CHAPTER III

PERSPECTIVES AND BARRICADES OF THE POULTRY INDUSTRY AND REVIEW OF LITERATURE

This chapter analyses the perspective and Barricades of poultry Industry and Review of Literature. It gives detailed information about the perspectives of the poultry Industry, availability of trained for poultry meat, need of labour employment in poultry industry, types of labour employment in poultry industry, skilled labour, unskilled labour, changing cultural qualities, renowned band names, poultry industry as a part of the integrated business structure, technological innovation, maintaining quality control, domestic poultry industry has matured from a backyard activity to large scale integrated poultry farming with wide spread adoption of modern technology, vital marketing opportunities, poultry infrastructure, Government support, financial assistance for the development of poultry farms, central poultry training institute, commercial poultry, rural poultry production, domestic market, increasing global demand, monitory support or benefits, barricades, price fluctuation, maintaining quality of raw ingredients, prevailing old technologies, natural brooding, artificial brooding, lack of special benefits (insurance and no support for any loss, claim procedure, high fluctuation in demand, electricity problems, legislation schemes/statutory protection, day by day management issues, availability of medicines to control diseases. Finally a review of literature of the study area is also presented.

INTRODUCTION

3.1. PERSPECTIVES OF THE POULTRY INDUSTRY

Till the Late 80’s poultry activities were dormant. Only backyard farming was prevalent. In the early 90’s the Poultry Industry came into focus. The Broiler industry was a Rupees 300 Crore profit making one and there is no looking back now. In the current year (2013) it is going to touch Rs.7500 crores. What made this dormant industry to be active and achieve phenomenal growth? The growth is attributed to
the concept of Integration. Integration is nothing but contract farming. This concept was first introduced in the country by Suguna in Tamilnadu. Those of the few farmers who were willing to join hands have come under the fold of integration. They joined Suguna on good will.

Prior to this the farmer was totally responsible for his profit or loss. He was unable to raise the volume of production. Hence he could not make a reasonable profit. Earlier there were too many profit centers such as Chick seller, Feed seller, Hatcher, Medicine, Transport etc. But in Integration all these profit centers were changed as cost centers in a single organization passing the benefits to the farmer, consumer, and the company. In marketing there were middlemen who are eliminated in Integration.

Also on the Production side too farmers are able to attain higher productivity under the method of integration. Earlier Feed Conversion Ratio was somewhere around 2.4. Now it is reduced to around 1.75. Similarly a farmer was spending around Rs 2/- per kg on live bird previously. There was no uniformity in getting his flocks. Most of the times due to multiple flock livestock he could not control the spread of any disease. More than anything he could not make a regular income. Hence Integration came as a boon for him.
In the early 90s, contract farming was introduced and in 1995 it spread all over Tamilnadu. Between 1995 and 2000 it spread to Karnataka. It gathered momentum and spread its wings to Maharashtra and Andhra Pradesh, in the years, 2001 & 2002 and now it has crossed over to West Bengal, Orissa and Gujarat. The spread is mainly due to the in built strengths of the Integration System.

One of the main points of strength is that the farmer is free from all worries as he is getting everything, chick, feed, medicine, technical support from the integrating company and daily care at his farm gate. At the end of every batch he gets his due income. Integration has provided for a situation in which the production cost has come down even though the prices of basic raw materials have been on the increase. Maize and Soya were sold at Rs 2500 and 6000 per ton earlier, but the production cost of the live broiler bird was more than Rs 30 per Kg. While the current price of Maize & Soya are Rs 5,500 and 12,000 respectively, the production cost of a broiler bird has slid down to Rs 26 per kg. This dramatic change has been brought about by the Integration system.

Lesser production cost, higher productivity were the fruits of the dual efforts of the Integrating company and the farmers. The Integrator provides everything and gives the income to the farmer by
way of growing charges. The farmer on his part manages the farm and tries to perform well and get a higher income. The farmer also gets an additional income by selling the manure at the end of every batch. The end result is that the consumer gets poultry meat at affordable prices, the farmer gets his regular income and the company is happy about the higher volume and productivity. The company also is proud that it provides employment to rural and urban youth.

