Indian Farmer
Volume 10, Issue 05, 2023, Pp. 214-216
Available online at: www.indianfarmer.net
ISSN: 2394-1227 (Online)

Original article

OPEN ACCESS

Integrated livestock farming: An Innovation

Aditya Sharma[1*] and Sheikh Uzma Farooq[2]

[1]*Department of Veterinary Pathology, Khalsa College of Veterinary and Animal Sciences, Amritsar*
[2]*Department of Veterinary Pharmacology and Toxicology, Khalsa College of Veterinary and Animal Sciences, Amritsar*

***Corresponding Author:** aditya555sharma@gmail.com*

Received: 02/05/2023 *Published: 10/05/2023*

Abstract

India is an agricultural country, where majority of the people are dependent on agriculture for their livelihood and survival. Unfortunately, due to poor managing skills and lack of technical advancements in farming methods adopted by agriculturists, the yield is insufficient to feed the nation. In today's world, Indian agricultural sector is lagging behind because of the over employment and poor management and technical skills which is a wastage of the natural sources. One of the ways to tackle this issue is integrating the farming activities in such a way that the output of one unit is the input of the other unit, so that there is a link among all the farming units. The underlying idea of Integrated farming system is to combine various expanded systems synergistically like agriculture, livestock, piggery, aquaculture, apiary, silviculture, horticulture, floriculture, duckery, silvipasture and agro-industry, such that the residues of one system becomes the input for other systems.

Keywords: Agriculture, Management, Integrated farming, Residues, Horticulture

Introduction

With each day, population is increasing abruptly so much so that, today India ranks 2nd in having highest population in the world. With the incoming of industrial wave, farming lands have been recklessly converted into infrastructural realms. Day by day, even our nation's well educated youth resists being in agricultural sector. Combining these factors, overall, agricultural production has fallen down. Retrieval of skilled and educated people from the sector adds up to the backwardness of our farming sector. Without technical advancements, skilled youth's support and gap in updating farming practices, our farmers and farming sector are suffering humongous losses. Unfortunately, this loss is not only affecting the overall economic growth of our country, but also this loss adds up to the series of burden on farmers. To get rid of this freight, farmers commit suicide, leading to the loss of our nation's assets. Livestock holders also share the plight along with farmers.

The best way out for this issue is to update current prevailing farming practices by introduction and mingling of various sectors of agriculture. In other words, we can evade this issue by adopting Integrated Farming System (IFS).

Integration of various farming system by vertical expansion for upliftment of economic condition of farmers in a scientific manner is defined as Integrated Farming System (IFS).The involvement of the livestock along with the farming is called as the integrated Livestock Farming (ILF).This is an excellent way to reduce financial expenditure and increase the production output as well as the income of the farmers without affecting the environment's health and the soil fertility. It helps in reduction of risk of crop failure along with increasing nutritional food and adding you the food security of the nation. The farmers would not have to wait for the next season to make their ends meet. Throughout the year, they would be earning the money.

Concept and Components

The bottom line of this system is "maximum production with minimum wastage". The byproducts, left over materials, feed or act as ingredients for other systems. It is reliable way of integration of various land - based enterprises to obtain profit with minimum loss, effective use of the sources along with maximum compatibility and replenishment of organic matter by recycling organic waste.The prominent way of adopting this method is by following Integrated Livestock Farming (ILS).

Integrated Livestock Farming makes use of animals and crops in mutually dependent way i.e., byproducts of one are input ingredients for the other. This is very similar to Mixed Farming which also makes use of animals for agricultural use, but the underlying ideas and concepts are disparate from Integrated Livestock Farming.

In Integrated Livestock Farming, there are eco-biological interactions among the different units, are interdependent and there is NO waste. In case of Mixed Farming, systems exist independently of the each other. The main purpose of combining crops and livestock is to primarily reduce crop failure risks and it does not aim in recycling the waste of one system by the other system. This variation in the goals of these two techniques make them diverge from each other, even though they use same components.

Some of the effective Integrated Livestock Farming combinations are:

1.) Agriculture + Horticulture + Poultry + Fishery +Mushroom cultivation
2.) Agriculture +Livestock
3.) Agriculture + Livestock + Poultry
4.) Agriculture + Fishery +Piggery
5.) Agriculture + Fishery + Mushroom cultivation
6.) Horticulture+ Sericulture
7.) Fishery + Piggery + Duckery
8.) Agro-forestry + Silvipasture +Bamboo culture
9.) Agriculture + Floriculture +Apiary
10.) Agriculture + Rabbit farming

Economic and Ecological goals of Integrated Livestock Farming (ILF)

The foremost aim of this system is to generate the stable income for the poor farmers throughout the year. The subsequent intent is to fulfil the daily needs of increasing population without destroying the environment and ecosystem. It judicially uses the natural resources by providing financially viable and sustainable technology and maintains an equilibrium between the living and non-living components of our biosphere.

