



Integrated Farming: A Key of Empowerment

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Abstract: Developing countries around the world are promoting sustainable development through newer agricultural practices which will help them in addressing socioeconomic as well as environmental issues simultaneously. Within the broad concept of sustainable agriculture “Integrated Farming System” hold a special position. Our Agriculture profession is connected with nature. Our people not only natural lovers in habitat and life style and also they used cow dung, poultry waste and dried leaves are used as fertilizer. This kind of Agriculture provided healthy and wealthy life. Integrated Farming System can be understood as combination of many systems, it attempts to increase farmers income using natural resources on sustainability basis which can be obtained by integrating crop husbandary with allied enterprises is Understood as IFS.

INTRODUCTION

Nowadays, farmers are subjected to a high degree of uncertainty in their income due to their dependence majorly on a single enterprise. India needs to adopt a “well designed” Integrated Farming System (IFS) to overcome this problem. So, farmers have to diversify their farming to get a more sustainable income as if one fails, another one can provide income. The integration of various agricultural enterprises such as cropping, animal husbandry, fishery, poultry, etc. have great potential in the farming economy. This also helps in reducing wastage of output from one enterprise as it can be used as an input for another one.

Problems of present-day agriculture systems

- The decline in agriculture growth rate
- Decline in productivity
- Shrinkage in the net cultivable area
- Increasing environmental pollution
- Depleting groundwater table
- The increasing cost of production
- Low farm income
- Problems of farm labours due to large scale migration
- Climate change and decrease in average rainfall

In recent years, food security, livelihood security, water security as well as natural resources conservation and environmental protection have emerged as major issues worldwide. Developing countries are struggling to deal with the dual burden of climate change and globalization. It has been accepted that sustainable development is the only way to promote proper utilization of resources and environmental protection without affecting economic growth.

Developing countries around the world are promoting sustainable development through newer agricultural practices which will help them in addressing socioeconomic as well as environmental issues simultaneously. Within the broad concept of sustainable agriculture “Integrated Farming System” hold a special position. It refers to an agriculture system that integrates livestock and crop production. Moreover, the system will help poor small farmers, who have very small landholding for crop production and few heads of livestock to diversify farm production, increase cash income, improve the quality and quantity of food produced and exploitation of unutilized resources.

The role of livestock in Indian economy is special one. One fourth of the country’s total revenue is come from the Agriculture. Animal husbandry contributes 33 per cent. Livestock farming is livelihood in villages, it removes poverty of the farmers, helps to improve their economic status. Daily revenue yielding milch cow farming was considered as important profession by the small and marginal farmers. Their milch animals largely depends on plant residues like straw and sorghum stalk, due to this milk production is low.

Our Agriculture profession is connected with nature. Our people not only natural lovers in habitat and life style and also they used cow dung, poultry waste and dried leaves are used as fertilizer. This kind of Agriculture provided healthy and wealthy life. But today, synthetic fertilizers are degrading soil fertility. At this point, in integrated farming system with the use of livestock residues panchakavya can be prepared and used for agriculture and fodder crops to minimize disease incidence and growth promoter.

The term "Integrated Farming System" is frequently used to describe a more integrated method of farming than monoculture methods. It is a multidimensional approach designed to manage resources sustainably and effectively for higher crop output. The Integrated Farming System uses organic farming, livestock, vermicomposting, and other methods to achieve its numerous goals of sustainability, food security, farmer security, and poverty reduction.

Integrated Farming System (IFS) A sub system of a high level land use system like a village or a watershed which includes crop production, raising livestock, fishery, poultry, beekeeping etc. on a particular farm with a objective of higher profitability without altering ecological and socio-economic balance on one hand and to meet the national goals on the other hand.

Integrated Farming System also defined as biologically integrated farming system which integrates natural resources and regulation mechanisms into farming activities to achieve maximum replacement of off-farm inputs, secures sustainable production of high quality food and other products through ecologically preferred technologies, sustain farm income, eliminates or reduces sources of present environment pollutions generated by agriculture and sustains the multiple function of agriculture.

Integrated Farming System can be understood as combination of many systems, it attempts to increase farmers income using natural resources on sustainability basis which can be obtained by integrating crop husbandary with allied enterprises is Undrstood as IFS.

Salient Features of Integrated Farming System:

- The term "Integrated Farming System" (IFS) refers to a set of interdependent, related, and frequently interlocking production systems that are based on a small number of crops, animals, and related subsidiary businesses.
- They are basically designed to maximize the utilization of nutrients in each system and minimize the negative environmental effects of these businesses.
- Because of the interconnected, interdependent, and interlocking character of IFS, primary and secondary output from one system are used as the primary input for the other system, integrating the two systems into one cohesive whole.
- It is an integration of farm enterprises such as cropping systems, animal husbandry, fisheries, forestry, and so on for optimal resource utilisation and farmer prosperity.

- The components of a farming system should be chosen and implemented based on the availability of land, the type of land, water, capital, resources, the farmer's technical skill, market facilities, and so on.
- In order to coordinate the joint management of land, water, vegetation, livestock, and human resources, integrated farming systems have long been recognised as a sound approach.

Understanding an Ideal Integrated Farming System:

- An ideal Integrated Farming System should have a low risk for farmers, modest investment requirements, quick returns, and be straightforward and repeatable.
- Five fundamental requirements must be met for an IFS to be considered ideal:
 - o Economic Viability
 - o Nutritional Security
 - o Environmental Sustainability
 - o Energy Self-sufficiency
 - o Climatic Adaptation
- It ought to produce enough revenue and job opportunities to sustain the farmer's and his family's way of life.
- Additionally, it should be able to offer a nutritious balanced diet to the entire family using various agricultural products.
- Furthermore, it should be sustainable, generating less waste through efficient by-product utilization and trash recycling inside the IFS.
- This would lessen emissions of greenhouse gases (GHG) and groundwater contamination (eg: due to nitrogen leaching from fertilizer application).