The integration system has made possible one more thing. Due to the affordability in prices the consumption of poultry meat has increased considerably over the years. Earlier in the year 1990 it was a mere 400 grams per person per year in India. During the calendar year, 2009, it has increased to 1.6 kg per person per year. This will yet reach to the level of 2.01 kg in year may, 2013 at the present growth rate. It is increased to 37% (2.76kg) per person 2021. As said earlier Integration has paved the way for employment generation. It prevented the migration of the rural youth to cities and towns. More than this an additional contribution is made to the nation’s GDP. It also earns foreign exchange through exports.

After exploring the export potential, India has started making exports for the past two years. The Gulf countries are the second largest poultry meat consumers and are importing large quantities of poultry meat from far-off Brazil. As of now Brazil is the largest
exporter to Gulf countries. But India is nearer to these Gulf nations. Hence we can fulfill a part of their requirement. For fulfilling this export requirement the only solution is higher production through Integration

THERE WAS A GREEN REVOLUTION FOR AGRICULTURE

LET US MAKE A PINK REVOLUTION FOR POULTRY MEAT

3.1.1 AVAILABILITY OF TRAINED PEOPLE

Poultry farming which was only a mode of living in the primitive stage and was fun and managed only at a small level for domestic consumption alone has been developed as a full-fledged industry in the present. The same is now managed and run even on a large scale basis. The change in the nature of poultry farming has made poultry industry an employment generating industry and a good income earning enterprise. Farmers and persons engaged in other enterprises may start poultry farming easily. It is also a lucrative enterprise for the persons seeking self employment. No doubt, by keeping only 1000 birds two persons may get full time employment on an even basis throughout the year.

The employment potentialities of the poultry industry may be in the form of direct and indirect labour. Direct labour involves the keeping, feeding and maintaining of birds on a regular basis, while
indirect labour involves the preparation of sheds; transportation of feeds, eggs and birds; storage of eggs, marketing of birds and eggs, involvement of work in disposing of the other by products. Thus, the industry requires huge labour and involves enormous job opportunities. If the same is managed on a scientific basis, this may solve the problem of unemployment to some extent.

3.1.2 NEED OF LABOUR EMPLOYMENT IN POULTRY INDUSTRY

The poultry industry has also got good marketing potentiality and huge developmental possibilities. We may stress that the per capita consumption of eggs and poultry meat is on the increase and this would enrich the developmental potentialities.

3.1.3 TYPE OF LABOUR EMPLOYMENT IN POULTRY INDUSTRY

The labour involved in the poultry industry may be of two types - domestic and hired labour. Domestic labour may be used for maintaining and looking after the birds. It can also be used for disposing of the poultry products. Self labour will suffice on small poultry units. But, in big poultry farms, hired labour would be needed. On big farms hired labour can only run the enterprise successfully with that of self-labour. Domestic self labour is a must for all the poultry units – mini, small, medium, or large. Self labour is also needed for keeping and managing the income and expenditure of
the enterprise. For all the general management practices to be used, and keeping of accounts and records, self labour of the owner is needed.

For managing and running the poultry unit, hired labour is also needed. Hired labour may be for full time or part time. Full time labour is needed for maintaining the birds on a regular and daily basis. Part time hired labour is required for preparation of sheds, transportation of poultry feeds and poultry products and for performing the marketing process relating to both eggs and poultry meat.

