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Profitable Integrated Farming System for Enhancing Income for Small and Marginal Farmers

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Abstract

The farmers concentrate mainly on crop production which is subjected to a high degree of uncertainty in income and employment to the farmers. Integrated farming is defined as a biologically integrated system, which integrates natural resources in a regulated mechanism into farming activities to achieve maximum replacement of off-farm inputs and sustain farm income. An Integrated Farming System (IFS) helps farmers, especially small and marginal, to achieve maximum returns and income from different integrated components, thereby improving their standard of living. The IFS also acts as a means for providing nutritional security to a farmer's family as the farmer is able to provide various IFS components such as vegetables, fruits, egg, milk, fish, etc.

Introduction

Integrated farming system may be defined as linking together two or more enterprises which then become subsystems of a whole farming system. Two major features of IFS are waste or by-product utilization in which the wastes or by-products of one subsystem become an input to a second subsystem; and to improved space utilization in which the two subsystems essentially occupy part or all of the space required for an individual subsystem. Integrated farming has been defined as the biologically IFS which: (1) integrates natural resources and regulation mechanisms into farming activities to achieve maximum replacement of off-farm inputs; (2) secures sustainable production of high quality food and other products through ecologically preferable technologies; (3) sustains farm income; (4) eliminates or reduces sources of present environment pollution generated by agriculture; and (5) sustains the multiple function of agriculture. Thus an IFS represents multiple crops (e.g., cereals, legumes, tree crops, vegetables) and multiple enterprises (e.g., livestock, apiary, aquaculture, etc.) on a single farm in an integrated manner. The IFS approach is holistic, multidisciplinary, problem solving, location specific, and farmer oriented (Singh *et al.*, 1998). The basic aim of IFS is to derive a set of resource development and utilization practices, which leads to an IFS and Livelihood of Small and Marginal Farmers: For the small and marginal farmers of India, IFS can play a vital role in enhancing their economic situation and livelihood.

Unlike specialized farming systems, IFS activity is focused around selected, interdependent, interrelated, and often interlinking production systems based on several crops, animals, and related subsidiary professions. An IFS involves the utilization of primary and secondary produce of one system as basic inputs to the other systems, thus making them mutually integrated as one whole unit. There is need for effective linkage and complementarities of various components to

develop effective holistic farming systems (Singh *et al.*, 2007). If we compare a specialized farming system with IFS, there are many variations with respect to structure, function and management. In India, where 60% of the population depends on agriculture and subsistence farming is dominant, the first preference is for the farm family to consume the majority of the farm produce. Due to this, IFS has become a focus of the government of India its development programs, with special emphasis on small and marginal farmers to bring livelihood. It is in this context that systematic research efforts are now on-going in India to develop sustainable IFS models for small and marginal farmers.

Problems in Present Agriculture

- Decline in agricultural growth rate.
- Decline in factor productivity.
- Decline in food production.
- Increase malnutrition.
- Shrinkage in net cultivable area.
- Increase cost of production.
- Low farm income.

Essential of Integrated Farming System

Places where one crop in a year, scarcity in irrigation and low rainfall areas, Agriculture practiced with animal husbandry not only gives additional income and employment opportunity to the family members around the year and also livestock excreta utilized as manures lowered the cost of fertilizers. Additional yields from crops. Soil fertility was protected. Crop residues used as livestock feed will reduce the feed cost. In this method agriculture along with fodder and azolla production combined with animal husbandry we will get more benefits. In our country, more than 80% farmers having a hectare or less than a hectare farm holders like small and marginal farmers. So, small and marginal farmers can cultivate part of their land with fodders like sorghum, maize and forage grass like Co-4 and guinea grass and legumes like Pillepesara and Stylo were fed to animals. Small farmer owning one hectare of land could allocate 0.8 hectares of land for agriculture, and 0.2 hectares of land for fodder production with modern technologies and if followed crop rotation, the returns from agriculture, milk and meat were high and realize more income.

Advantages of Integrated Farming System

- Regular income and year round employment.
- Provide food and nutritional security.
- Eco recycling of agricultural waste/ by-product/ residues.
- Better soil quality for sustainable agriculture.
- Minimization of pollution hazards.

- Improve micro climate.
- Conservation of natural resources.
- Minimize the risk of failure in productivity.

Table 1: Enterprise liked in different agro ecosystem

Dry land	Garden land	Wet land
Dairy	Dairy	Dairy
Goat/sheep	Poultry	Poultry
Agroforestry	Mushroom	Mushroom
Farm pond	Apiary	Apiary
	Piggery	Fishery
	Sericulture	duckery

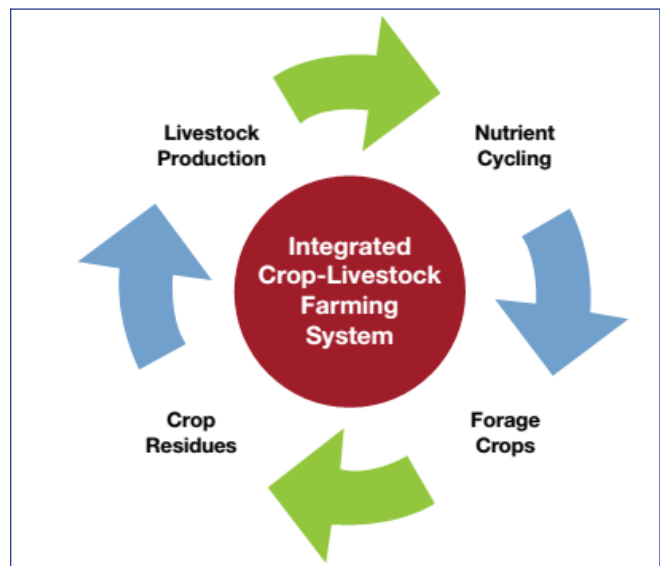


Figure 1: integration of enterprises

Types of Integrated Farming System

1. Crop-livestock farming system
2. Crop-livestock-fishery farming system
3. Crop-livestock-poultry-fishery farming system
4. Crop-poultry-duckery farming system
5. Crop-fishery-duckery farming system
6. Crop-poultry-fishery-mushroom farming system
7. Crop-livestock-forestry farming system
8. Agri-sericulture-apiary farming system
9. Agri-horticulture-sericulture-Pastoral system

Expected Output

- Productivity: 3-5 times increasing.
- Gain in net return: 3-5 times.
- Resource saving: 40-50 %.
- Average regular daily income: Rs. 750.00 /house /acre
- Nutritional security: 100%
- Generate income.



Figure 2: Agricultural crop (Ground nut) under IFS



Figure 3: Fodder bank under IFS



Figure 4: Dairy unit under IFS



Figure 5: Goat farming under IFS



Figure 6: Azolla production unit under IFS

Conclusion

Integrated Farming System approach not only fulfils the household needs but enrich diet of human being and animals both for nutritional security. Further, diversified nature of the model provides employment opportunity for unemployed rural youth. Economic and livelihood analysis of the system revealed that beside household food, feed, fodder and fuel security, the system generates a sizable amount of savings which will assist to meet other liabilities of the family including education, health and social obligations and overall improvement in livelihood of small farm holders. The adoption of multiple farm enterprises in an integrated manner can ensure a substantial income generation to sustain the livelihood of farmers over the meagre income from self-standing enterprises.

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