

Integrated Farming Systems

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Integrated farming which evolved in China, has spread across the globe, thereby helping the agro-based economies a lot. This farming method has included the essence of more productivity and sustainability with lesser competition.

In news: Sustainable Agriculture in India

Placing it in syllabus: Society

Dimensions

- What are integrated farming systems?
- Its advantages
- components
- Agro climatic zones and integrated farming

Content:

What are Integrated Farming Systems (IFS)?

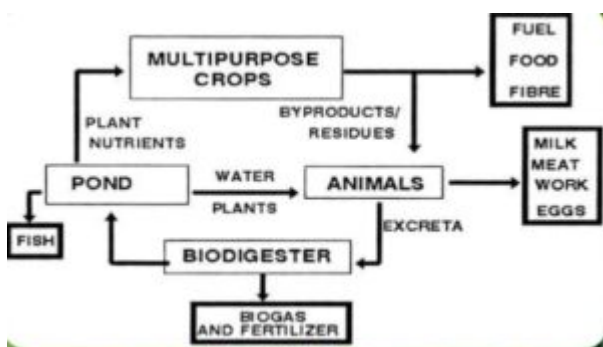
- IFS refers to agricultural systems that integrate livestock and crop production and may sometimes be known as **Integrated Biosystems or Integrated Agriculture**.
- IFS, is an integration or a collaboration of two sectors of production- crop production and animal rearing.
- It adopts a holistic approach of taking up agriculture, horticulture and other allied activities simultaneously.
- Integration two sectors of production into one guarantee diversified production with minimum cost and labour.
- The uniqueness of IFS is its method of recycling farm waste. Here, the by-product of one becomes the raw material for the other.
- Integrated farming is a system that tries to mimic nature's principle where not only crops but various plants, animals, and poultry form a diverse ecological system.

- The flora and fauna are combined in such a way that each element helps another element i.e. waste from one is a resource for others.
- For example, cattle dung mixed with crop residues and farm waste can be converted into nutrient-rich vermicompost and used in another part of the same farm.
- This approach makes the whole farm largely self-sustainable and environment friendly.
- Suitable methods of agronomy and crop production are harmonised in compliance with site specifics.
- Thus its basic principle is to enhance the ecological diversity – by choosing the appropriate cropping methodology with mixed cropping, crop rotation, crop combination, and intercropping so that there is less competition for water, nutrition, and space.
- A multi-story arrangement is followed for proper utilization of space e.g. a poultry farm on the upper level with a fish farm on a lower level where the waste from poultry will feed the fish on a lower level.
- IFS is a labor-intensive system that keeps the farmer indulged in the farm productively throughout the year.
- IFS induces collective purchasing of inputs and collective marketing of produce among farmers which in turn leads to good productivity and profit margins as well.
- The IFS approach has multiple objectives of sustainability, food security, farmer security and poverty reduction.
- The salient features of IFS include –
 - innovation in farming for maximising 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, vermicomposting and others

The IFS system is similar to mixed farming where farmers grow one main crop and raise livestock. In IFS crops are grown along with other farm ventures e.g., animal husbandry or poultry farming or piggery or fishery with vegetable farming.

However, the difference is related to the amount of waste generated. The waste is almost completely recycled into the new crop in IFS.



Advantages of IFS:

Self-reliance and Self-Sufficiency:

- From the production of fodder for animals to production of manure or vermicompost, every raw material is produced in the farm itself.
- This constant self-reliant nature helps this mode of farming to enhance agro-ecological balance.

Renewable resources:

- From biogas to solar energy and from hydel power to vermicompost, this farming process includes no non-renewable resources.
- The crop rotation mechanism prevalent in these farms helps in renewing the soil productivity.

Diversification of Farm income and gainful employment:

- In addition to the main crop, Integrated farming

provides a number of additional related income domains such as honey production, lumbering (thus helping in paper and pulp factories) and silk production.

- Thus it prevents seasonal unemployment of farmers and gives more avenues for income throughout the year.

Reduced Expenditure:

- The waste product management helps in lowering the dependence on the raw materials bought from the markets.
- The symbiotic association between the two sectors of production helps in fully utilizing the resources and also helps in optimizing the yield and productivity.
- Thus, IFS mechanism creates an eco-friendly usage of the by-products, thereby decreasing the input expenditure.

Environment friendly and Sustainable:

- This type of farming does not use chemical pesticides and insecticides, thereby providing healthy food.
- The zero waste policy used in IFS helps in negating the drastic negative effect on the ecology. The soil is nourished naturally with the manure and crop rotation.

'Jaivagriham' project

- Kerala government announced the **'Jaivagriham' project** under the Rebuild Kerala Initiative (RKI).
- It envisages an integrated system of agriculture, animal husbandry, poultry, apiculture and aquaculture for maximum utilisation of land, time and energy.
- As per this, farms under the Agriculture Department in various districts will be developed as model farms by adopting hi-tech and integrated farming methods.
- The technical support for the ₹25-lakh project will be supplied by the Integrated Farming Systems Research Station (IFSRS), a Kerala Agricultural University (KAU) station here at Karamana.
- Agro-ecological unit (AEU)-specific IFS models that

promise higher productivity, sustainability and profits will be validated and showcased under the project. (Kerala has 23 AEU's in five agro ecological zones.)

Components of IFS:

The components of IFS vary depending on the local conditions and type of farm.

Following elements may be included in IFS depending upon the individual farmers resources, interest and opportunities.

- Watershed
- Farm ponds
- Bio-pesticides
- Bio-fertilizers
- Plant products as pesticides
- Bio-gas
- Solar energy
- Compost making (Vermi, Japanese, Improved etc.)
- Green manuring
- Rain water harvesting

Case Study

- In a study conducted at **ICAR Research Complex, Goa**, it was revealed that rice-brinjal crop rotation is the best in terms of productivity and profitability owing to higher yield of the brinjal. The system yielded a total productivity of 11.22 t/ha rice grain equivalent yield with a net return of Rs.46, 440/ha.
- Further, with the integration of mushroom and poultry production (based on the resources availability within the system) the system productivity was increased to 21, 487 kg/ha especially with rice-brinjal rotation leading to an additional returns of Rs 30,865/ha with integration.
- In addition, the system approach was found to

sustainable as reflected from the changes in soil organic carbon and indicated by sustainability yield index

Agro-climatic zones and integrated farming

- A sensible blend of agrarian ventures like dairy, poultry, piggery, fishery, sericulture and so forth.
- This fits the given agro-climatic conditions and financial status of the farmers can carry success to the cultivating activities.

Some example IFS for specific agroclimatic zones:

- Agroforestry-based Land Management Systems of Indian Himalayas and other hilly regions
- Crop- Livestock- Fish Farming in wetland areas and coastal zones.
- Cropping + poultry/pigeon/goat + fishery in Cauvery delta Zone

Mould your thought: What is an Integrated Farming System? How does it help betterment of agriculture?

Approach to the answer:

- Introduction
- Define IFS
- Discuss the basic principle of IFS
- Mention the Advantages of IFS
- Conclusion