



## **Integrated Farming: A Way towards Sustainability in Agriculture**

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Agriculture is the base of every nation's economy. It plays an important role in maintaining the economy of both developed and developing nations likewise India is also a chief agricultural country. Survival of the country depends mainly upon agriculture. In past India faced the situation of food scarcity in this case green revolution helped the country to achieve a status of food deficit to food surplus country. Development of high yielding varieties and use of agro-chemicals helped the country to achieve this status. Currently India is facing an agrarian crisis and seems on the path of food scarcity again, reason behind that is the ever-increasing population and decline in per capita availability of land in the country. Land holding in India is decreasing day by day due to population explosion and there is no scope for horizontal expansion of land for agriculture. To get the satisfactory production farmers are using agro chemicals excessively that leads to death of soil microflora and fauna and had poisoned our food and ecosystem. Due to the excessive use of water ground water availability is also decreasing day by day and use of hazardous chemicals leads to decline in water aquifers. So, the land and water crisis added to climate variations have made farming unprofitable. The small and marginalized farmers, who often own less than one acre of land are getting marginalized in the new economic order. They have neither resource to invest, nor can they earn any significant amount of profit. Integrated Farming System (IFS) seems a possible solution to solve or overcome these problems. IFS is capable to fulfill the continuously increasing demand for food production, it helps in increasing sustainability in agriculture. It helps to stabilize income for small and marginal farmers with limited resources. To implement this approach to agriculture every farmer should understand each aspect of IFS. Different aspects of IFS are discussed below:

### **Integrated Farming System:**

IFS is the imitation of nature's principle, where with crops cultivation different species of animals, plants, birds, fishes and other flora and fauna are also utilized for the production. The International Organization of Biological Control (IOBC) describes integrated farming as a farming system where high-quality organic food, fibre and renewable energy are produced by using resources such as soil, water, air and nature as well as regulating factors to farm sustainably and with as little polluting input as possible.

### **Problems of Recent Agriculture and reasons why we need IFS:**

- Lack of food availability.
- Total cultivation area shrinkage.
- Increase in Environmental pollution because of excessive use of chemicals.
- Increase in production cost.
- Depletion of ground water because of excessive utilization.
- Farmers are able to earn very less and they also face instability of income.
- Growth rate in agriculture is decreasing & unemployment is increasing day by day.



### IFS comes with the following goals to overcome these problems:

- Maximization of production of all components enterprises to provide stability in income.
- Use of natural cropping system management to avoid build-up of insect pest, diseases and weed population and to decrease their intensity.
- Rejuvenation/enhancement of framework's usefulness and accomplish agro-biological balance.
- To provide chemical free healthy production and environment to the society by reducing the use of chemical fertilizers and pesticides. Dar *et al* (2018).

### Components of Integrated Farming:



Major Components of IFS are:

1. **Crops:** This includes cereals crops, fruit crops, legume crops, medicinal crops and fodder production.
2. **Livestock:** Rearing of buffalo, cow, goat and sheep comes under livestock component.
3. **Fish Farming:** Different species of fish and prawn are reared in this component.
4. **Poultry:** Hen, Duck, Turkey and Bater are included in poultry farming.

### Some Successful Models of Integrated Farming:

- Agricultural Crops + Livestock
- Crops + Livestock + Poultry
- **Fish Farming + Sericulture:** In this system pond are created to rear fishes and mulberry trees are grown on the banks of the pond to produce silk.



- Fruit Crops + Fish Farming + Poultry
- Pig + Fish Farming
- Rice Cultivation + Fish Farming
- Agricultural crops + Duckery + Poultry

### Advantages of Integrated Farming System:

- IFS leads to higher food production that is adequate to fulfill the demands of increasing population.
- Appropriate recycling of residue and other components leads to higher farm income.



- Recycling of waste helps to maintain the soil fertility and protect the soil from degradation.
- Increased availability of nutritious food that is rich in protein, carbohydrate, fat, minerals and vitamins due to integration of different crops and other allied activities.
- Lower production cost because of recycling of inputs and proper use of by products and available resources.
- Stability of income due to inclusion of poultry, livestock and other activities like bee keeping, silviculture etc.
- Cultivation of forage crops leads to availability of nutritious food for animals.
- Energy crisis can be resolved by inclusion of Bio-Gas and Agro-Forestry. Requirement of firewood and construction wood can be met by agro forestry without affecting the natural forest.
- IFS leads to generation of regular income and employment for the families of small and marginal farmers.

### **Possible Outputs of Integrated Farming System:**

IFS is the complex interaction of soil, water, plants, animals and environment which makes the farming system more viable and profitable than the arable farming system. Integration of livestock and other activities to the cropping system will positively affect the outcomes like it enhances the productivity and profitability and also helps to conserve natural resources. Integration of various farm enterprises in farming ensures the growth in productivity and stability of income. Productivity and economics of different integrated systems can be seen below in table:

### **Productivity and Economic Analysis of Different Integrated Systems:**

<b>Farming Systems</b>	<b>Production Cost (Rs/ha)</b>	<b>Gross Return (Rs/ha)</b>	<b>Net Return (Rs/ha)</b>
Cropping Alone	27822	64975	37153
Crop + Fish + Poultry	48303	146035	97731
Crop + Fish + Pigeon	47090	145868	98778
Crop + Fish + Goat	55549	186667	131118

Rana S. S. (2015)

### **Conclusion:**

We would like to conclude that Integrated Farming System should be integrated into farming system to sustain the present agriculture. This system has lots of advantages over the arable farming system. Integrated Farming System seems a possible solution for increasing production, income and for improving the nutritional status of small and marginal farmers.

### **References:**

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