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Poultry Farming in India with Special Reference to Punjab: An Overview

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ABSTRACT

Animal raising activities have become one of the enormously flourishing sectors in Indian agriculture. Within livestock sector, the poultry husbandry started from a backyard venture and became a commercial agro-business generating revenue to the farmers. Poultry farming, comprising of Layer farming and Broiler farming, not only enhances food security, but has also been a remunerative source of income. The present paper is an attempt to give an overview of poultry farming in India, with special reference to Punjab. The poultry farming is a complete scientific process as it includes breeding, brooding, incubation, housing, rearing and feeding. The study revealed that poultry farming has been rising 5 times more than that of the agriculture crop production, which in turn pushed India to attain a substantial position in the world market. The percentage of poultry birds, production of eggs and meat registered an upswing. Due to its peculiarities of low investment, short gestation period and adaptability with different climatic conditions, it's in the reach of the farmers.

Key words: Agriculture, Broiler, Chickens, Layer farming, Poultry farming.

Agriculture plays a transforming role in the economic growth and development of almost every country. Developing countries, especially India, are usually agriculture dominating economies, where its primary sector contributes a significant portion of the national income to the country. Further, agricultural and allied activities not only provide employment opportunities, directly or indirectly, to the Indian population, but also enable the country to earn foreign exchange, to a considerable extent, through export of different items (Patel, 1981).

Animal husbandry, forestry, dairy, poultry and fishery are treated as allied activities of agriculture. These are supporting activities to agriculture and rural economy. The demand for the animal protein source is increasing rapidly in developing countries due to its high protein and nutrient content (Khan, 2004 and Ali, 2007). Undoubtedly, poultry industry is one of the fast growing agro-industries in the world. Similarly, it is also one of the fastest growing segments of the agricultural sector in India (Archaria, 1990). It started from a backyard venture, a mere tool of nutritious food and supplementary income for the family, which has now fully transformed into commercial agro-business generating revenue (Kumar and Rai, 2006; Raju *et al*., 2007; Krishna, Erenstein, Sadashivappa and Vivek 2014). Eggs and meat are those supplementary nutritious food which have low economical value in accordance with their health benefits (Rajkumar *et al*., 2021). While the production of agricultural crops has been rising at a rate of 1.5 to 2 per cent per annum and that of eggs as well as broilers has been rising at a rate of 8 to 10 per cent per annum. As a result, India is now the world's eighteenth largest producer of broilers and fifth largest egg producer (Mehta *et al*., 2003).

The industry is concerned with the production of meat (broiler industry) and eggs (layer industry) (Archaria, 1990).

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Layers are the chickens reared especially for the production of eggs. Layer farms are meant for the purpose of egg production. The layer birds produce eggs for a number of months up to the age of 20 months or less. Layer birds start production when they attain 22 weeks of age and it rises sharply, reaching a peak at about 32-35 weeks of age. After that, the same declines gradually. When the laying capacity of layer birds deteriorates, they are sold off for the purposes of meat (FAO, 2013). Broiler birds are a young chicken reared for the purpose of meat production. Broiler birds have 1.5 to 2.0 kilogram's weight with tender meat, soft, smooth textured and flexible breast. It is also known as "frayer". In broiler farms, farmers procure one-day-old chicks (broiler); rear up to the age of six weeks and finally dispose in the market.

According to FAO (2003) the poultry farming as a business venture can be undertaken in five ways as represented in Table 1. Backyard poultry production is regarded as the subsistence level of farming in which birds are reared under free range system and left on natural hatching method to hatch their eggs. The labour involved in backyard poultry production is usually part-time. Farm flock production is slightly more specialized than backyard poultry production. Eggs are hatched at a separate location

where the hatch and the sexing of the birds are controlled by the poultry farmers.

Commercial poultry farm production

It involves full-time labour and is geared toward producing on a sufficient scale for the sale of both eggs and poultry meat. Specialised techniques of production are used under such farming to maximise the revenues from the poultry products.

Specialized egg production

It consists of separating poultry for meat and egg production. In the egg producing plant, specialized employees oversee specific aspects of egg production. There is specialisation and division of labour in such kind of poultry farming.

Integrated egg production

It is the most advanced farming technique which involves full mechanisation and automation of the egg production cycle including battery egg laying, temperature controls, scientific feeding and mechanised egg collection methods. Such type of farming is undertaken on a large scale. In almost all types of production systems, broiler diets should encompass adequate amount of citric acid and kaolin-garlic mixture for uplifting growth performance, economic aspects and feed conversion efficiency of broiler chickens (Makofane *et al*., 2022 and Sahraoui *et al*., 2022).