The poultry industry by nature requires huge employment of workers. For the success and scientific operation of the poultry unit mainly of the big size and medium size, both the types of labour is needed – the domestic and hired labour. Big farms and medium sized farms cannot be run and managed successfully without employing the needed labour. Thus we may stress that the industry needs both types of labour services - hired labour and self labour.
A) SKILLED LABOUR

In the poultry industry, the labour requirement is of two types—the direct and the indirect labour. The labour used in the poultry farms in Tamil Nadu is both skilled and unskilled. Skilled labour is used in the poultry farms mainly to undertake responsibility and do those jobs which need technical knowledge. Skilled work covers veterinary services, feeding of the birds, purchasing of the birds, medicines, equipments etc, and selling the eggs and poultry meat etc. For all these jobs poultry experts are to be engaged.

B) UNSKILLED LABOUR

Unskilled labour is also required in poultry enterprise. The jobs unskilled labourers may undertake involve the watering services of birds, cleaning of the poultry equipments, and litter, preparation of sheds and poultry house, transportation work and sweeping. These jobs can be undertaken either by an illiterate or educated man.

3.1.4. CHANGING CULTURAL QUALITITES

There is considerable seasonality associated with poultry consumption for each geographic region based on religious beliefs, weather conditions and festivities. For example, in the Hindu month of “Shravan” (July-August) there is a considerable decline in
consumption of poultry meat and eggs, especially in Maharashtra and certain parts of Northern India. Similarly, in the Tamil month of “Puratassi” in Sep- Oct and during the “Sabarimal Pilgrimage” in Dec-Jan there is a decline in meat consumption in Tamil Nadu and in the “Lent” in Mar-Apr, there is a seasonal decline in the consumption of poultry products in Kerala. On the other hand, consumption increases during the festive periods of October- December (combined with the winter season) and during the marriage season in the various parts of the country. Generally, meat production and consumption is lower in summer than in winter.

Wide geographic and seasonal variations combined with poor cold storage infrastructure, limited transportation results in wide fluctuations in the prices of various poultry products across geographies at a given time and during a year for a given place.

Further factors like outbreak of ‘bird flu’ in certain regions also affects prices though the same has been marginal in the last two years. The Broiler prices have strengthened considerably in Feb-Mar’11 to reach the peak prices of Rs. 70-72/kg at wholesale levels.
3.1.5. RENOWNED BRAND NAMES

The Indian poultry production is considered to be the cheapest in the world. Leading broiler integrators in India are as follows:

Venkateswara Group, Pune
Suguna Poultry Farms Ltd, Coimbatore
Pioneer Poultry Group, Coimbatore
Godrej Agrovet Ltd, Mumbai
Sky Lark group, North India
Japfa com feed, India (Indonesia)
CP feed, India, (Thailand)

These companies account for nearly 40% of broiler industry integrators and contracts. Pioneer Poultry group introduced the concept of contract farming in the year 1980 and the concept of integration was introduced by Suguna farms in 1990. India produces 3.6% of global egg production, i.e., 61 million tonnes. The annual growth rate of eggs is 5 to 8%. India has the lowest cost of egg production in the world at 2.55 US cents per egg. The introduction of new poultry products and the perceptible shift in eating habits are moving people to branded food such as chicken yummiez, cold cuts, breaded and coated snacks, marinated snacks, chicken nuggets,
canned chicken curry, freeze dried chicken pulao, meat soup, powder omlette and scrambled egg mixtures, sandwich, pizza, burger and dial-a-chicken and fast food joints, Kentucky Fried Chicken (KFC), McDonald’s, Wimpy, Pizza Hut are all going to change the palate of the chicken consumer.