Integrated livestock – crop farming

In this system, primarily ruminants are reared along with the crop production. This activity is mostly performed by rich farmers. The cow dung can be used as the manure, and can be used for the methane gas production. The left-over of crop can be given as feed and fodder to the ruminants. The crop residues and crop by-products obtained can be used for improving the animal nutrition. Milk, meat, wool and leather can be obtained from the animals. This is the most common adopted system in India as well as in foreign countries.

Integrated Fish Farming

In this system, edible fishes farming is incorporated along with domesticated animals like sheep, goat, cattle & pigs.

Some plausible combinations include:

-Fish-cattle
-Fish-duck
-Fish-poultry
-Fish-pig
-Fish-goat
- A combination of fish with two or more types of livestock

The feed and pond fertilizers are replaced by the organic waste produced by the livestock animals and this helps in reduction of the input costs, put 60 percent in Aquaculture. Both indigenous and exotic fishes can be cultured. Mixed Aquaculture could be practiced in this type of integration. Instead of fishes, ducks could be involved in this amalgamated system. Khakhi and Campbell are mainly used indigenous breeds of ducks. Ducks are reared in shed constructed on the bank of ponds. Ducks consume the frogs, tadpoles, dragonfly, snails and provide a safe habitat to the fishes. 300 ducks are enough to fertilize one hectare of land.

Fish cum poultry farming

Much attention is being given for the development of poultry farming in India with improved scientific management practices. Poultry has now become a popular rural enterprise in different states of the country. Apart from eggs and chicken, poultry also yields manure, which has high fertilizer value. Utilization of this huge resource as manure in aquaculture afford better conversion than agriculture. The fully built - up deep litter removed from the poultry farm is added to fish pond as manure. There are two methods that are adopted in recycling the poultry manure for fish farming:

i. The poultry droppings from the poultry farms is collected, stored in suitable places and is supplied in the ponds at regular instalments at the rate of 50 Kg/ha/ day every morning after sunrise.
ii. Constructing the poultry housing structure partially covering the fish tank and directly recycling the dropping for fish culture

It has been estimated that one ton of deep-litter fertilizer is produced by 30-40 birds in a year. As such 500 birds with 450 kg as total live weight may produce wet manure of about 25 Kg/day, which is adequate for a hectare of water area under polyculture. The fully built-up deep-litter contains 3% nitrogen, 2% phosphate and 2% potash. The built-up deep-litter is also produced in large poultry farms. The farmers who do not have the facilities for keeping poultry birds can purchase poultry litter and apply it in their farms. The application of poultry manuring in the pond provides a nutrient base for dense bloom of phytoplankton and zooplankton development.

For exploitation of the above food resources, polyculture of three Indian Major carps and three exotic carps is taken up in fish cum poultry ponds.The pond is stocked after the pond water gets properly detoxified.The stocking rates vary from 8000 - 8500 fingerlings/ha and a species ratio of 40 % surface feeders, 20 % of column feeders, 30 % bottom feeders and 10-20 % weedy feeders are preferred for high fish yields. Mixed culture of only Indian major carps can be taken up with a species ratio of 40 % surface, 30 % column and 30 % bottom feeders.

In the northern and north - western states of India, the ponds should be stocked in the month of March and harvested in the month of October - November, due to severe winter, which affect the growth of fishes.In the south, coastal and north - eastern states of India, where the winter season is mild, the ponds should be stocked in June - September months and harvested after rearing the fish for 12 months.Aquatic weeds are provided for the grass carp.Periodical netting is done to check the growth of fish. If the algal blooms are found, those should be controlled in the ponds.

Fish cum poultry cum pig farming

In this system, pigs along with the poultry birds are reared in the fish farm together.Pigs are used along with fish and poultry in integrated culture in a two-tier system. Chick droppings form direct food source for the pigs, which finally fertilise the fish pond. Depending on the size of the fish ponds and their manure requirements, a system can either be built on the bund dividing two fish ponds or on the dry-side of the bund. The upper panel is occupied by chicks and the lower by pigs.

Integrated horticulture, floriculture and apiary

The cultivation of the flowers can be done along with the bee keeping. The bee keeping provides a lot of economic profit. We can get the honey, wax from bees by just allowing them to suck the nectar from the flowers cultivated in the farm. The flowers can be sold out separately. The horticulture can also be combined along with this. Honey is the only sugar that is medicinal, anabolic, antiseptic, anticancer and liver friendly. For bee keeping, plants such as alder, bee balms, black berries, rasp berries, dahlias, roses, fansyare cultivated, but the range is very broad and diverse.

Conclusion

For the developing and underdeveloped nations the best way to sustain themselves is through integrated livestock farming practices. ILF is an hour’s need for countries having high population less resources. This will also help in fulfilling the nutritional demands of both animals and humans. The nations that adopted, have gained a better future scope. This system helps in educating the people about ecological interactions of various components of our ecosystemand uplifts the status of the weaker sections in the nation along with sustainably safeguarding the environment.