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## INTEGRATED FARMING SYSTEMS (IFS)

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### Abstract:

Integrated farming systems (IFS) is an eco-friendly approach in which waste of one enterprise becomes the input of another thus its make more efficient use of resources from the farm. IFS as a mixed farming system that consists of at least two separate but logically interdependent parts of a crop and livestock enterprise. IFS is more advantageous than the farmers can able to produce more by using optimal resource utilization and recycling waste materials and family labour employment. Integrated farming system improves economic condition of the small and marginal farmers which enhanced the education, health and social obligations and overall improvement in livelihood security.

### Introduction:

An integrated farming system consists of a range of resource-saving practices that aim to achieve acceptable profits and high and sustained production levels, while minimizing the negative effects of intensive farming and preserving the environment (Lal and Miller, 1990; Gupta *et al.*, 2012). IFS is a multidisciplinary whole farm approach and very effective in solving the problems of small and marginal farmers. The approach aims at increasing income and employment from small-holding by integrating various farm enterprises and recycling crop residues and by

products within the farm itself. Integrated Farming Systems (IFS) has enabled us to develop a framework for an alternative development model to improve the feasibility of small sized farming operations in relation to larger ones. IFS helps in improving the soil health, weed and pest control, increase water use efficiency and maintains water quality. In integrated farming system the use of harmful chemical fertilizers, weed killers and pesticides should be minimized and also provide safeguards to the environment from the adverse effects. According to the Economic Survey of India, in 2008, the

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growth rate of food grain production decelerated to 1.2% during 1990-2007, that is lower than the population growth of 1.9%. It is estimated that in our country population will touch 1370 million by 2030 and to 1600 million by 2050.

For securing nutrition and food security for massive population, productivity enhancement may provide a vital solution. (Thamizoli et al., 2006) found that the introduction of forestry with agriculture along with the farm-based allied enterprises like dairy, apiculture, goat rearing, etc. as a risk management strategy to cope up with disasters like long drought season. the rationale of IFS is to minimize the wastes from the various sub systems on the farm and thus it improves employment opportunities, nutritional security and income of the rural people.

### Goals of Integrated Farming System

The four primary goals of IFS are-

1. Maximization of the yield of all component enterprises to provide steady and stable income.
2. Rejuvenation/amelioration of the system's productivity and achieve agro-ecological equilibrium.
3. Avoid the build-up of insect-pests, diseases and weed populations through natural cropping system management and keep them at a low level of intensity.

4. Reducing the use of chemicals (fertilizers and pesticides) to provide chemical-free healthy produce and environment to the society.

### Components of IFS

Components of IFS include - A. Agriculture – Horticulture, Forestry, Dairy, Fish farming, Duck rearing. B. Mushroom cultivation – Sericulture, Azolla farming, Kitchen gardening, Fodder production, Nursery. C. Seed Production- Vermiculture, Pigeon rearing, Apiary, Goat rearing, Poultry. D. Sheep rearing- Piggery, Rabbitry, Value addition (Lal et al., 2018). The benefits of the use of livestock manure in crop production are improvements in soil physical properties and the provision of N, P, K and other mineral nutrients. The application of livestock manure increases soil organic matter content, and this leads to improved water infiltration and water holding capacity as well as an increased exchange capacity. Manure and urine raise the pH level and accelerate the decomposition of organic matter and termite activity. The mechanism of IFS offers various ecosystem services making farms environment-friendly, sustainable, and climate-resilient.

IFS exploring its concept, components, and need, and emphasizing its potential for higher system productivity, profitability, and employment generation in a sustainable

manner. The IFS also actively addresses energy conservation as the integration of different components in a single farm collectively contributing to a reduction in energy consumption. IFS may also include the development of renewable energy sources like solar panels or wind turbines to generate on-farm energy, thereby reducing dependence on conventional energy grids. IFS utilizes significantly higher direct and renewable energy while minimizing the use of indirect and non-renewable energy, resulting in higher energy output, net energy, energy use efficiency, and energy profitability as compared to solo farming.

### Conclusions

In the long term, IFS can fulfil future food demands while also enhancing ecosystem services and promoting the adoption of IFS, government policies should be evaluated for providing support for capital investments, infrastructure, and on-field demonstrations, particularly for small and marginal holders. This approach aims to optimize the individual component and management of available resources, facilitate the recycling of waste and by products, engage family labour to reduce cultivation costs, enhance input use efficiencies, etc. The ultimate goal is to maximize production, productivity and income generation from a unit of land area over a stipulated period.

IFS is needed to sustain the Green Revolution while protecting the environment and ensuring farmers' food, nutrition, and livelihood security as these farms also exhibit ecological and non-tangible benefits.

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