3.1.6 POULTRY INDUSTRY AS A PART OF THE INTEGRATED BUSINESS STRUCTURE

The structure and cost of production in the Indian poultry meat industry varies from region to region. While independent and relatively small-scale producers still account for most of the production, relatively large-scale integrated producers account for a growing share of output in some regions. Integrated operations include large regional firms that incorporate all aspects of production, including raising grandparent and parent flocks, rearing day-old-chicks (DOC), contracting production, compounding feed, providing veterinary services, and wholesaling. Most integrated firms also have some presence in retail marketing, largely for the purpose of establishing price leadership and having an influence over wholesale-retail margins. Some integrators (about six to eight nationwide) also process a share of their production in modern, automated, or semi-automated plants.
India’s poultry industry also has a number of smaller, partially integrated firms that typically omit one or more of the major input enterprises, such as breeding or feed milling, and may have little or no contract production. Large-scale integrated producers are most prominent in the southern and western regions. Smaller, independent, and sometimes partially integrated producers account for most poultry production in the northern and eastern regions. Commercial broilers and eggs are produced by separate enterprises using specialized broiler and layer breeds and distinct management practices. Joint production of poultry meat and eggs from dual purpose birds is confined to noncommercial “back yard” operations. Although data on noncommercial production of poultry and eggs is not available, industry sources indicate that this industry segment is declining and probably accounts for only 10-20 percent of India’s total output. This study excludes analysis of this component of production.

Integrators are also expanding in Bangalore and Hyderabad in the South and Calcutta in the East. The only major region where large integrators have not yet made significant inroads is in North India, including the large Delhi market. In this region, some individual producers have expanded into feed mixing and direct retail marketing. No producers, however, are involved in rearing parent or grandparent flocks, and very few are contracting out production.
The lack of poultry integration in the North may be due to difficulties in enforcing contract-farming agreements. In the South the climate is favourable for poultry production whereas in the North there is more capital and technology prevalent in the poultry industry. Lastly, unlike other regions where integrators have flourished, the Punjab-Haryana-Western Uttar Pradesh area near Delhi is heavily irrigated and highly productive for crop farming. As a result, allocating management and labour to contract farming for the margins fixed in standard broiler contracts may be less appealing.

3.1.7. TECHNOLOGICAL INNOVATION

Climate conditions are most suited to poultry production in southern India, where average temperatures, though fairly high, tend to avoid the extreme heat of the eastern and western regions, and the extremes of both hot and cold are found in northern India. The capacities of houses range from 8,000 to 20,000 birds and from 6,000 to 15,000 square feet. Production facilities and equipment in the four regions can be characterized as follows:

A) SOUTH In the South, poultry houses tend to be built of brick pillars, with open sides, tile roofs, and concrete floors. Cooling, when needed, is provided by ceiling fans, and heating is unnecessary except for brooding. Bedding is generally made of paddy husks. Manual
feeders and bell-type drinkers are most common, with little use of automatic watering and feeding systems.

**B) WEST** In the Mumbai region, where average summer temperatures are higher than in the South, houses are also built of brick with tile roofs and concrete floors, but tend to be mostly enclosed with evaporative automatic cooling systems. Automatic watering and feeding systems are more common in this area.

**C) EAST** In the region north of Calcutta, houses are constructed of brick pillars with open sides, very similar to houses in the South, although side curtains are generally present to help hold in warmth in the slightly cooler winters. Feeding and drinking equipment is generally manual, and ceiling fans provide summer cooling.

**D) NORTH** In the North (Punjab, Haryana, western U.P.), both summer and winter weather are more extreme than in the other regions. Houses are built of brick and concrete and have either enclosed sides or side curtains and concrete floors. Some houses have automatic systems for both evaporative cooling and heating. Because land prices are significantly higher in this region, two-storied houses are common. Both manual and automatic watering and feeding equipment is seen in this region.
3.1.8. MAINTAINING QUALITY CONTROL

The feed cost for producing 1 kg of eggs is lowest in Zimbabwe, it is 18 cents. Feed cost are highest i.e. 45 cents in Philippines. In India the figure is 44 cents. In USA. It is 15-50 cents. The costs in other countries are as follows Pakistan 25 cents, Sri Lanka 24 cents, France 25 cents and Great Britain 27 cents. We can reduce the cost of feed. India is gifted with natural sunshine, cultivable land and sufficient rains. And there are millions of unemployed. Even by providing water to thirsty lands, we can make poultry feed that can be sufficient for the world poultry. Even by controlling post harvest losses of food grains, we will be able to feed world poultry. The Poultry industry control the quality measures and concentrate the Sea freight subsidy for export of egg products, and facilities for testing of pesticides residues and removal of restitution charges and Assistance for sales promotion. The quality control has suggested that poultry players may integrate into feed and maize seed production.
DOMESTIC POULTRY INDUSTRY HAS MATURED FROM A BACKYARD ACTIVITY TO LARGE SCALE INTEGRATED POULTRY FARMING WITH WIDE SPREAD ADOPTION OF MODERN TECHNOLOGY

