

### INTRODUCTION

Integrated farming system approach is one of the holistic approaches which targeted income enhancement with eco-friendly manner. This

system is very much profitable for small and marginal farming community who has less cultivated land.

**Cite this article:** Kumar, S., and Sharma, R.C., Integrated Farming Systems Approach Proves Backbone for Doubling Income of Small and Marginal Farmers, *Int. J. Pure App. Biosci. SPI: 6(3): 803-808 (2018).*

Integrated farming system can mitigate the need of organic materials through dairy based livestock and fertility of soil by using it in fields. Now a day the land holding of farmers even shrinking day by day that may threaten future agriculture in these circumstances integrated farming is only viable option for sustainable agricultural production. In this manner the study of these concepts and their awareness and implementation is very crucial for doubling the farming income with less land holding situations.

The International Organization of Biological Control (IOBC) describes Integrated Farming according to the UNI 11233-2009 European standard as a farming system where high quality organic food, feed, fibre and renewable energy are produced by using resources such as soil, water, air and nature as well as regulating factors to farm sustainably and with as little polluting inputs as possible.

Thiagu Ranganathan<sup>16</sup> reveals that the farm households earned INR 77,888 in the period from July 2012 to June 2013 or INR 6491 per month during this period. During the same period from 2002 to 2003 the earning of the farm households, based on a similar survey by NSS, was INR 2,115 per month. This translates to a CAGR of 3.4% for real household incomes during the period from 2002-03 to 2012-03. The growth of income from livestock was very high compared to other incomes and it has increased its share in total income of a farm household from 4% to 13%. The share of nonfarm business income in total income dropped from 11% to 8% during the period and that of wage/salaried income reduced from 39% to 32%. The ratio of crop cultivation income, livestock income, nonfarm business income, wage income and total income of households possessing more than 2 ha to households possessing less than 1 ha was 7.43, 2.01, 1.47, 0.79 and 2.98 respectively. The same ratios in 2002-03 survey were 6.81, 0.46, 1.41, 0.69 and 2.66 for the respective incomes. It indicates that inequalities on account of landholding might have increased during the period from 2002-03 to 2012-13.

Across landholding classes, the lowest land class (with less than 0.01 ha land) earned INR 54, 147 in the period while the largest land class (with greater than 10 ha land) earned INR 4,52,299 in the period. The lowest land class earned 1% of their incomes in crop cultivation while the largest earned 86% of their total incomes from crop cultivation. Livestock contributed to 36% of total income for lowest land class and 7% to the highest. Nonfarm business contributed 10% of total income to lowest land class and 4% to the highest while wage income contributed to 63% to lowest land class and 3% to the highest.

The integrated farming system (IFS) is a promising enterprise for the marginal and small farmers particularly who has less farm holdings. From this study, the IFS provide progressive economic growth, employment opportunities, family nutritional requirements, optimal utilization of resources of the farming enterprises etc. Further many researchers found many types of integrated farming system models existing in the country but it has not properly documented to reach the mass farmers. Hence measures to be taken to document such kinds of farming system models and to disseminate to the needy farmers. Integrated Farming System (IFS) plays an important role for maximizing their profit and production to meet the nutritional requirement with food security with less investment<sup>13</sup>. This is a multidisciplinary whole-farm approach and very effective in solving the problems of small and marginal farmers. The approach aims at increasing income and employment from small-holdings by integrating various farm enterprises and recycling crop residues and by-products within the farm itself<sup>3,14</sup>.

The gradual shrinking of land holding, horizontal expansion of land is not possible. Hence, vertical integration of land based enterprises within the socio-economic environment of the farmers will make farming more profitable and dependable. Therefore, Integrated Farming systems can be proved as viable approach represents an appropriate combination of farm enterprises, viz. crop

production, horticulture, livestock, fishery, forestry, poultry and goatry etc. in specific farming situation to address the problems of sustainable economic growth of Indian farming communities. Hence, it is viewed as a powerful tool for natural and human resource management in developing countries like India<sup>9</sup>.

By keeping in mind the discussed concepts and importance of integrated farming approach towards income enhancement present conceptual study was undertaken in Harda district to make it more empirical in local situation to contribute for double the income of small and marginal framers.

#### OBJECTIVES OF THE STUDY

- 1: To understand the concept of integrated farming system
2. To implement the integrated farming approach for doubling the farmers income

#### MATERIAL AND METHODS

Study was summarized at JNKVV, Agricultural science Centre –Harda (MP) during 2018. The concept of integrated farming system was made understood to numerous farmers through training and krishak sangosthies and other mandatory activities in district Harda (MP). The farmers who adopted the integrated farming system approach were studied to assess their income enhancement from last five years. The farmers who were really found success to double the income in last five year is being detailed under this study to motivate the farmers especially small and marginal group.

