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Role of Poultry in Nation Building

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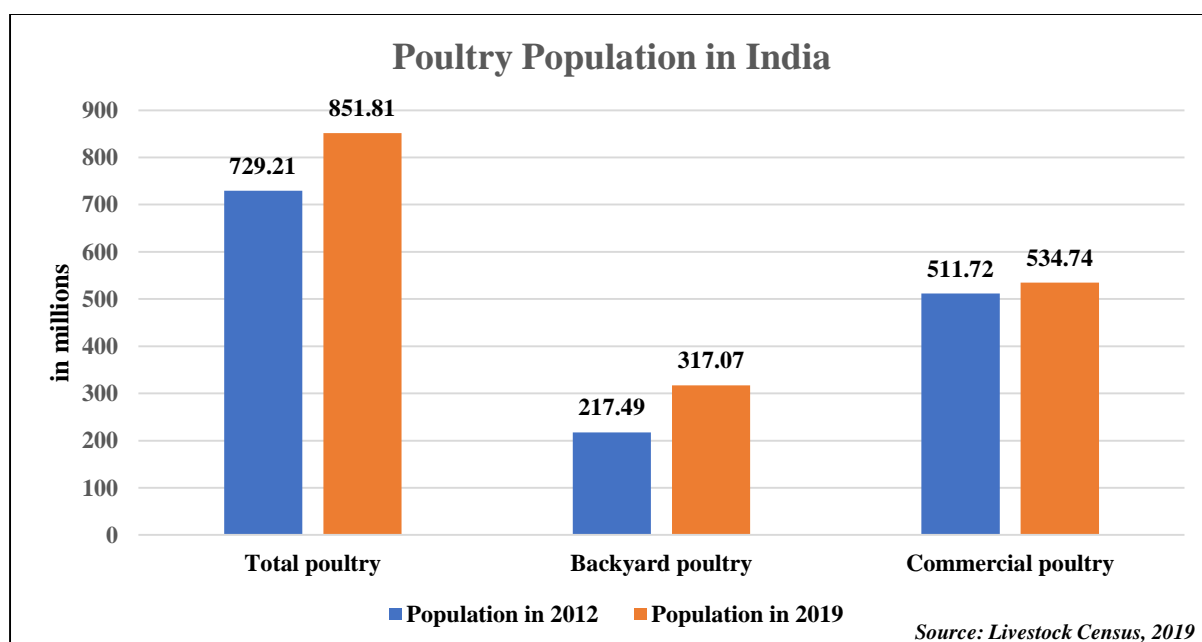
INTRODUCTION

Poultry includes the rearing of chicken, quail, ducks, geese, and turkey by human beings for the purpose of eggs, meat, and feathers. The poultry industry involves the breeding, hatching, rearing, and processing of domestic birds. India ranks 7th in the world poultry population (851.81 million tons) (Statista, 2022), 3rd in egg production (120 billion eggs/year), and 5th in chicken meat production (6 MMT/year) (Economic times, 2020-21). Nearly 95% of total eggs produced in India are from chickens, with the remaining 5% coming from ducks and other poultry species, this indicates the domination of chickens in the poultry industry (DADF, 2014). Rearing poultry is a very old practice in our country and it is now an important contributor to the economy in rural and semi-urban areas. The organized sector of the poultry industry is contributing nearly 70% of total output and the remaining 30% is from the unorganized sector in the Indian poultry market. The southern region accounts for about 57 percent of the total egg production, the eastern and central regions of India account for about 17 percent, while the northern and western regions contribute 26 percent of egg production. In addition to commercial layers and broilers, India has a huge (300-500 million) population of indigenous backyard free-range chickens which is a source of pin money for housewives. The broiler industry is well-dominated in the southern states of India, with nearly 60-70% coming from Andhra Pradesh, Tamilnadu, Telangana, and Karnataka states. The layer industry is also very strong in Andhra Pradesh, Tamilnadu, Telangana, and Maharashtra which represent 70% of total country egg production.