Though poultry farming is an age old business in India, modern poultry breeding started in the 1970s and large scale integrators have become prominent in the last decade. The modern poultry farm methods are based on total separation between chicken bred for meat production (Broiler) and those bred for table egg production (Layers). This is to take advantage of the negative genetic correlation in chicken between growth and reproduction. For broilers, males are selected for growth and carcass quality while females are selected for egg production and hatchability. For layers, males are bred for high egg weight while females are bred for high rate of egg production. Commercial poultry farming is based on hybrids that are produced on a selection and multiplication pyramid by crossing male and females of selected breeds, which combine the desired traits.

The DOC (day old chick) is the final product of cross breeding done beginning with pure lines. Pure lines are crossed to get Great Grandparent (GGPs) and then Grandparents (GPs). GPs are further crossed to get parents and the off springs of parents are sold as DOC. The property of chicken in terms of weight and other attributes
depend largely upon the attributes that the pure lines possess and thus, becomes the critical criteria for poultry business. A complete cycle from crossing a pure line to the last stage of a DOC takes around four years, with different pure lines being used for broilers and layers. A broiler DOC takes six weeks to grow into a live bird with an average body weight of 1.8 – 2.0 kg. The time line and body weight varies based on feed quality, weather conditions and general farm management for a given Pure line. A layer DOC takes 18 – 20 weeks before it starts laying eggs. Production of eggs usually happens in the 72nd week of the layer’s life with an average production of 300-320 eggs (250 -260 are table eggs and the rest are hatching eggs) during its lifetime.

The domestic poultry industry has few large scale integrated players like Venkateshwara Hatcheries (VH) group. Suguna Poultry Product Limited, Godrej Agrovet Limited, Charoen Pokphand (India) Private Limited, Arambagh Hatcheries Limited, etc having their own GP and parent breeding farms, hatcheries, feed mills, in house veterinary services, and marketing set up. The key players have also moved into vertical integration by setting up retail chains, processing, branding and aggressively marketing their products under
frozen/chilled and ready to cook categories. While these large players have their own parent breeding farms, DOC breeding is usually done through the contract farming model which is spread across the country with farm sizes typically ranging from 2000 -10,000 DOCs though there are a few larger farms too. The strong growth in the Indian poultry industry is attributed to the successful implementation of the contract poultry farming model on a large scale. In this model, integrators provide farmers with DOCs, feed, medicines, necessary training and standard growing fee while the farmer needs to provide farm space, labour and power. The growing fee usually has a minimum guaranteed fee plus bonus based on weight gain with typical per kg growing fee in the range of RS.3.5 per kg. Poultry farming provides healthy sources of alternative income for the rural population and has been growing strongly across the country especially in Southern India, and in states of Maharashtra, Haryana and Punjab.

India imports its grandparent stock, as Pure line breeding is an expensive affair with sizeable R&D involved. Further global pure line breeders usually won’t supply their pure line stock and most of the domestic poultry players start from grandparent breeding. VH group is the only domestic entity to have pure line breeding. The group started with an imported Pure line breed in the 1970s (Vencobb for broiler and BV 300 for layer) and has invested significantly over the
years to make it suitable to Indian weather conditions. Other major pure lines used in India are ‘Ross’, ‘Shaver’, ‘Lohmann,’ etc with domestic breeders importing GP stock of these pure lines.

