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Integrated farming system in India: scope and future scenarios in changing agricultural dynamics.

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Introduction

Farming system is a mixture of farm enterprises such as Crop, livestock, apiculture, agro-forestry and fruit crops. In this system family allocates its resources. It is to efficiently manage the existing environment for the attainment of the family goal. Farming system represents proper combination of farm enterprises and the resources available to the farmer to raise them for profitability. Farm enterprises can be cropping systems, horticulture, livestock, fishery, forestry, poultry, etc

Integrated farming system (IFS) is a broadly used term to explain the suitability of a more integrated approach towards farming over monoculture approaches. In this system an interrelated set of enterprises are maintained and by-products or wastes from one production system becomes an input for another production system, which reduces cost and improves production and/or income. Thus, IFS works as a system of systems. FAO stated that 'there is no waste', and 'waste is only a misplaced resource which can become a valuable material for another product' in IFS. For example, paddy straw, by-product from rice crop can be used as a valuable input for mushroom cultivation or dry fodder for dairy animals. Similarly spent of mushroom cultivation (used straw) can be used as a raw material in compost or vermicompost pits and by-products from dairy unit like dung can be used as fish feed or raw material for vermicompost unit. The farming system is essentially cyclic, organic resources - livestock - land - crops.

Lal and Miller defined farming system as a resource management strategy to achieve economic and sustained agricultural production to meet diverse requirements of farm livelihood while preserving resource base and maintaining a high level of environment quality. On the other hand, a farming system is the complex interaction of a number of inter-dependent components, where an individual farmer allocates certain quantities and qualities of four factors of production, viz. land, labour, capital and equipment to which he has access.

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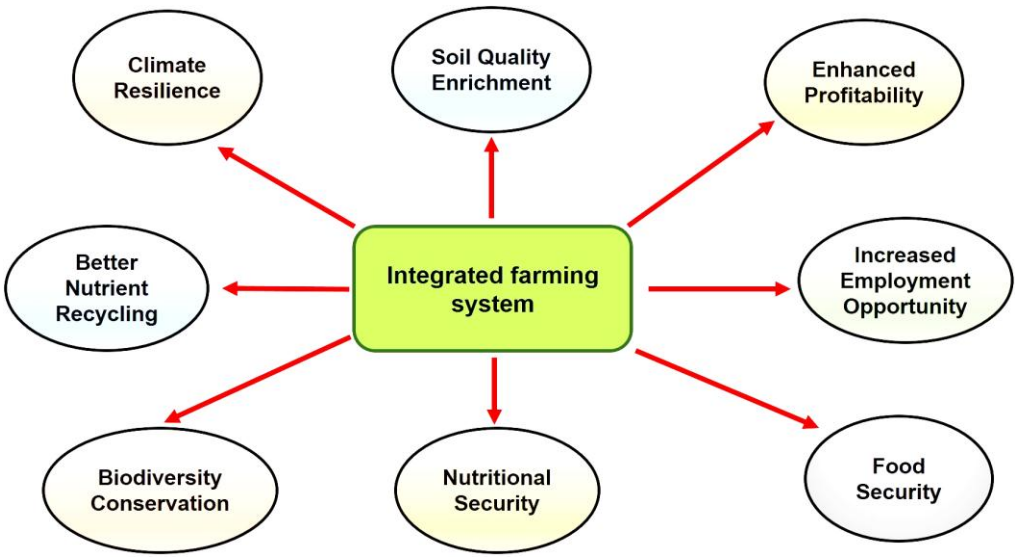
Goals of IFS

1. Maximize yield of all component enterprises to provide steady and stable income.
2. Rejuvenation of system's productivity and achieve agro ecological equilibrium.
3. Avoid build-up of insect-pests, diseases and weed population through natural cropping system management and keep them below ETL i.e. Economic Threshold Limit.
4. Reducing the use of chemicals (fertilizers and pesticides) to provide chemical free healthy produce and environment to the society.
5. To maintain sustainable production system without damaging resources/environment.

Advantages of integrated farming system

The benefits of IFS, a strategy to ensure sustainable use of the natural resources for the benefit of present and future generations, include pooling and sharing of resources/inputs, efficient use of family labour, conservation, preservation and utilization of farm biomass including non-conventional feed and fodder resources, effective use of manure/animal waste, regulation of soil fertility and health, improved space utilization, diversified products, income and employment generation for many people and increase economic resources.

1) **Productivity:** By virtue of intensification of crop and allied enterprises, IFS provides an opportunity to increase economic yield per unit area per unit time.
2) **Profitability:** The use of by-product of one component as the input of other reduces the cost of production as well as eliminates middleman interference thereby increasing the B/ C ratio.
3) **Potentiality or Sustainability:** Organic supplementation through effective utilization of byproducts of linked component provides an opportunity to sustain the potentiality of production base for much longer periods.
4) **Balanced Food:** The linkage of various components having different nutritional value enables to produce a complete and balanced source of nutrition.
5) **Environmental Safety:** Adoption of IFS minimizes the environment pollution to a great extent as the waste materials of one component becomes the input of other.
6) **Recycling:** Effective recycling of waste material.



7) **Income Rounds the year:** The interaction of enterprises with crops, eggs, milk, mushroom, honey, cocoons silkworm provides income to the farmer throughout the year which reduces the financial crisis in the farmer's family.
8) **Adoption of New Technology:** Big farmers fully adopt the new technologies by the linkage of dairy / mushroom / sericulture / vegetable etc. which provides money flow round the year. This motivates the small/ original farmers to go for the adoption of technologies.
9) **Meeting Fodder crisis:** Every piece of land area is effectively utilized. Plantation of perennial legume fodder trees on field borders not only fixes the atmospheric nitrogen which upgrades the land fertility but also minimizes the problem of non – availability of quality fodder to the animal component.
10) **Employment Generation:** IFS provides ample scope to employ family labour whole round the year. The integration of different components in IFS would increase the labour requirement significantly which in turn reduces the problems of unemployment to a great extent.
11) **Agro – industries:** When the produce of one component in IFS are increased to commercial level then the produce of other components gets surplus adoption which leads to development of allied agro – industries.
12) **Increasing Input Efficiency:** The use of inputs in different components of IFS shows greater efficiency and high benefit cost ratio.

Ecosystem services provided by Integrated Farming System

Benefits of IFS

1. Increase farm-level production
2. Efficient use of inputs
3. Minimize post-harvest losses
4. Minimize risk at farmer ‘s level
5. Promoting subsidiary activities for income generation

Conclusion

The integrated farming system is considered as a powerful tool for natural and human resource management as well as very effective in solving the problems of small and marginal farmers in developing countries including India. This multidisciplinary whole-farm approach aims at increasing income and employment from smallholdings by integrating various farm enterprises and recycling crop residues and byproducts within the farm itself. The traditional monoculture and disciplinary approach are unable to meet the growing and changing food demand and improve the livelihood of these smallholders on a sustainable basis.

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