#### RESULT DISCUSSION AND IMPLICATION

##### **Concept of Integrated Framing System:**

Here we have given concepts as accepted by different experts in their locality to make the study more understandable. Jayanthi *et al.*<sup>5</sup>, describes the IFS as a mixed animal crop system where the animal component is often raised on agricultural waste products while the animal is used to cultivate the soil and provide manure to be used as fertilizer and fuel. Radhamani *et al.*<sup>12</sup>, described IFS as a

component of farming systems which takes into account the concepts of minimizing risk, increasing production and profits whilst improving the utilization of organic wastes and crop residues. Agbonlabor *et al.*<sup>1</sup>, defined the IFS as a type of mixed farming system that combines crop and livestock enterprises in a supplementary and / or complementary manner. Jayanthi<sup>5</sup>. stated that IFS is a component of Farming System Research (FSR), introduces a change in the farming techniques for maximum production in the cropping pattern and takes care of optimal utilization of resources. Singh and Ratan<sup>15</sup>. defined the IFS is an integrated set of elements/components and activities that farmers perform in their farms under their resources and circumstances to maximize the productivity and net farm income on a sustainable basis. Panke *et al.*<sup>11</sup>, stated that the integration is made in such a way that the product i.e. Output of one enterprise / component should be the input for the other enterprises with high degree of complementarily effects. Similarly the authors stated that the rationale of IFS is to minimize the wastes from the various sub systems on the farm and thus it improves employment opportunities, nutritional security and income of the rural people. Bahire *et al.*<sup>2</sup>, defined the IFS as an integrated mixed farming system is the practice of raising different yet dependent enterprises and when different enterprises are dependent they are primarily complementary and supplementary to each other.

##### **Major Components of Integrated Farming System:**

Mohanty *et al.*<sup>8</sup>, identified the IFS components consists of field crops (Rice, groundnut, maize, pigeon, pea and ragi), horticultural crops (Yam, banana, tapioca and vegetables), vermin composting and poultry (Vanaraja breed) in Gajapati district of Orissa. Tripathi and Rathi<sup>17</sup>. stated that various prevailing farming system models in Uttarkhand namely, crop + dairy, crop + dairy + goats + horticulture, crop + horticulture+goats, crop +dairy + vegetables, horticulture + dairy + vegetables, vegetables + dairy and crop + dairy

+ companion animals are the major components in IFS. Manivannan *et al.*<sup>7</sup>, reported that the respondents from Erode district of Tamilnadu were having goat+crop, goat +dairy + crop, goat + dairy and goat +dairy +crop systems as the main components in IFS. Vision 2030 suggested that the integration of mono-crop agriculture with agro forestry, pisciculture and animal husbandry as an important components for resource utilization, enhancing farm income and livelihood security of farmers. Vision 2020 suggested that the integrated fish farming is a diversified and coordinated system of producing fish and agricultural/livestock

produce in fish farms with fish as the main component for maximal utilization of land/water through recycling of wastes and by - products, reduced application of fertilizers and feeds and maintenance of a balanced ecosystem.

In the same manner few important components of integrated farming system were identified in Harda district for boosting the income of small and marginal farmers like field crop+dairy+small enterprise under soybean- wheat/gram/mustard crop sequence at a time to make it easy in implementation. The successful model is being given of Harda district as follows

**Table1: The comparative statement of vertical spared through integrated farming approach in Harda district of Madhya Pradesh.**

S. No	Name crop/enterprise	Technology adopted at present	Present production (q/ha)	Five year back Production (q/ha)	Difference in production (q/ha)	Present status of production
1	Soybean	Raised bed planting with HYVs, Varieties JS-2069, JS-2034, JS-2098, JS-9305, RVS 2001-4	20-25	10-12	10-13	Present production was near to Doubled means income was doubled in last five years by adoption of IFS approach by farmers
2	Gram	Raised bed planting, HYVs- JG/130, JG-14	30-32	20-22	10	
3	Wheat	Line sowing, SWI wih HYVs- GW-322, JW-3288, HI-1544	70-75	40-45	30	
4	Summer Greengram	Seed drill with HYVs- PDM-139, HUM-12	15-18	10-12	5-6	
5	Dairy	Cattle shed and Gir Cow rearing	20-25 l/day a@ Rs 30/L	Nil	Organic product like Vermi-wash, Organic Insecticide, Jivamrit, Bijamrit annual gross income Rs 85,000/year additional	
6	Vermin-culture	<i>Eisenia fetida</i>	@ Rs 400/Kg	Nil	120 kg/year production of worth Rs 50,000/ year additional gross income	

\*The information furnished in the table is estimation of farmer itself reported during study

The successful case of Harda district was noted under this study for further implementation as per statement and personal observation. The case revealed that Shri Nanhelal Bhati of age 42 years old having only 2 ha land was a local electrician away from agriculture interest. But five year back came in contact with JNKVV, Agricultural Science Centre-Harda and was motivated to adopt integrated farming approach as way of income generation. He decided to cultivate the crops with new technique as per scientific

recommendation followed by dairy production and small enterprise. Presently he became successful to earn 6.5 lakhs Indian rupees per year from 2 ha cultivated land followed by dairy and small enterprise. The present income is doubled from his benchmark income of five year back which was observed about 3 lakhs per years. The integrated efforts made by this small holding farmer made him successful to double his income in last five year in Harda district of MP.



Observation of different crops and other enterprises of farmer by Scientists

### CONCLUSION

The integrated farming approach was found useful to enhance the income of small and marginal farmers in Harda. This concept need to be more popularized by using new extension approach like electronic media and other extension activities as field visit, demonstration, training and sangosthies, farmer field schools etc. The economic boost of farmers may be possible by using multidimensional approach in agriculture. The integrated farming approach may play very crucial role in economic growth of farmers in general and for small and marginal farmers especially because this system provides farmers a platform to get income from many ventures at time, so income multiplication become possible by adopting agriculture with animal production as well simultaneously covering, dairy, poultry, goatry etc. The small enterprises also can be established with less

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