

## IFS: An Ideal Approach for Rural Livelihood Security Management

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### SUMMARY

At present, the farmers concentrate mainly on crop production which is subjected to a high degree of uncertainty in income and employment to the farmers. In this contest, it is imperative to evolve suitable strategy for augmenting the income of a farm. Integration of various agricultural enterprises viz., cropping, animal husbandry, fishery, forestry etc. have great potentialities in the agricultural economy. These enterprises not only supplement the income of the farmers but also help in increasing the family labour employment. The integrated farming system approach introduces a change in the farming techniques for maximum production in the cropping pattern and takes care of optimal utilization of resources.

### INTRODUCTION

Globalization of marketing cells for competitiveness and efficiency in agricultural production that renders the agricultural sectors to face challenges on the ecological, climatic, equity, social justice, energy and employment front. Majority of Indian farmers are resource poor and have marginal and small holdings. Rural livelihood security includes security for balanced food, water profitable farming, employment generation and environmental protection. In rural livelihood security it is important to integrate crop-based agriculture with supplementary farm enterprises like livestock keeping, agro forestry, farm level horticulture, bee keeping etc. Being a inter and intra- disciplinary approach, farming system would be highly effective in providing all basic needs with regular employment as well as environmental protection. Present rural livelihood insecurity due to low crop productivity, lower benefits due to use of high cost agri-inputs, lack of entrepreneurship development among rural youth etc.

Integrated farming is a whole farm management system which aims to deliver more sustainable agriculture. It refers to agriculture systems that integrated livestock and crop production. Integrated farming systems has revolutionized conventional farming of livestock, aquaculture, horticulture, agro-industry and allied activities. The integrated farming system approach introduces a change in the farming techniques for maximum production in the cropping pattern and takes care of optimal utilization of resources Jayanthi *et al* (2000).

- 1.The enterprises not only supplement the income of the farmers but also help in increasing the family labor employment.
- 2.The farm wastes are better recycled for productive purposes in the integrated system.
- 3.A judicious mix of agricultural enterprises like dairy, poultry, piggery, fishery, sericulture etc. suited to the given agro-climatic conditions and socio-economic status of the farmers would bring prosperity in the farming.

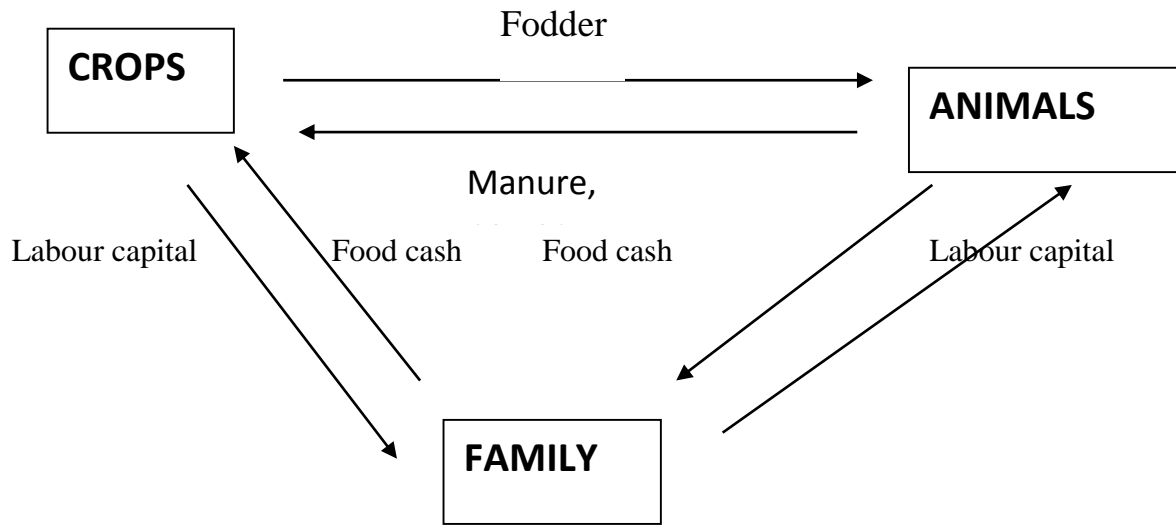
### Definition of Farming System

Farming systems are defined by their physical, biological and socio-economic setting and by the farm families, goals and other attributes, access to resources, choices of productive activities (enterprises) and management practices. "Farming" is the process of harnessing solar energy in the form of economic plant and animal products, and "system" implies a set of inter-related practices/processes organized into a functional entity. Farming system therefore designates a set of agricultural activities organized while preserving land productivity, environment quality and stability. In other words Farming system is a resource management strategy to achieve economic sustained agricultural production to meet diverse requirements of the farm household while preserving the resources base and maintaining high environmental quality. Radhammani *et al.* (2003) described IFS's 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.