Globally India ranks fourth in broiler meat production with an annual production of 2.9 million metric ton (MMT) of broiler meat. USA and China leads with an annual production of 24.0 MMT and 12.3 MMT respectively. India is ranked third in table egg production after USA and China with an annual production of 57 billion eggs.

3.1.9. VITAL MARKETING OPPORTUNITIES

For the time being, current experience in rural India suggests that small-scale rural poultry farmers, keeping on an average a few hundred birds, can be as efficient in production as large commercial integrators, and more efficient than the latter in supplying rural areas with low priced poultry products, provided that they cooperate so as to achieve economies of scale both in input and output markets (World Bank, 1999). An example is the small holder broiler farming model which PRADAN, a major Indian NGO, has developed, tested and implemented in several Indian States. This NGO functions in this manner:

(i) predominantly female self-help-groups are trained in poultry production /economics / management and supported to establish and properly manage a broiler cooperative;
(ii) each member of the cooperative invests about Rs. 60,000 (US$ 1,380), obtained through bank loans and subsidies, to build sheds, buy day-old chicks and feeders/water dispensers and other equipment necessary to raise 300 to 500 birds per production cycle (four to five weeks);

(iii) the cooperative takes responsibility for the provision of quality chicks, feed, animal health services as well as collection and marketing of broilers;

(iv) the cooperative sells about 75 to 80 percent of broilers in small rural markets, at a price which is 20-25 percent lower than the retail price in major urban markets throughout India;

(v) each member of the cooperative earns between Rs 9,000 to Rs. 15,000 (US$ 207 US$ 345) per year (PRADAN, 2008).

3.1.10 POULTRY INFRASTRUCTURE:

A properly planned, constructed and managed poultry housing system is a must to keep birds healthy and vigorous. This will result in higher egg production in layers, higher gain in body weight in case of broilers and save labour. The egg processing plants are well equipped and meet the international requirement for exports.
In the recent past poultry slaughtering facilities have been set-up by new companies in Karnataka, Maharashtra and Andhra Pradesh. Mechanized washing, grading and packing facilities for table eggs is required to be set-up in major production areas. Since Andhra Pradesh, Tamil Nadu and Maharashtra are the three major poultry producing states, APEDA has proposed to set up mechanized washing, grading and packaging facilities in these states for the purpose, APEDA is conducting a feasibility study to identify parameters like location, capacity, project cost etc. for setting up of such facilities. While the study in Andhra Pradesh has been completed, the study is yet to be taken up in Tamil Nadu and Maharashtra. All these factors will help to increase the net profit of the owner.

3.1.11. GOVERNMENT SUPPORT

A) FINANCIAL ASSISTANCE FOR THE DEVELOPMENT OF POULTRY FARMS:

It is proposed that a National Poultry Development Board may be set up to co-ordinate various activities in the field of poultry development. Some of the salient functions of the Board would be to promote poultry production activities; assist the state governments in organizing poultry development on a co-operative basis on the lines of Anand pattern co-operative societies viz., primary, district and state level co-operative organizations; provide support price for egg through
market intervention operations; protect the interests of producers and consumers; assist in the delivery of processing and marketing inputs; arrange financial support for viable poultry development ventures; aid activities concerning export of poultry and poultry products; provide consultancy services to private and public enterprises and help in other aspects of poultry production, processing, marketing and export; tie up with national and international agencies in the field of poultry development and fund and support professional bodies.

**B) CENTRAL POULTRY TRAINING INSTITUTE:**

This institute offers short term training courses in the field of poultry breeding and genetics, poultry management and farm economics, marketing of poultry and poultry products, poultry nutrition and feeding. The activities of this institute would be strengthened by the improvement of infrastructural facilities like modern equipment, additional accommodation for trainees and manpower in specialized fields.