Trends of poultry farming in India

India has vast resource of poultry population, which plays a transforming role in recuperating the socio-economic conditions of rural masses. The livestock census 2019 computed the data on backyard and commercial poultry population. It reveals that the total poultry population was 729.21 million in 2012 and further rose to 851.81 million in 2019. During the period of 2012-2019, the growth rate was 16.81 per cent. The backyard poultry population is 317.07 million in 2019, whereas it was 217.49 million in 2012. Although, the population in absolute terms is more in case of commercial poultry, yet the growth rate showed a tremendous increase in backyard poultry as it is 45.48 per cent. In case of commercial poultry, the population is 511.72 million and it is almost same with a slight increase standing at 534.74 million with an average growth rate of just 4.5 per cent.

The trends of poultry farming varied significantly in different states of India. The Department of Animal Husbandry (2018-19) estimated the total production of poultry in separate states of India and ranked top ten states according to their production share in the country for the year 2018-19. Table 2 demonstrates that Maharashtra stood at first producing 632.32 tonnes of poultry birds. Second place is occupied by Haryana, producing 478.63 tonnes of poultry, followed by West Bengal, Tamil Nadu and Andhra Pradesh with their production level around 450 tonnes and share of poultry production around 11 per cent. Uttar Pradesh and Telangana have almost equal share in poultry production *i.e.* nearly 8.5 per cent and in absolute terms 359.44 and 336.33 tonnes respectively. The poultry production was lowest in Kerala, Karnataka and Punjab with an average of 150 tonnes which is almost one- fourth as compared to Maharashtra state. In absolute terms, the share of poultry production of Punjab was least, stood at 125.03 tonnes among all the ten nations. In comparison to Punjab, Kerala performed bit better as the production stood at 178.03 tonnes for the year of 2018-19.

Trends of poultry farming in punjab

Poultry farming, a newly emerged activity is practised by thousands of rural as well as semi-urban people. Fragmentation of land holdings in the rural areas is one of the main reasons because of which poultry farming has attained a special significance in the state of Punjab. There is no such scope for extensive and intensive cultivation. As on one hand, there is ceiling to the existing land area and on the other hand, the production and productivity of food grains, especially of cereals in Punjab have already reached

Table 1: Types of poultry enterprises.

Basis	Backyard poultry	Farm flock	Commercial poultry farm	Specialized egg production	Integrated egg production
Subdivision of egg production	Pullet growing, feed production	Hatchery production separate from farming	Feed production separate from poultry farms	Chicken meat production becomes independent of egg production	Separate enterprises reintegrated as a business
Main management characteristics	Natural hatching	Artificial hatching and sexing	Feed mixing	Egg processing plant	Controlled-environment houses
Type of farming	Subsistence farming	Mixed farming	Joint egg and meat production	Eggs industry (single commodity)	Egg complex
Building	Free range	Water feeder	Water feeder	Manure disposal equipment	Egg belt automatically controlled house
Labour	Part-time	Part-time	Full-time	Division of management and labour	Separate daily work and random work

Source: Food and Agriculture Organisation (FAO), 2003.

a point of saturation. Because of all this, there is a need for other subsidiary occupations like poultry farming, which can ensure remunerative income to the farmers (Singh *et al.*, 2008 and FAO, 2012).

Poultry farming has certain distinctive features that make it an ideal subsidiary occupation, especially for weaker sections of the rural community. In Punjab, the place for poultry is no more in the backyard as some entrepreneurs have not only entered the commercial poultry farming but also have found it highly remunerative (Reddy and Kumar, 1992). The poultry industry is contributing to the economies in almost all the aspects, whether it's social, physical or economic. With the advent of globalization, there has been increase in the demand for poultry products both within and outside the nation. Internally, the demand has not only increased in the overall economy rather within state the rate of production among the poultry birds varied significantly. Furthermore, wide variations have been noticed in the volume of poultry birds reared in different districts of Punjab.

Table 2: State-wise distribution of poultry production in India (2018-2019).

State	Production ('000 tonnes)	Share (per cent)
Maharashtra	632.32	15.57
Haryana	478.63	11.78
West Bengal	475.42	11.70
Tamil Nadu	455.51	11.21
Andhra Pradesh	443.35	10.92
Uttar Pradesh	359.44	8.85
Telangana	336.33	8.28
Kerala	178.03	4.38
Karnataka	139.18	3.43
Punjab	125.03	3.08
Total	3623.24	-

Source: Department of Animal Husbandry, 2018-19.