Principles of Integrated Farming System:

The fundamental principle is to boost ecological biodiversity by the following:

- By using the proper cropping techniques, such as intercropping, crop rotation, crop combination, and mixed cropping, there will be less rivalry for scarce natural resources, such as water, food, and space. Additionally, by implementing eco-friendly procedures.
- Using a multi-story layout to make the most of the space that is available and to maximize the interplay between biotic and abiotic elements.
- By incorporating subsystems that allow the various elements to interact favorably, increasing total agricultural production.
- The integrated farming system, which emphasizes intensifying agricultural productivity through resource integration, market linkages, and increased diversification, is also a sustainable agriculture system.

Goals of Integrated Farming System:

- Maximizing the yield of all component enterprises in order to provide consistent and stable income at higher levels.
- Rejuvenation/improvement of system productivity and attainment of agro-ecological equilibrium.
- Control the population of insects, pests, diseases, and weeds through natural cropping system management and maintain a low level of intensity.
- Reducing the use of chemical fertilizer and other harmful agrochemicals and pesticides in order to provide society with pollution-free, healthy produce and environment.
- Increased natural resource efficiency through early nutrient recycling.
- Mitigation of the negative environmental impact of agriculture or livestock.

Objectives of IFS :

- Efficient recycling of farm and animal wastes
- Minimizing the nutrient losses
- Maximizing nutrient use efficiency
- Adoption of efficient cropping systems and crop rotations
- Complementary combination of farm enterprises.

- Definition – Enterprise in farm business is defined as the production of single crop or a kind of stock.
- Generally farmers take more than one enterprise on their farms.
- The main objectives of the farming is to get maximum profit with minimum expenditure by combining enterprises.
- The combination of enterprises on a farm is influenced by the relationship that exists between the enterprises.

Advantages of Integrated Farming System (IFS):

- Productivity
- Profitability
- Sustainability
- Balanced food
- Environmental safety
- Recycling of waste
- Saving energy
- Adoption of New Technology
- Money Round the year
- Availability of fodder, fuel and timber
- Employment round the year
- Agro-industries
- Increases input efficiency
- Standard of living
- Avoid degradation of forest etc.

Productivity: Integration of crop and allied enterprises helps to increase economic yield per unit area per unit time. Intensification of cropping and allied enterprises in space and time dimension found to increase the productivity.

Profitability: Produce/waste material of ne enterprise can be used for other enterprise at least for crop, thus reducing the cost of production and increasing profitability per rupee investment.

Sustainability: Huge quantity of inorganic fertilizers, pesticides, herbicides are required to meet the food requirement of increasing population @ 2.2 % every year. Abundent use of such material causes soil degradation and pollution. The productivity of soil gets drastically reduced in due course of time. IFS provides an opportunity to sustain production through organic supplementation and effective utilization of byproduct of linked components.

Balanced food: IFS link varied nature of enterprises to provide nutritious food viz., vitamins, proteins, carbohydrates, fat, minerals etc. from the same area. This solves the malnutrition problem of poor peoples.

Environmental Safety: Abundant use of inorganic fertilizers, pesticides, herbicides make the soil, water and environment polluted. Similarly, residues of some crops, waste material also pollute the environment after decomposition. However in IFS waste material, byproducts of one composite are effectively recycled using for other component and by-product of that component as organic manure to enrich the soil. Use of bioagent or crop protection also minimizes the pesticides.

Recycling of waste: By-product of the crop husbandary can be effectively recycled for preparation of compost. Some of the by-product can be used as feed. This reduces the cost of production of one enterprise at the cost of other. Thus net income of farm is increased.

Saving energy: Energy crises can be served to same extent by utilizing organic waste to generate biogas which can be used for cooking, lighting etc.

Adoption of new technology: Big farmers are fully aware with the new technologies because of using improved varieties, package of practices. But small and marginal farmers

are not able to adopt for want of money. In IFS linking of cropping with dairy, mushroom, sericulture, floriculture there is a flow of money throughout the year.

Money round the year: In conventional farming income is expected once at the end of cropping season. However, IFS provides flow of money round the year by way of disposing eggs, milk, edible mushroom, honey, cocoons of silkworm etc.

Availability of fodder, fuel and timber: IFS utilizes every part of land. Growing of fodder trees on border will not only provide fodder but also enrich the soil by fixing atmospheric nitrogen. In multistroyed cropping includes of fodder component like cowpea as second or third tier also meet the fodder crises. The current production of fuel wood is about 20 million ton which needs to be increased to eighteen folds.

Employment round the year: Crop-livestock integration increase labour requirement through the year, other activities like mushroom cultivation, sericulture, apiculture also needs labor. Hence IFS provides employment to family members as well as outside labour throughout the year.

Agro-industries: Linking of various components in IFS, the production definitely increased to commercial level. Surplus production leads to development of agro based side industry.

Increase input efficiency: IFS provides better scope to use available inputs more efficiently. This leads to increase benefit: cost ratio.

Standard of living: IFS leads to produce milk, eggs, fruits, honey, edible mushroom and generate bioenergy for farmers family and commercial purpose. There is regular flow of money at frequent interval through out the year.

Avoid degradation of forest: There is a vast gap between demand and production of fuel wood and timber. Users encroaches/destroy the forest area to bridge the gap. Forest lands get degraded and eroded due to denudation of forest. IFS linked with Afforestation and provide safety against degradation of lands, besides supplementation of fuel, timber and fodder.

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