Poultry industry in India

The Indian poultry industry is 5000-year-old and in recent years it witnessed remarkable growth from the backyard to the commercial poultry industry. According to the size of the operation and the level of biosecurity, the FAO divided poultry production systems into four categories: village or backyard production, commercial poultry production with low biosecurity, large-scale commercial production with high biosecurity, and industrial and integrated production systems. Whereas the poultry enterprises in India have been divided into two distinct categories i.e., developmental farms and commercial farms. Developmental poultry farms are also referred to as village or unorganized poultry production because it operates at a low scale by using traditional techniques with limited capital. Unorganized poultry farms are more prevalent in village areas which act as income and employment sources for small families. Production in developmental poultry farms is low due to the above-said constraints. This type of production is very common in India’s rural areas, as the livestock sector plays an essential role in supplementary income generation, family nutrition and raising the living standards of rural households. Across India, around 30 million farmers have still involved in backyard poultry farming. On the other hand, commercial/ industrial poultry production farms are also called organized farms and are operated at a large scale where more birds are reared per unit area by using recent technological advancements. The growth of the commercial poultry sector is quite significant over the years and mostly it is confined to the urban and semi-urban areas.

Figure 1: Poultry population in India



According to the latest report by IMARC Group 2022, the Indian poultry market was valued at INR 1,988 billion in 2020 and is expected to grow at a CAGR of 15.2% during the forecast period (2021-26). Due to the increased consumption of meat in our country

on the grounds of health consciousness and immunity building, the poultry market gained huge significance over the years. In India, the poultry market is driven by increasing health consciousness among the people, especially during the COVID-19 pandemic period, and also changing dietary patterns and rising demands for protein-rich food products among individuals which positively influences the market growth. Poultry is one of the fastest-growing segments of the agricultural sector in India. In our country, while the output of agricultural crops has been increasing at a pace of 1.5 to 2 percent annually, egg production has been shown a growth rate of 6-7 % and the broiler has risen at an annual rate of 8-10 percent in recent decades due to the improved breeds of layers and broilers. The potential growth in the sector is mainly due to growth in the per capita income, rising urban population, and availability of poultry products at affordable prices to the common people.

The tremendous growth in poultry industry is due to the following reasons

1. Chicken and eggs are accepted by all communities without any religious taboos towards those products
2. Compared to other animal protein sources, chickens and eggs are the cheapest commodities
3. Eggs are the most nutritious, natural, unadulterated & easily digestible food with highest biological value (96 %)
4. Among various types of meat, poultry meat has the highest protein, lowest fat and cholesterol content
5. Poultry is the best converter of feed into meat & eggs
6. Poultry has a short generation interval and will produce the largest number of offspring per dam
7. Requirement of space for poultry farming is much less than other livestock
8. Poultry can be reared successfully under wide agroclimatic conditions, in any type of soil. Even waste lands can be utilized
9. Poultry are highly adaptable to the intensive system of rearing with full automation

These facts created interest in farmers and entrepreneurs & encouraged them to start poultry farms. The remarkable growth in the Indian poultry sector is due to the introduction of pure line breeding within the country in both the public and private sectors which lead to the availability of elite commercial layer and broiler germplasm, and the introduction, improvement, and commercialization of diversified poultry species. Other contributing factors include balanced feed, appropriate health coverage, transfer of technology package, and market support, etc.

Backyard poultry

Until the late 1900s, poultry production in India took place mainly in people's backyards. In India, poultry farming was initially started as a backyard activity, but the rising demand for poultry products has propelled poultry production into a full-fledged industry, where India stands as one of the world's largest producers of eggs and broiler meat. The poultry industry has transformed within four decades through heavy investment in chicken breeding, hatching, rearing, and processing. Across India, there are 30 million farmers are still engaged in backyard poultry farming. Thus, the demand for livestock and poultry products can play an important role in the income and employment status of some rural households. While backyard poultry farming is more common in rural India, the majority of poultry is produced in commercial farms which are contracted to major companies like Venky's, Suguna, Srinivasa and Sneha, etc.

