

Integrated Farming System: An Overview

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Introduction

Integrated Farming System (IFS) is a sustainable system of agriculture where sequential linkages between two or more farming activities are utilised. IFS ensures maximum utilisation of resources, reduces risk of crop failure and provides additional income to farmers and food for small scale farming household. Integrated farming system involves recycling of by-products and interconnected nutrient flow of one system as input for other, thus maximising the production from a unit area at minimum cost. This system paves path for an organic agriculture management system that can augment integrated soil water fertility management (ISWFM) and can boost biodiversity and biological cycles.

The Green revolution technology are often associated with environmental harm. Such damage is caused by the excessive use of “Mineral Fertilizer & Chemical Pesticide”. 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.

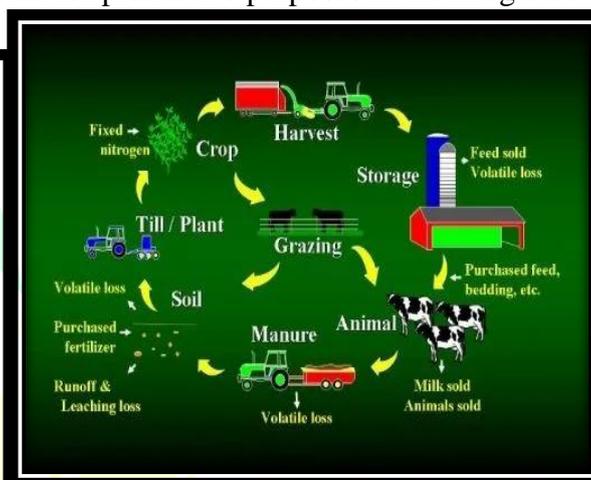
What is integrated farming system (IFS)

“*Integrated Farming System*” describe as a set of agricultural activities, while preserving land productivity, environmental quality, and maintaining biological diversity and ecological Stability.

According to Paul Harris, “*It is a system which comprises of inter-related set of enterprises with crop activity as base, will provide ways to recycle produces and “waste”*”

from one component becomes an input for another part of the system, which reduces cost and improves soil health and production and/or income.”

- 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.
- The farm wastes are better recycled for productive purposes in the integrated system.



Concepts of integrated farming system

- An arrangement of recycling products/ by- products of one component as input to another linked component
- Reduction in cost of production
- Increase in productivity per unit area per unit time
- Increase in total income of farm
- Effective utilization of family labours around the year

Elements of integrated farming system

- Farm ponds
- Bio- fertilizers
- Bio-gas
- Solar energy



- Vermi-compost making
- Green manuring

Goals of integrated farming systems

- Maximization of yield of all component enterprises to provide steady and stable income.
- Rejuvenation of system's productivity and achieve agroecological equilibrium.
- Avoid build-up of insect-pests, diseases and weed population through natural cropping system management and keep them at low level of intensity.
- Reducing the use of chemicals (fertilizers and pesticides) to provide chemical free healthy produce and environment to the society
- To identify existing farming System in a specific area.
- To increase farm Resource use Efficiency.
- To maintain Environmental quality & Ecological stability.
- To integrate different production systems like Dairy, Poultry, Livestock, Horticulture, apiculture etc with agricultural crop Production.

Scope of integrated farming system (IFS)

Integrated Farming enterprises include crop, livestock, poultry, fish, tree crops, plantation crops, etc. A combination of one or more enterprises with cropping, when carefully chosen, planned and executed, gives greater dividends than a single enterprise, especially for small and marginal farmers.

- Soil and climatic features of the selected area.
- Availability of resources, land, labour and capital.
- Present level of utilization of resources. Scope of Integrated farming systems.

Advantages of integrated farming system

Profitability: Use waste material of one component at the least cost. Thus, reduction of cost of production and form the linkage of utilization of waste material, elimination of middleman interference in most input used. Working out net profit B/ C ratio is increased.



Potentiality or Sustainability: Organic 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 periods.

Balanced Food: We link components of varied nature enabling to produce different sources of nutrition.

Environmental Safety: In IFFS waste materials are effectively recycled by linking appropriate components, thus minimize environment pollution.

Recycling: Effective recycling of waste material in IFFS.

Income Rounds the year: Due to interaction of enterprises with crops, eggs, milk, mushroom, honey, cocoons silkworm. Provides flow of money to the farmer round the year.

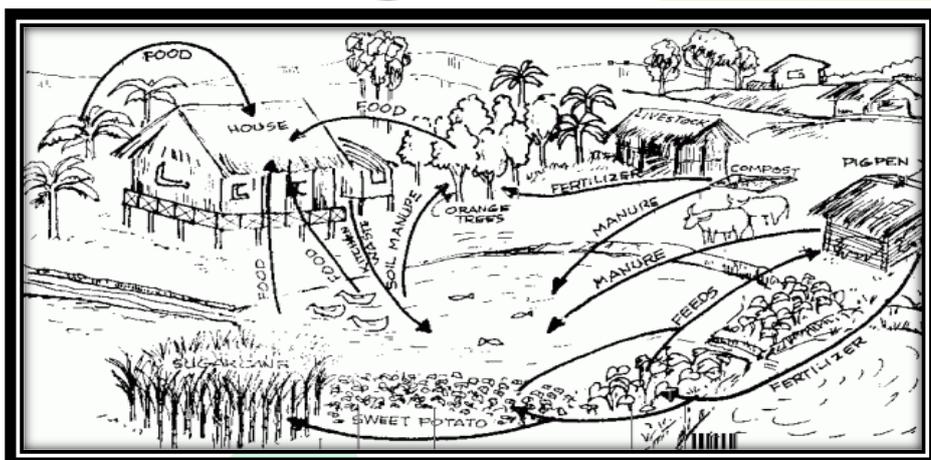
Adoption of New Technology: Resources farmer (big farmer) fully utilize technology. IFS farmers, linkage of dairy / mushroom / sericulture / vegetable. Money flow round the year gives an inducement to the small/ original farmers to go for the adoption technologies.

