



Integrated Farming Systems: Challenges and Opportunities

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Cropping, animal husbandry, fisheries, forestry, and other agricultural enterprises that are integrated have significant potential in the agricultural sector. These enterprises not only assist farmers supplement their income, but they also serve to increase family's labour employment. The integrated farming system strategy changes agricultural techniques for maximum productivity in the cropping pattern while also ensuring optimal resource utilisation. In the integrated system, farm waste is better recycled or processed for profitable reasons.

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." Agriculture can be integrated with livestock, poultry, and fish at the same location in an integrated agricultural system to offer year-round employment and additional income.

Concepts of integrated farming system

- An arrangement of recycling products/ by-products from one component as input to another related component.
- Lowering the cost of manufacture
- Increase in productivity per unit area per unit time

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- Increase in total farm income
- Year-round effective usage of family labour

Elements of integrated farming system

Farm ponds, Bio-fertilizers, Biogas, Solar energy, Vermi compost making, Green manuring.

Components of integrated farming system

Crop husbandry, Livestock production, Poultry, Horticulture, Aquaculture, Sericulture, Mushroom cultivation, Agro-forestry, Biogas plants, Miscellaneous enterprises.

Why is IFS required?

- High input costs
- To fulfil the increased demand for food, feed, fibre, fuel, and fertiliser
- To reduce the hazards associated with biotic and abiotic challenges
- Nutritional needs of the family
- Increased demand for soil nutrients
- Increased income
- Employment
- Standard of living
- Sustainability

Advantages of integrated farming system

Profitability: Use the least expensive waste material from one component. As a result, the cost of production is reduced, and a link is formed between waste material usage and the elimination of middleman interference in the majority of inputs used. The net profit B/C ratio is increased when working out.

Potentiality or Sustainability: Organic supplementation is done by effectively utilising byproducts of connected component, allowing the potentiality of the production base to be sustained for considerably longer durations.

- **Balanced Food:** We combine natural components to create a variety of nutrition sources.
- **iv. Environmental Safety:** Waste materials are effectively recycled in IFFS by connecting appropriate components, reducing pollution.
- **Recycling:** In the IFFS, garbage is effectively recycled.
- **Income Rounds the year:** Income is distributed throughout the year due to the interaction of businesses with crops, eggs, milk, mushrooms, honey, cocoons, and silkworm cocoons. Ensures a steady supply of funds to the farmer throughout the year.
- **Adoption of New Technology:** The resource farmer (large farmer) makes extensive use of technology. IFS farmers, dairy/mushroom/sericulture/vegetable linkage The availability of funds throughout the year encourages small/traditional farmers to adopt new technologies.
- **Energy Conservation:** Identifying an alternate source to minimise our reliance on fossil fuels in a timely manner. The organic wastes in the system can be used to generate biogas using an effective recycling approach. The energy crisis can be postponed till later.
- **Addressing the fodder shortage:** Every available piece of land is put to good use. Planting perennial legume fodder trees along field margins, as well as nitrogen fixation. These approaches will considerably alleviate the problem of quality fodder being unavailable to the animal component attached.
- **Resolving the Fuel and Timber Crisis:** By properly linking agroforestry, the production level of fuel and industrial wood can be increased without affecting agricultural yield. Deforestation will be considerably reduced as a result, maintaining our natural ecology.

- **Employment Creation:** Combining crop and animal enterprises would greatly raise labour demand and help to alleviate underemployment to a large extent. IFS provides ample opportunity to use family labour throughout the year.

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

Factors affecting farming type

Physical factor (climate, soil, topography) Economic factor Marketing cost Labor availability Capital land value Prevalent pests and diseases, Social factor (community type, ease of transportation, marketing facilities, and cooperative spirit) (income, production, minimising cost etc.), Availability of resources and components.

Factor deciding nature and size of enterprises

Farm size, Marketing facilities, Climate, Availability of technologies, Soil type and condition of the soil, Level of income, Credit facility, Skill/Knowledge.

Goals of integrated farming systems

- Increasing the output of all component businesses to ensure a continuous and predictable income.
- Rejuvenation of system production and attainment of agro-ecological balance
- Using natural cropping systems to manage insect pests, illnesses, and weed populations, keep them at a low level of intensity.
- Reducing the usage of chemicals (Fertilisers and pesticides) in order to provide society with chemical-free, nutritious produce and an environment

Scope of integrated farming system

- Poultry, tree plantation crops, etc.

- Combination of one or more enterprises when carefully chosen, planned and executed, gives greater dividends than single enterprise, especially small and marginal farmers.
- Soil and climatic features
- Availability of resources, land, labour and capital.
- Present level of utilization Scope Integrated farming systems

Long-term benefits of integrated farming systems

- Year-round income and employment
- Provides food and nutritional security
- Eco-recycling of agriculture residues, by-products, and wastes
- Improved soil quality for sustainable agriculture
- Halting of ground water depletion through enterprises requiring less water
- Minimization of pollution hazards Improves microclimate
- Conservation of natural resources

IFS limitations

- Lack of knowledge about sustainable farming systems
- Unavailability of various farming system models
- Lack of credit facilities with low interest rates
- Lack of banking acumen and habit to fully utilise loan facilities
- Lack of marketing information among farmers
- Lack of deep freezing and storage facilities
- Dedicated/committed extension services
- Lack of timely availability of inputs
- Lack of knowledge/education within agricultural population, particularly among rural youth

Issues to be considered

- The need for adaptive research to develop an efficient IFS model
- The provision of training to technicians, extension workers, and farm engineers to support and sustain farming systems
- The availability of adequate banking facilities and loans, with a priority for small and marginal farmers
- The provision of assured marketing facilities, particularly for perishable commodities

- Cataloguing and applying ITK concepts to the construction of agricultural system modules that generate revenue.

Conclusion

IFS is a promising approach for increasing overall productivity and profitability through recycling the farm by-products, and efficient utilization of available resources. The combination of different enterprises needs to be seriously viewed. This can go long way uplift rural life through increased income. It could further generate employment opportunities to the farming communities round the year and provide a better economic and nutritional security.