

Importance of Poultry in Integrated Farming System

Dr. Balwinder Singh Dhillon

Assistant Professor, College of Agriculture,
Guru Kashi University,

Talwandi Sabo (Bathinda), Punjab

Corresponding author: balwinderdhillon.pau@gmail.com

ARTICLE ID: 008

Introduction:

Poultry is one of the fastest growing food industries in the world. Poultry meat accounts for about 27% of the total meat consumed worldwide and its consumption is growing at an average of 5% annually. Poultry industry in India is relatively a new agricultural industry. Till 1950, it was considered a back yard profession in India. Specific poultry stocks for egg and broilers production are available.

About 70% of Indian population is engaged in farming. Therefore, prosperity of India would depend upon the prosperity of its farmers. This in turn depends upon the adoption of improved technology and judicious allocation of resources *i.e.* land, labour, capital, machinery etc). Human race depends more on farm products for their existence than anything else since food and clothing– the prime necessities are products of farming. Even for industrial prosperity, farming forms the basic raw material. To sustain and satisfy as many as his needs, the farmers include crop production, livestock, poultry, fisheries, beekeeping etc. in their farms.

“Farming system” is a resource management strategy to achieve economic and sustain agricultural production to meet diverse requirement of the farm household while preserving the resource base and maintaining high environmental quality. The farming system in its real sense will help to lift the economy of agriculture and standard of living of the farmers. Farming system specially refers to a combination of enterprises in which the products and the by-products of one enterprise serve as the inputs for production of other enterprise. The waste of dairying like dung, urine, refuse etc. is used for preparation of FYM, which is an input in cropping systems. The straw obtained from the crops is used as fodder

for cattle's are used for different field operations for growing crops. Thus different enterprises of farming systems are highly interrelated.

Integrated Farming (IF) is a whole farm management system which aims to deliver more sustainable agriculture. It refers to agricultural systems that integrate livestock and crop production. Integrated farming systems has revolutionized conventional farming of livestock, aquaculture, horticulture, agro-industry and allied activities.

The Main Features of IFS:

- Reduction in cost of production.
- An arrangement of recycling products/by-products of one component as input to another linked component.
- Increase in productivity per unit area.
- Increase in total income of farm.
- Effective utilization of family labours around the year.

Objectives of IFS

The objectives of Integrated Farming Systems (IFS) are to:

- To integrate different production systems like dairy, poultry, livestock, fishery, horticulture, sericulture, apiculture, etc. with agricultural crops production as the base.
- To increase farm resource use efficiency (land, labour and production/by- products) so as to increase farm income through rejuvenation/amelioration of the system's productivity and gainful employment opportunity.
- To promote multi-cropping (out of the total cropped areas of 2,65,816 ha only 46,697 ha (18%) is sown more than once), for multi-layered crops of economic value so as to sustain land productivity.
- To maintain environmental quality and ecological stability. Achieve agro-ecological equilibrium through the reduction in the build-up of pests and diseases, through natural cropping system management and the reduction in the use of chemicals (inorganic fertilizers and pesticides).

Poultry as a component of IFS

A majority of the stocks used for egg production are crosses involving the strains or inbred lines of white Leghorn. To a limited extent, other breeds like Rhode Island Red,

California Grey and Australop are used. Heavy breeds such as white Plymouth Rock, White Cornish and New Hampshire are used for cross-bred broiler chickens. Hence, it is essential to consider the strain within the breed at the time of purchase. Several commercial poultry breeders are selling day old chicks in India.

It is best to start with the day old chicks. Adequate space should be provided for the birds. Floor area of about 0.2 m² per adult bird is adequate for light breeds such as white Leghorn. About 0.3-0.4 m² per bird is required for heavy breeds. The house should have good ventilation and reasonably cool in summer and warm during winter, it should be located on well-drained ground from flood waters. The feed conversion efficiency of the bird is far superior to other animals. About 60-70% of the total expenditure on poultry farming is spent on the poultry feed. Hence, use of cheap and efficient ration will give maximum profit. Ration should be balanced containing carbohydrates, fats, minerals and vitamins. Some of the common feed stuffs used for making poultry ration in India are maize, barley, oats, wheat, pearl millet, sorghum, rice-broken (cereals), oil cakes, maize-gluten-meal, fish meal, meat meal, blood meal (cakes/meal) and limestone, oyster shell, salt, manganese (minerals/salt).