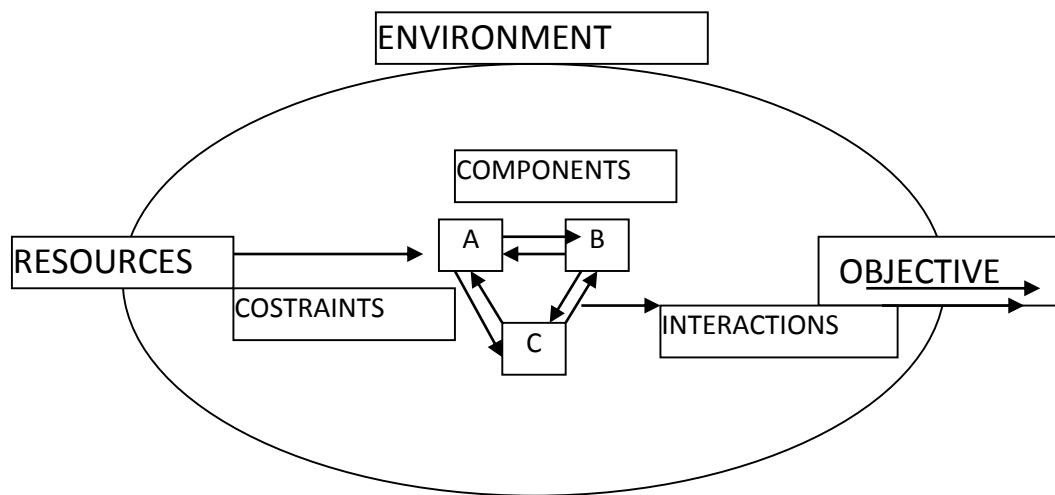
### Why Farming System?

- Population increase
- Shrinking land area

- Over use of chemicals
- Soil health deterioration
- Waste and over use of water



**BASIC FEATURES OF A FARMING SYSTEM**



**Objectives**

- Increasing the total farm income as a whole
- Improving the standard of living of the farmer
- Effective recycling of farm products and by-products
- Reduce the external input usage on the farm (LEISA)
- Sustaining the productivity levels and soil health
- Increasing the employment opportunities
- Regular cash flow throughout the year

**Environment**

Farm as a system functions within environment consisting of natural, socio economical and political features

**Resources**

Various physical and material requirements generated inside or outside the system

**Constraints**

Problems caused by the limitation and availability of natural and artificial resources

**Components**

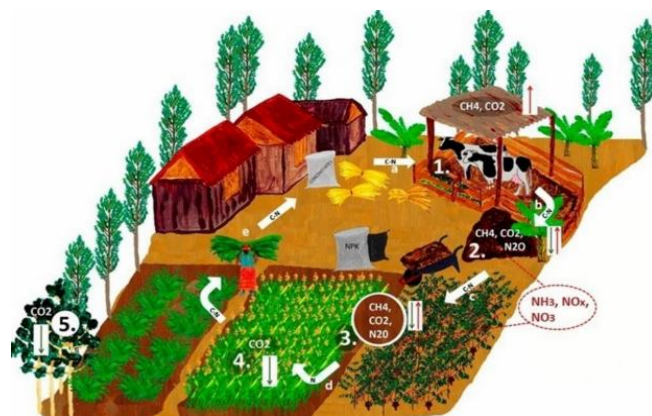
Constituent activities like crop production, dairy, poultry etc.,

### Interaction

Competitive interactions and complementary interactions



*Model of Integrated Farming System*



### Benefits of Integrated Farming Systems

- 1) Productivity: IFS provides an opportunity to increase economic yield per unit area per unit time by virtue of intensification of crop and allied enterprises.
- 2) Profitability: Use waste material of one enterprise at the least cost as input for other enterprise. Thus, reduction in cost of production, from the utilization linkage of waste material and elimination of middleman interference in most input used.
- 3) Sustainability: Organics supplementation through effective utilization of by-products of linked component is done thus providing an opportunity to sustain the potentiality of production base for much longer period.
- 4) Balanced food: IFS links components of varied nature enabling to produce different sources of nutrition for farm families.
- 5) Environmental safety: In IFS, waste materials are effectively recycled by linking appropriate components, thus minimize environment pollution.
- 6) Income round the year: Interaction of enterprises with crops, eggs, milk, mushroom, honey, fish, cocoons, etc. provides flow of money to the farmers round the year.
- 7) Adoption of new technology: Money flow round the year due to IFS gives an inducement to the small and marginal farmers to go for the adoption of new technologies.
- 8) Saving energy: Effective recycling technique the organic wastes available in the system can be utilized to generate biogas. Energy crisis can be postponed to the later period.
- 9) Meeting fodder crisis: Every piece of land is effectively utilized. Plantation of perennial fodder trees on field borders. These practices will greatly relieve the problem of non – availability of quality fodder to the animal component linked.
- 10) Solving fuel and timber crisis: Linking agroforestry appropriately the production level of fuel and industrial wood can be enhanced without determining effect on crop. This will also greatly reduce deforestation, preserving our natural ecosystem.
- 11) Employment generation: Combing crop with livestock enterprises would increase the labour requirement significantly and would help in reducing the problems of under employment to a great extent. IFS provide enough scope to employ family labour round the year.
- 12) Agro–industries: When one of produce linked in IFS are increased to commercial level there is surplus value addition leading to development of allied agro–industries.
- 13) Increasing input efficiency: IFS provide good scope to use inputs in different components efficiently and effectively.