Table 3 reveals that out of total 2,50,07,700 number of population in layer farming in 2019-20, 62,99,400 (25 per cent) were chicks *i.e.* up to the period of maximum 18 weeks of age and 1,87,08,300 (75 per cent) were layer birds which are above 18 weeks and up to 72 weeks of age. It was further noticed that S.A.S. Nagar, Ludhiana and Sangrur were the top three districts of Punjab, having highest number of layer population i.e. more than 50 per cent of the total layer birds in the year of 2019-20, whereas S.B.S. Nagar, Mansa and Fazilka were the bottom three districts, having very negligible contribution in the overall layer population *i.e.* only 0.48 per cent. Furthermore, Jalandhar, Ropar, Tarn Taran and Amritsar districts of Punjab were found to be holding a medium share (7.7 per cent) of total layer population in 2019-20.

During the period of study, it was found that usually poultry farmers engaged in layer farming purchases day old chicks from the hatcheries and rears them up to the age of 18 weeks and then shifts them into the layer sheds for egg laying purposes. Almost, all the districts of Punjab followed

Table 3: District-wise number of layer population (2019-20).

Districts	No. of farms	No. of chicks	No. of layers	Total
Ropar	9	183000	355000	538000
Patiala	52	511000	2184000	2695000
Fatehgarh Sahib	26	317000	637000	954000
S.A.S. Nagar	79	2340000	2926900	5266900
Barnala	87	460000	2122500	2582500
Sangrur	65	559000	2797000	3356000
Bathinda	16	45000	155000	200000
Sri Muktsar Sahib	20	25000	245000	270000
Ferozepur	54	0	696000	696000
Fazilka	6	0	75000	75000
Mansa	2	0	33000	33000
Faridkot	11	0	279000	279000
Moga	19	0	244000	244000
Jalandhar	15	95000	519000	614000
Hoshiarpur	22	272400	467900	740300
Ludhiana	92	1157000	3363500	4520500
S.B.S. Nagar	3	0	13500	13500
Kapurthala	7	40000	123000	163000
Gurdaspur	16	4000	257000	261000
Amritsar	10	135000	230000	365000
Tarn Taran	16	46000	378000	424000
Pathankot	14	110000	607000	717000
Total	641	6299400	18708300	25007700

Source: Department of Animal Husbandry, 2019-20.

Table 4: District-wise number of broiler population (2019-20).

District	No. of farms	No. of birds (31.3.20)	Production of year
Ropar	151	1102400	5603500
Patiala	213	1408500	7538000
Fatehgarh Sahib	96	795500	4119500
S.A.S. Nagar	44	257700	1427000
Barnala	103	748500	3742500
Sangrur	245	1858000	8825350
Bathinda	34	263000	1397000
Sri Muktsar Sahib	29	230000	1182000
Ferozepur	7	61000	338000
Fazilka	27	108500	527500
Mansa	26	150000	750000
Faridkot	26	148500	867000
Moga	13	104500	627000
Jalandhar	93	1151000	6906000
Hoshiarpur	567	3542800	19842700
Ludhiana	186	1846800	12500900
S.B.S. Nagar	65	555000	263000
Kapurthala	43	402500	2403000
Gurdaspur	434	2723200	16339200
Amritsar	97	936700	5620200
Tarn Taran	38	135800	814800
Pathankot	314	1350900	8105400
Total	2851	19880800	109739550

Source: Department of Animal Husbandry, 2019-20.

the same pattern, but the districts; Ferozpur, Fazilka, Mansa, Faridkot, Moga and S.B.S. Nagar were found to be purchasing directly mature birds above 18 weeks of age from the hatcheries and then engage them for egg laying purposes. As far as the number of farms is concerned, Ludhiana, Barnala, S.A.S. Nagar, Sangrur, Ferozpur and Patiala were the districts having more than 50 farms in their areas. In contrast, Mansa, S.B.S. Nagar, Fazilka, Kapurthala and Ropar have least number of farms in their respective districts which stood at less than 10 per district.