From the day old to 4 weeks of age, birds are fed on starter ration and thereafter finisher ration, which contain more energy and 18-20% protein. Feed may be given 2-3 times. In addition to the stuffs, antibiotics and drugs may also be added to the poultry ration. Laying hens are provided with oyster shell or ground limestone. Riboflavin is particularly needed. The chicks must be vaccinated against Ranikhet diseases with F1 Strain vaccine within the first 6-7 days of age. One drop of vaccine may be administered in the eye and nostril. When chicks get the optimum body weight of 1.0-1.5 around six weeks, they can be marketed for broiler. Hens may be retained for one year for production *i.e.* upto the age of 1½ years. After that they are disposed off for table purpose. It may not be economical to keep the hens beyond ½ years since egg production would get reduced. One hen is capable of laying 180-230 eggs in a year starting from the sixth month. In addition, a laying hen produced about 230 g of fresh droppings (75% moisture) daily.

Economic potential

Conventional cropping system comprising:-

- (i) Rice-rice-blackgram

- (ii) Maize –rice-blackgram
- (iii) Maize-rice-sunhemp and rice-rice-sunhemp

Each in 0.25 ha as practiced by the farmers was taken up for comparison. To sustain the productivity of soil through integrated nutrient supply, recycled poultry, pigeon and goat manures and composted crop residue (banana waste and sugarcane trash) as vermicompost each 6.25 t ha⁻¹ were tested along with 100, 80 and 60% of the recommended fertilizer for the sequences of cropping. Integrated farming system provides an opportunity to increase economic yield per unit area per unit time by virtue of intensification of crop and allied enterprises. Research results on integrated farming system for three years revealed that integration of crop with fish, poultry, pigeon and goat resulted in higher productivity than cropping alone under lowland. Crop + fish + goat integration recorded higher grain equivalent yield of 39610 kg ha⁻¹ than other systems (Table 1). Similarly as individual animal component, the goat unit (20+1) gave the highest productivity of 8818 kg (mean over three years). This could also provide 11.0 t of valuable manure apart from supplementing the feed requirement of 400 number of fish. While assessing the feasibility of fish by using poultry, pigeon and goat droppings as feed, the fish fed with poultry droppings resulted in higher fish yield (825 kg/0.04 ha ponded water) than the two other sources of feed.

Table 1. Productivity of integrated farming system and its linked components

Farming system	Component productivity (kg)					System productivity (kg/ha)	% increase over cropping
	Crop	Poultry	Pigeon	Fish	Goat		
Cropping alone	12995	-	-	-	-	12,995	-
Crop +fish + poultry	26352 (89.0)	1205 (4.1)	-	2052 (6.9)	-	29,609	128
Crop +fish + pigeon	24854 (85.2)	-	2545 (8.7)	1774 (6.1)	-	29,173	124
Crop +fish + goat	25725 (68.3)	-	-	1975 (5.2)	9979 (26.5)	37,679	190

Productivity is expressed in rice grain equivalent yields. Figures in parenthesis indicate % contribution of each component.

The net returns of Rs 97,731 and per day return of Rs 400/ha were obtained by integrating poultry + fish + cropping applied with recycled fish pond silt enriched with poultry manures. Higher net return of Rs 3.36 for every rupee invested was obtained by

integration of pigeon + fish + cropping applied with recycled fish pond silt with pigeon droppings. Integration of crop with fish and poultry resulted in higher fish productivity under lowlands. The poultry pigeon and goat droppings were utilized as feed initially and at the end of a year after the fish harvest, about 4500 kg of settled silt from each pond were collected. Combining cropping with other allied enterprises would increase labour requirement and thus provide scope to employ family labour round the year. The pond silt was utilized as organic sources to supply sufficient quantity of nutrients to the crops. The nutrient contents of raw animal manures and settled silt collected from different fish ponds are furnished in Table 2.

Table 2. Nutrient value of recycled poultry manure

Particulars	Poultry
Layers used to satisfy the feed requirement of 400 fingerlings	20
Quantum of dropping received in an year (kg)	700
silt cleared after one year from 0.04 ha pond (t)	4.5

Conclusion

Population living in rural areas predominantly occupied by poor, marginal farmers and landless labourers. They are facing the problem of low income as well as malnutrition. So, the concept of integrated farming system is the best way to improve their income as well as quality diet. Animal agriculture is one of the most important components of global agriculture and livestock is one of the main users of the natural resource base. The way poultry birds are kept and egg & meat is produced will be a key factor in the future health of the planet. The business of poultry processing by dressing the birds produced at their own farm for raw meat sale as well as preparation of different products of poultry (roasted, gravy chicken, home style chicken, grilled chicken, boiled eggs, bhurji, egg curry etc.)