### Advantages of Farming System

- Higher food production to equate the demand of the exploding population of our nation
- Increased farm income through proper residue recycling and allied components

- Sustainable soil fertility and productivity through organic waste recycling
- Integration of allied activities will result in the availability of nutritious food enriched with protein, carbohydrate, fat, minerals and vitamins
- Integrated farming will help in environmental protection through effective recycling of waste from animal activities like piggery, poultry and pigeon rearing
- Reduced production cost of components through input recycling from the byproducts of allied enterprises
- Regular stable income through the products like egg, milk, mushroom, vegetables, honey and silkworm cocoons from the linked activities in integrated farming
- Inclusion of biogas & agro forestry in integrated farming system will solve the prognosticated energy crisis
- Cultivation of fodder crops as intercropping and as border cropping will result in the availability of adequate nutritious fodder for animal components like milch cow, goat / sheep, pig and rabbit
- Firewood and construction wood requirements could be met from the agroforestry system without affecting the natural forest
- Avoidance of soil loss through erosion by agro-forestry and proper cultivation of each part of land by integrated farming
- Generation of regular employment for the farm family members of small and marginal farmers.

### **Enterprise linkage in IFS**

#### ***Wetland ecosystem***

Crop + Fish + Poultry / Crop + Fish + Duck / Crop + Fish + Pigeon / Crop + Fish + Poultry + mushroom / Crop + Fish + Mushroom / Crop + Fish + Pig + Mushroom / Crop + Fish + Goat

#### ***Garden land ecosystem***

Crop + Dairy + Biogas / Crop + Dairy + Biogas + Sericulture / Crop + Dairy + Biogas + Fishery  
 Crop + Dairy + Biogas + Homestead garden + Sylvipasture / Crop + Dairy + Biogas + Homestead garden +  
 Silviculture + Apiculture / Crop + Dairy + Biogas + Spawn production + Mushroom / Crop + Dairy + Biogas +  
 Spawn production + Mushroom + Silviculture

#### ***Dry land ecosystem***

Crop + Goat / Crop + Goat + Agroforestry / Crop + Goat + Agroforestry + Horticulture  
 Crop + Goat + Agroforestry + Horticulture + Farm pond / Crop + Goat + Buffalo + Agroforestry + Farm pond /  
 Crop + Goat + Pigeon + Buffalo + Agroforestry + Farm pond / Crop + Goat + Rabbit  
 Factors influencing the selection and size of components in Farming Systems

- Climatic conditions - Rainfall, temperature, solar radiation, wind, humidity, etc.
- Soil type
- Farmers preferences
- Size of the Farm
- Knowledge, skill and technology
- Storage, transport and marketing
- Resource mobilizing power of the farmer
- Credit facilities available
- Socio-economic condition
- Customs, sentiments and believes

### **Steps involved in the preparation of a model Integrated Farming System to a specific situation**

- Assessment of available resources
- Identifying the existing cropping system
- Identifying component(s) to be integrated
- Fixing the size of the individual components
- Working out the requirement of the components
- Modifying the existing cropping system to suit the requirements of the components integrated

- Working out the economics of individual components and for the IF system as a whole
- Identifying constraint and suggesting remedy measures/modifications for technical feasibility, economic viability and practical utility

### CONCLUSION

It can be concluded that Integrated Farming System (IFS) had a positive effect on the economic return maintaining the environmental sustainability than the Non- Integrated Farming System (NIFS). The enterprises which were integrated, played an important role and also were found to be very much region specific.

### REFERENCES

- Jayanthi, C., Rangasamy, A. and Chinnusamy, C. (2000). Water budgeting for components in lowland integrated farming systems. *Agricultural Journal*, 87:411-416.
- Radhammani, S., Balasubramanian, A., Ramamoorthy, K. and Geethalakshmi, V. (2003). Sustainable integrated farming systems for dry lands: A review. *Agricultural Reviews*, 24:204-210.