Table 4 represents the district wise broiler population in Punjab. In the year 2019-20, overall broiler production was highest in the Hoshiarpur district, followed by Gurdaspur and Ludhiana. These all three districts have the broiler production of above 1 crore *i.e.* 44 per cent of the total production. On the flip side, S.B.S. Nagar, Ferozpur and Fazilka were found to be the lowest three contributing districts in overall broiler production having only 1 per cent share in total production of the year. The districts like Kapurthala, S.A.S. Nagar and Bathinda have the medium concentration of broiler production, on an average 17 lakh birds produced under broiler production which is near to 5 per cent in the total broiler production.

Further, the number of birds in the first quarter of the year as shown in the table also revealed almost same facts in which Hoshiarpur, Gurdaspur, Ludhiana were the top three districts, having more than 35 lakh, 27 lakh and 18 lakh number of birds respectively. Similarly, bottom three districts were also same as in case of total broiler production over the year. Moreover, the concentration of number of farms in districts of Punjab also witnessed the similar trend in which the farm number was highest in Hoshiarpur (567), followed by Gurdaspur (434), Pathankot (314), Sangrur (245) and Patiala (213), whereas the district such as Ferozpur, Moga, Mansa, Faridkot and Fazilka have lowest number of farms (less than 30).

The government also made efforts to support such type of business ventures by extending loans through nationalised banks under various National Bank for Agriculture and Rural Development Schemes. One of the primary schemes started by NABARD and Ministry of micro, small and medium scale enterprises in India is Poultry Venture Capital Fund Scheme for supporting farmers and helping to promote poultry farming activity. The scheme helps in strengthening and supporting the poultry industry by providing employment or opportunities in backward areas in India which in turn helps in the economic growth of the country. Furthermore, the Ministry of Agriculture, Government of India has four Central Poultry Development Organisations, will serve as single window to meet out all the technical requirements of the poultry farmers of all the regions of India and working for the development of the poultry in India. In spite of the strenuous attempts made by the government, poultry farming is still a risky enterprise being live in nature. With the passage of time, there has been a drastic change witnessed in the cost and returns aspects in poultry products due to volatility in prices. Poultry farmers in India are facing the shortage of feed raw materials, lack of capital for investment, external and internal competition, disease outbreak *etc.*

Conclusion and Summary

Animal raising activities have become one of the enormously flourishing sectors in Indian agriculture. Within livestock sector, the poultry husbandry started from a backyard venture and became a commercial agro-business generating revenue to the farmers. The rate at which the production of poultry farming is rising, is 5 times more than that of the agriculture crop production. Due to its peculiarities of low investment, short gestation period and adaptability with different climatic conditions, it's in the reach of the agriculture farmers. It is a complete scientific process as it includes breeding, brooding, incubation, housing, rearing and feeding.

In the past decade, the growth rate of total poultry population was 16.81 per cent. The trend in the growth rate showed a tremendous increase in backyard poultry in comparison with commercial poultry production. As the backyard poultry population rose by almost one and a half times in the year 2019 as compared to the population in 2012, whereas the commercial poultry population increased slightly with an average growth rate of just 4.5 per cent. The production of eggs in the Eleventh Five Year Plan jumped

up by one-third as compared to its magnitude in the Tenth Five Year Plan. Similar pattern was also seen in the livestock census. The percentage of poultry birds in 18th livestock census rose by 32 per cent in comparison with 17th livestock census. The trends of poultry farming varied significantly in different states of India. Among the top ten states, Maharashtra has the largest production share in the country, followed by Haryana, West Bengal, Tamil Nadu and Andhra Pradesh. Uttar Pradesh and Telangana have almost equal share in poultry production. The poultry production was lowest in Kerala, Karnataka and Punjab.

Lagging of agriculture and fragmentation of land holdings led the poultry farming venture to attain a special significance in the state of Punjab. The total number of bird population was highest in Gurdaspur, followed by Ludhiana, Sangrur and Patiala. Layer farming was more adopted by the farmers relative to broiler farming in the districts of Tarn Taran, S.A.S. Nagar, Ludhiana, Firozpur, Faridkot, Muktsar Sahib, Moga, Bathinda, Sangrur, Patiala, Gurdaspur and Barnala. On the other hand, the farmers of district Amritsar, Kapurthala, Jalandhar, S.B.S. Nagar, Hoshiarpur, Rupnagar, Mansa and Fatehgarh Sahib were found to be more engaged in broiler farming. Though, government made efforts to support this business ventures by extending loans through nationalised banks, however, over time, a drastic change in the conditions of poultry farming augmented the need of regulatory policies and a framework.

Conflict of interest

All authors declared that there is no conflict of interest.

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