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INTEGRATED FARMING SYSTEM FOR SMALL AND MARGINAL FARMERS TO INCREASE THEIR INCOME

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Introduction:

In the evolving landscape of Indian agriculture, the Integrated Farming System (IFS) plays a central role in productivity, profitability and environmental sustainability. The IFS bridge crops, livestock, aquaculture, agroforestry and value-added activities. It creates a holistic agricultural approach that harnesses the strengths of each component for maximum yield, soil health, nutrient cycling, and climate resilience (Figure 1).

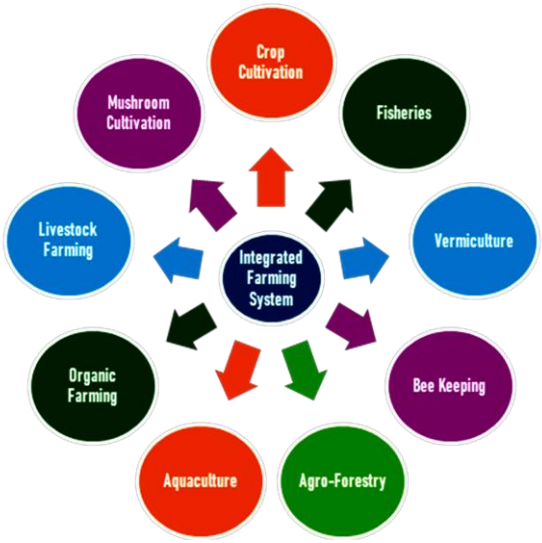

Figure 1. Integrated Farming System

Core Objectives of IFS

The objectives of an IFS model are centered on "Maximum Production with Minimum External Input":

- **Yield Maximization:** Increasing the total productivity per unit area through intensified cropping and allied enterprises.
- **Agro-ecological Equilibrium:** Maintaining soil health and biodiversity to ensure the system remains productive in the long term.
- **Biotic Regulation:** Utilizing natural management strategies for insect-pests and diseases through crop rotation and biological diversity.
- **Resource Recycling:** Minimizing the use of chemical fertilizers by substituting them with organic residues, green manure, and bio-gas slurry.
- **Economic Stability:** Generating a steady cash flow throughout the year rather than waiting for a single seasonal harvest.

Enterprise Interactions and Synergies

The core of a successful IFS is the

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"Interaction Matrix" that relies on the flow of nutrients and energy between subsystems to create a closed-loop environment (Table 1).

Table 1. Key linkages of IFS Interaction Matrix	
Crop-Livestock Synergy	Crop residues (straw, husks) serve as fodder. In return, livestock provides Farm Yard Manure (FYM) and draught power.
Pisciculture-Poultry Link	Poultry droppings falling into fish ponds serve as organic fertilizer, stimulating plankton growth, the primary food for fish.
Bio-Gas Nexus	Cattle dung and human waste are processed in a Biodigester to produce fuel for the home and nutrient-rich slurry for the fields.
Apiary and Horticulture	Bee colonies improve the pollination rates of fruit and vegetable crops while producing honey and wax for the market.

Rashtriya Krishi Vikas Yojana

The Rashtriya Krishi Vikas Yojana (RKVY), which started in 2007, is a central government program focused on the overall development of agriculture and related fields in India. It operates under the Department of Agriculture and Cooperation (DAC), which is part of the Ministry of Agriculture and Government of India. The main goal of RKVY was to help the agricultural sector grow by 4% each year. Through this scheme, states support farmers by offering 50% funding for their inputs and also encourage more public investment in agriculture and related areas. RKVY was executed during the 11th and 12th Five-Year Plans. In 2017-2018, the scheme was renamed as Rashtriya Krishi Vikas Yojana- Remunerative Approaches for Agriculture and Allied Sector Rejuvenation (RKVY-RAFTAAR).

Funding setup for RKVY

RKVY-RAFTAAR funds agriculture development through a 60:40 central-state cost-sharing ratio (90:10 for Northeastern/Himalayan states). It provides up to ₹25 lakh seed funding for startups and supports projects like infrastructure, value addition, and technology, approved by State Level Sanctioning Committees (SLSC).

Models for Specific Agro-Eco systems

A "one-size-fits-all" approach does not work in IFS; models must be tailored to the local climate and topography. The factors governing the model selection is described in Table 2.

A. Wetland Ecosystems (Lowland Farming)

In areas with abundant water or canal irrigation, the focus is on "High-Intensity Wetland IFS."

1. **Core Crop:** Triple cropping of Rice (e.g., Rice-Rice-Pulses).

2. **Allied Enterprises:** Fish culture in perimeter trenches, duckery, and dairy units.
3. **Synergy:** Ducks help in weeding and aerating the water in rice fields, while their excreta fertilize the crop.

B. Coastal Ecosystems

1. **Tree Crops:** Coconut, Cashew, and Jackfruit.
2. **Allied Enterprises:** Prawn culture in homestead canals and salt-tolerant goat breeds.
3. **Farm Pond Technology:** Digging ponds in 20% of the area to harvest rainwater, allowing for a secondary crop (Vegetables) during the summer months.
2. **Year-Round Income:** Income is generated from milk, egg and weekly from vegetables.
3. **Employment Generation:** The IFS system needs regular work; more employment opportunities are provided.
4. **Risk Mitigation:** In case crop cultivation is failure due to weather condition other enterprises like livestock or fish help to earn money. They protect the farmers from loss.

Conclusion

IFS could be be the answer to the problem of food production. It can increase income of small-scale farmers with limited resource. It doesn't cause any adverse effect on environment and ecosystem. It also emphasizes adopting informed practices that can lead to improved efficiency and sustainability. The climate change challenges can also be easily managed by IFS through proper planning.

Table 2. Factors Governing Model Selection

Factor category	Components
Environmental factor	Soil type, drainage capacity, space concept (vertical vs. horizontal)
Climatic factor	rainfall
Economic factor	Input prices, market demand, capital availability
Sociological factor	Traditional benefits, family labor, farm size (0.15-1.0 ha)

How Small Farmers Benefit from IFS?

The IFS model is specifically designed to address the limitations of small-scale farming:

1. **Balanced Nutrition:** They provide different types of food items for family such as milk, grain, meat and vegetables.

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