

Integrated Farming Systems for Sustainable Income

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Integrated Farming System (IFS):

It is a combination of many systems; it attempts to increase farmers income using natural resources on sustainability basis which can be obtained by integrating crop husbandry with allied enterprises is called as IFS.

Aim

It is a combination of different agricultural activities in a unit area of land aimed at;

- Maximum return from unit area
- Maintaining soil status and fertility
- Ensuring supplementary and complementary enterprise relationships to use the by-products of one component of the farming system as inputs to the other
- To reduce environmental pollution.

Elements of integrated farming system

1. Farm Ponds
2. Biological Pesticides
3. Biogas
4. Bio-fertilizers
5. Solar Energy
6. Vermicompost making
7. Green manuring
8. Rainwater harvesting
9. Watershed management

Factors determining the implementation of IFS

1. Soil and climate feature of selected areas

2. Availability of resources and land labor.
3. The current level of resource use.
4. Economics of the proposed integrated farming.
5. Farmer's management skills.

Components of integrated farming system

It can be divided into some categories, like;

- a. **Crop** - Cereals, Pulses, Oilseeds, Fruits, Vegetables, Spices, Planting Crops, Flowers, Fodder / Forage Crops, Agricultural Forests, Sugarcane, Fiber Crops.
- b. **Livestock and Poultry** - Cows, Buffaloes, Pigs, Goat, Sheep, Poultry, Duck.
- c. **Fishery** - Fingerling Production, Composite Fish Culture, Paddy cum Fish Culture.
- d. **Secondary Agriculture** - Bee Cultivation, Mushroom Cultivation, Food Processing, Vermicomposting, Biogas Production, Azolla Cultivation, Silk Cultivation.

It is possible to develop an integrated farming system by integrating the above four components (A + B, A + C, B + C, A + D, B + D, C + D, A + B + C, A + B + D, B + C + D, A + C + D, A + B + C + D).

Limitations of integrated farming system

- Lack of awareness about the sustainable farming system.
- Unavailability of various farming system models.
- Lack of easy and reasonable interest rate credit facilities.
- Unavailability of certain marketing facilities, especially for perishable products.
- Lack of storage facilities.
- Lack of timely availability of input.
- Lack of education/knowledge in farming communities especially rural youth.

Interrelationship among different enterprises: -

- a. **Crop-Livestock interaction:** - Crop-livestock interaction takes place in two main systems. First interaction is without full integration defined as segregated system. Farmers own animals and herders might grow crops.
- b. **Aquaculture-Crop interaction:** - A large quantity of salt and manure is added to the fish pond every year on an average 25 kg pond silt produce 1kg of green fodder. Rice is found to be increased by 10% due to synergistic effect of fish on rice. Weeds and insects also controlled by fish.

- c. **Aquaculture-Bio-gas-Livestock Interaction:** - Cattles in aquaculture utilizes the fodder produced through application of silt to the crop. Fish in pond feed on the zoo-planktons and phytoplankton, bacteria etc. Ducks acts as a Bio-aerators as they aerate the pond through their legs. Bio-gas plant generate the gas used for cooking and lighting.

Advantages of Integrated Farming System (IFS):-

- ✚ Productivity
- ✚ Profitability
- ✚ Sustainability
- ✚ Balanced food
- ✚ Environmental safety
- ✚ Recycling of waste
- ✚ Saving energy
- ✚ Adoption of New Technology
- ✚ Money Round the year
- ✚ Availability of fodder, fuel and timber
- ✚ Employment round the year
- ✚ Agro-industries
- ✚ Increases input efficiency
- ✚ Increase Standard of living

1. **Productivity:** - Integration of crop and allied enterprises helps to increase economic yield per unit area per unit time. Intensification of cropping and allied enterprises in space and time dimension found to increase the productivity.
2. **Profitability:** - waste material of one enterprise can be used for other enterprise at least for crop, thus reducing the cost of production and increasing profitability per rupee investment.
3. **Sustainability:** - Huge quantity of inorganic fertilizers, pesticides, herbicides are required to meet the food requirement of increasing population @ 2.2 % every year. Abundant use of such material causes soil degradation and pollution. The productivity of soil gets drastically reduced in due course of time. IFS provides an opportunity to



sustain production through organic supplementation and effective utilization of byproduct of linked components.

4. **Balanced food:** - IFS link varied nature of enterprises to provide nutritious food viz., vitamins, proteins, carbohydrates, fat, minerals etc. from the same area. This solves the malnutrition problem of poor peoples.
5. **Environmental Safety:** - Abundant use of inorganic fertilizers, pesticides, herbicides make the soil, water and environment polluted. Similarly, residues of some crops, waste material also pollute the environment after decomposition. However, in IFS waste material, byproducts of one composite are effectively recycled using for other component and by-product of that component as organic manure to enrich the soil. Use of bioagent or crop protection also minimizes the pesticides.
6. **Recycling of waste:** - By-product of the crop husbandry can be effectively recycled for preparation of compost. Some of the by-product can be used as feed. This reduces the cost of production of one enterprise at the cost of other. Thus, net income of farm is increased.
7. **Saving energy:** - Energy crises can be served to same extent by utilizing organic waste to generate biogas which can be used for cooking, lighting etc.
8. **Adoption of new technology:** - Big farmers are fully aware with the new technologies because of using improved varieties, package of practices. But small and marginal farmers are not able to adopt for want of money. In IFS linking of cropping with dairy, mushroom, sericulture, floriculture there is a flow of money throughout the year.
9. **Money round the year:** - In conventional farming income is expected once at the end of cropping season. However, IFS provides flow of money round the year by way of disposing eggs, milk, edible mushroom, honey, cocoons of silkworm etc.
10. **Availability of fodder, fuel and timber:** - IFS utilizes every part of land. Growing of fodder trees on border will not only provide fodder but also enrich the soil by fixing atmospheric nitrogen. In multistorey cropping includes of fodder component like cowpea as second or third tier also meet the fodder crises. The current production of fuel wood is about 20 million ton which needs to be increased to eighteen folds.
11. **Employment round the year:** - Crop-livestock integration increase labour requirement through the year, other activities like mushroom cultivation, sericulture,

apiculture also needs labour. Hence IFS provides employment to family members as well as outside labour throughout the year.

12. Agro-industries: - Linking of various components in IFS, the production definitely increased to commercial level. Surplus production leads to development of ago based side industry.

13. Increase input efficiency: - IFS provides better scope to use available inputs more efficiently. This leads to increase benefit: cost ratio.