Backyard farming in India

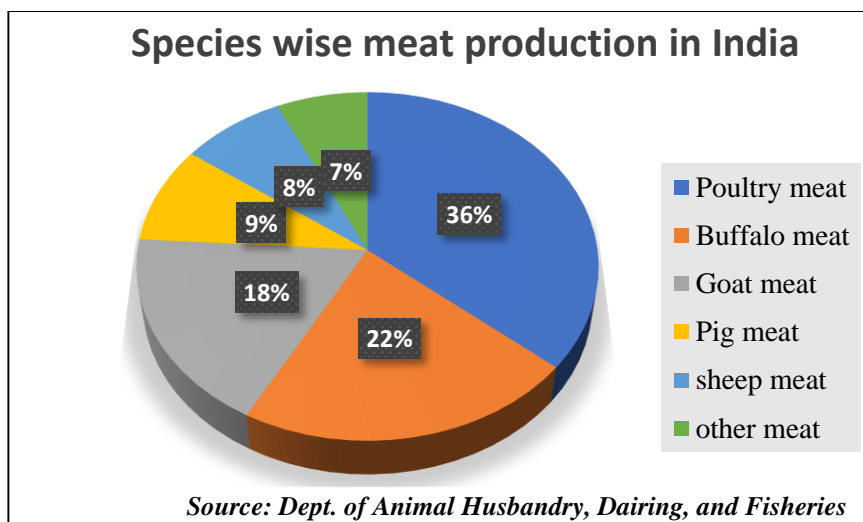
Backyard farming is an age-old practice in India and it is also a profitable business. It contributes about 15 percent of the total poultry output in India. Backyard poultry is the rearing of birds in which in the morning times they are allowed to outside to search for feed and during the night time they are housed in a shelter. Generally, agricultural by-products, grains like maize and rice, and kitchen waste are given as supplementary to scavenging, so feed cost will be less. Raising birds in the backyard is to ensure a steady stock of fresh nutritious food and for landless and poor farmers it acts as a source of subsidiary income. It involves low-cost investment and yields high returns and these can be easily managed by women, children, and elder people. In villages, backyard production is mainly based on traditional local breeds producing both chicken meat and eggs. Indigenous poultry birds are poor performers in terms of eggs @ 80-100 eggs/bird/year and their body weight gain potential is also very low. In recent years, several improved varieties of chicken were developed by both government (Rajasri, Srinidhi, Vanaraja, Giriraja, Grama Priya, Cari Nirbheek, Cari Shyama, Hitcari, Upcari, Gramasree, and Krishi bro) and private organizations (like Kroiler, Rainbow rooster). The introduction of these birds into backyard farming improved the production potential which results in higher profits. The central government of India was taken an initiative for the growth of rural backyard poultry. Based on the Indian government's national action plan for eggs and poultry -2022 (NAPEP), a component under rural backyard poultry development covers the beneficiaries from the below poverty line and this will enable them to gain subsidiary income and nutritional support. State and central governments are providing financial support to a certain extent for backyard poultry farms and encouraging women and self-help groups and entrepreneurs. So, it can be used as a powerful tool for the alleviation of rural poverty, and for the eradication of malnutrition among the rural population of the country.

Commercial poultry farming

In India, mainly layer and broiler farming is grown up as commercial poultry farming. In layer poultry farming, egg-type chickens are grown up to 72-80 weeks of age and will produce an average of 310-320 eggs per annum and in the case of broiler poultry farming meat-type chickens are grown and attain a weight of 2.5 kg in just 6 weeks of age. Most of the commercial farms are working under the integration system. Integration is defined as the association, coordination, and amalgamation of companies engaged in various stages of production of a particular product or related products. In this, there will be a smooth flow of inputs and outputs from one unit to other, leading to an overall reduction in the cost of production of the final product. The introduction of improved, exotic, genetic material is the main reason for the growth and development of the commercial poultry sector. Other factors contributed are proper nutrition, improved housing, management, and veterinary care.

Poultry meat is the fastest-growing component in the poultry sector. India, the world’s 2nd largest developing country is experiencing rapid growth in its poultry sector mainly due to the increased dependence on poultry products which are good sources of quality protein, vitamins, and minerals for the common people at affordable prices. Poultry meat is a major contributor to Indian meat production, contributing to 36 % of total meat production, followed by carabeef (22%), chevon (18%), pork (9%), mutton (8%), and the rest is from others (DADF).

Figure 2: Species-wise meat production in India



POULTRY BY-PRODUCTS

Poultry manure

Poultry manure is a good source of organic materials and contains about 30 percent protein which can be used for making vermicompost, it generates a biofertilizer containing adequate quantities of N, P, K, and several micronutrients which are essential for plant growth every year an average 2-2.5 million tons of poultry litter is produced as a by-product. It enriches soil fertility and improves its physicochemical and biological properties. In mixed farming systems such as duck/chicken with fish farming, where chicken manure can be used as feed for fish. It can also be used for producing biogas for household use and for power generation (Oliveira *et al.*, 2012).

Feathers

High-quality feathers are used to make accessories, hats, and clothes. Other feathers can be processed properly and can be used as animal feed. In addition, they can be converted to biodiesel, biodegradable plastics, and organic fertilizers. Chicken feathers contain about 91% protein (keratin), 1% fat, and 8% water.