Saving Energy: To identify an alternative source to reduce our dependence on fossil energy source within short time. 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.

Meeting Fodder crisis: Every piece of land area is effectively utilized. Plantation of perennial legume fodder trees on field borders and also fixing the atmospheric nitrogen. These practices will greatly relieve the problem of non – availability of quality fodder to the animal component linked.

Solving Fuel and Timber Crisis: Linking agro- forestry 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.

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.



Why IFS is needed?

- For reducing the risks due to biotic and abiotic stresses
- High input costs
- For meeting the rising need of food, feed, fibre, fuel and fertilizer
- Nutritional requirement of family
- Increased demand of soil nutrients
- For increasing the income
- Employment
- Standard of living
- Sustainability

Ideal situations for introduction of IFS

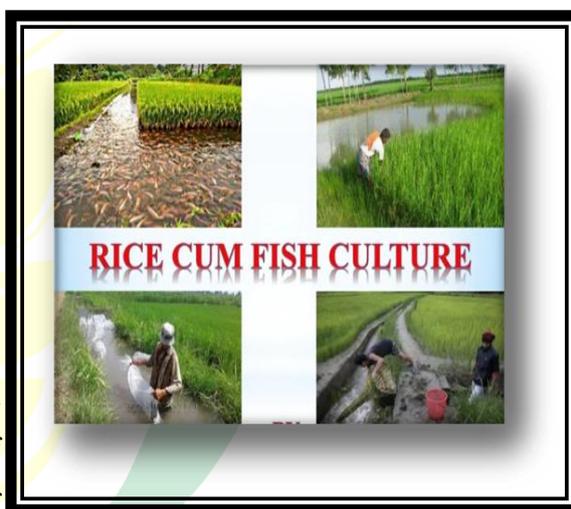
- The farmer wishes to improve the soil quality
- The farm household is struggling to buy food or below the poverty line
- Water is stored on-farm in ponds or river-charged overflow areas
- Soil salinity has increased as a result of inorganic fertilizer use
- The farmer is seeking to maximize profits on existing holding
- The farm is being eroded by wind or water
- The farmer is looking to reduce chemical control methods
- The farmer wants to reduce pollution or waste disposal costs

Types of integrated farming systems

- Crop-livestock farming system
- Crop-livestock –fishery farming system
- Crop-livestock – poultry - fishery farming system
- Crop-fishery-poultry farming system
- Crop- livestock- fishery-vermicomposting farming system
- Crop-livestock-forestry farming system
- Agri-silviculture system
- Agri-horti-silvi-pastoral system

Rice cum fish farming

A rice-fish system is an integrated rice field or rice field/pond complex, where fish are grown concurrently or alternately with rice. The rice fields that remain water logged even after the harvest of crop are ideal for fish culture and provide farmers with off-season income. Pokkali of Kerala, Khazans of Maharashtra etc. are some the examples of



traditional rice cum fish/prawn culture. The ecological benefits of such systems include weed and pest control, bioturbation of soil-water interface etc. Fish may be deliberately stocked (fish culture), or may enter fields naturally from surrounding water ways when flooding occurs (rice field fisheries), or a bit of both.

History

- History of Rice-Fish culture is quite old.
- First started in ancient China about 2000 years ago.

Traditional system

- Small ditches
- Attract wild fishes

- Fry of Carpio
- Low Production
- 50 kg per hectare

Advantages

- Production of fish as additional crop.
- Insect or pest controlled.
- Faecal or semi-faecal materials serve as fertilizer.
- More profitable than rice cultivation alone.
- Easy technology and low-cost involvement.
- Great acceptability especially to the rural people.

Disadvantages

- ✓ Maintaining suitable water level for fish culture
- ✓ Fish might escape or die due to floods or disease.
- ✓ Theft of fish.
- ✓ Predators such as snake, frog, kite may eat fish.
- ✓ Restricted pesticide use, in control of pests

CONCLUSION

The integration of fish with livestock and agriculture needs to be viewed because this activity can go long way in the uplift of rural life through manifold increase in return on investment. Integrated farming system seems to be the answer to the problems of increasing food production, for increasing income and for improving nutrition of the small-scale farmers with limited resources without any adverse effect on environment and agro- ecosystem. IFS are a promising approach for increasing overall productivity and profitability through recycling the farm by-products, and efficient utilization of available resources. It could further generate employment opportunities to the farming communities round the year and provide a better economic and nutritional security.