Egg Shells

Egg shells are waste from the food industry and hatcheries together with restaurants and homes. Eggshells contain approximately 98.2% calcium carbonate, 0.9% magnesium, and 0.9% phosphate, respectively. It can be a valuable resource of calcium for livestock feed. Eggshell membranes including the inner and outer membranes contain 69.2% protein, 2.7% fat, 1.5% moisture, 27.2% ash and 10% collagen. After the extraction, collagen has diverse applications in the medical, pharmaceutical, biochemical, food, and cosmetic industries.

SPF eggs

Specific pathogen-free (SPF) eggs can be used for the production and control of vaccines for humans and animals.

Designer eggs

The composition of egg nutrients can be modified by making changes in the diet of the hen. Designer eggs contain extra amounts of desirable nutrients and related compounds from feed can be used to supply important nutrients like fatty acids, minerals, and vitamins. They may act as a potential source of pharmaceuticals that supply the body with antibodies essential for maintaining good immunity and health. According to consumer demands, these can be produced such as low cholesterol eggs, omega 3 enriched eggs, and mineral enriched eggs.

Role of poultry in the Indian economy

Poultry is one of the important sectors of agriculture and allied activity that can contribute well to the national economy. In the past three decades, the poultry industry, which offers a cheap supply of animal protein, has advanced significantly, moving from a

relative backyard activity to an industrial marketing endeavour. The poultry industry alone it is contributing 1% to the national GDP and 14% to the Livestock GDP and is providing employment to more than 6 million people in the country, with this it has become the highest employability-providing sector of the livestock per unit investment (Singh, 2019). India exported 3.20 lakh MT of poultry products to other countries, which was worth RS. 529.81 Crores during 2021-22 (APEDA, 2021-22). The major export destinations for Indian poultry products are Oman, Maldives, Indonesia, Vietnam, Bhutan, Japan, and Russia. The government of India has also taken some initiatives like a national action plan for egg and poultry 2022, with an aim to double the farmer's income, provide protein-enriched food to the growing nation, and achieve 2% of the world egg market trade through exports.

There is a huge potential for poultry farming in India to promote rapid economic growth, because of its low investment requirement and quick generation interval, and can also help the weaker sections by providing income throughout the year by taking up backyard poultry rearing at a small scale. As per the Economic Survey (2021-22), the egg production in our country increased from 78.48 billion in 2014-15 to 122.11 billion in 2020-21 and meat production including poultry meat increased from 6.69 MT in 2014-15 to 8.80 MT in 2020-21. This improvement in egg production and poultry meat is mainly due to the development of good laying hens (320-350 eggs) and broilers which can achieve 2.4 kg in 6 weeks and also due to the availability of a variety of vaccines, disease control strategies, better managemental practices, and feeding strategies. Despite this huge growth and development in this sector, our country's average per capita availability of eggs is 90, and poultry meat is 6.52 kg which is well below the actual recommendation of 180 eggs and 11kg of meat as suggested by the Indian Council of Medical Research, which indicates the clear gap between the availability and need of poultry products.

Opportunities and challenges in the poultry sector

In our country, the agrarian crisis can be better avoided by the diversification of agriculture with allied sector activities like poultry farming, which can not only provide income to the farmer but also meet the growing demand for poultry products and can also provide employment to rural people. The poultry industry faces some major challenges including fluctuations in the prices of the major feed ingredients such as corn and soybean meal, and their shortage, emergence of new or the re-emerging of existing diseases (sporadic bird flu incidences), the fluctuating market price of eggs and broiler meat and lack of cold storage and processing facilities, and low level of value addition of poultry products. Moreover, issues relating to animal welfare and environmental pollution in poultry units have been of increasing concern nowadays. All these limiting factors are extremely affecting the production and export potential of poultry products. Except for a few urban areas, egg and broiler meat marketing are not entirely organized in our country. The establishment of a dependable and steady marketing supply chain throughout the year for the sale of chicken goods is a need of the hour in our country.

CONCLUSION

So far, the Indian poultry market has shown tremendous growth and is well contributed to the Indian economy. The increased demand for poultry products has transformed poultry production activity into a full-fledged industry from a mere household/backyard activity. Technological advances have revolutionized the role and structure of the poultry industry in India. The Indian poultry market should focus on the transition from live birds to chilled and frozen meat products and their value addition, exports, organic poultry production, and also on the policies which ensure the availability of feed ingredients such as corn and soybean at an affordable price which can further boost the growth and development of the Indian poultry market as well as the nation in near future.

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