**C) COMMERCIAL POULTRY:**

India has emerged as the only country in the developing world to be a self-reliant, technology driven industry, with capability to produce every essential input for successful poultry farming including indigenous genetic resource and breeding, world class poultry
vaccines and medicines, specific pathogen free eggs (SPF), farms and hatchery automation systems, pelleted feed, egg processing, poultry processing, nationwide network of disease diagnostic laboratories and facilities for entrepreneurial development and training in both private and public sectors.

D) RURAL POULTRY PRODUCTION:

Rural poultry production constitutes an important component of agricultural economy in India, Small poultry holders are practically capable of more significant contribution to alleviate malnutrition, poverty and unemployment. A spectacular progress has been made from subsistence to sustainable production system. Indian backyard poultry farming has increased only by 16% in the last 30 years. 76% of China’s eggs come from the rural backyard production. India requires both mass production as well as production by masses.

E) DOMESTIC MARKET:

Poultry production and consumption in the domestic market is set to grow. The Indian poultry industry has been a major contributor to the food-processing sector in the country. From a backyard activity to a major commercial operation the poultry sector has undergone a paradigm shift.
Large variations exist within the domestic market in terms of production and consumption pattern with Southern India being the leading producer; Further, considerable seasonal variations exist within each geography; resulting in volatility of prices. There are large variations in production and consumption of poultry meat and eggs in India across various states. The consumption is affected by various factors including taste preferences, religious practices, per capital income, urbanization, etc. Higher urbanization and the relatively stronger presence of organized players has supported rapid gains in the commercialization of poultry farming in the South and West regions, while another 20% comes from the Western region. Tamil Nadu leads in terms of poultry closely followed by the other Southern states. The egg consumption in these states is also benefitted from inclusion of eggs in various MidDay meal programmes.

3.1.12. INCREASING GLOBAL DEMAND

Many countries are exporting eggs at prices lower than production costs. Poultry industry with high investments in these countries is under the threat of extinction. Many countries have saved their poultry industry with a ban on imports.
In the global poultry market, Indian eggs are the cheapest, 50 cents per kg. At the other end, eggs are costlier in Argentina with the price of 145 cents per kg. The price of eggs in different countries are as follows. U.S.A.- 80 cents, france-120 cents, Holland -86 cents, Japan -127 cents, New Zealand -136 cents, Taiwan -108 cents, Great Britain -102 cents, In nearby Sri Lanks-58 cents, Bangladesh -117 cents and Pakistan -87 cents.

India with abundant land, technical knowledge, and irrigation systems can be the best place for poultry industry in the world. The business has become competitive. Production expenses are increasing, but customers want quality products at cheaper rates.

Poultry exports are mostly made to Maldives and Oman. Indian poultry products have a good market in Japan, Malaysia, Indonesia and Singapore. Coming back to home, over all, Andhra Pradesh accounts for the maximum production of eggs. Within Andhra Pradesh, Hyderabad is the city with the maximum number of poultry farms and hatcheries. Besides Andhra Pradesh, Vishkhapatnam, Chittoor, Karnataka, Tamilnadu, Maharashtra, Gujarat, Madhya Pradesh, Orissa and the North Eastern States are the major contributors of eggs. Both public and private sector organizations contribute to the poultry industry and this has made India secure a place among the top players. There are 115 layers, and
280 broiler hatcheries producing 1.3 million layer broilers and 280 million broiler parents. They in turn supply 95 million hybrid layer and 275 million broilers, and day-old chick.

Presently there are only five egg powder plants in India which is considered to be insufficient in view of the growing demand for different kinds of powder-whole egg, yolk and albumen. The scope of foreign investment and state-of-the art technology in this field is therefore tremendous. The years 2008 and 2009 witnessed a major set-back for the chicken industry which was on the growth graph in the past 10-15 years due to bird flu influenza.

There are many exporters in India. ‘The Exporters India’ is, an online business directory offering a comprehensive database of companies engaged in export of eggs. Buyers can browse the catalogues of these exporters of eggs and send a request for product details. For example: ‘Taunts Trading corporation’, are exporters of white and brown eggs.

3.1.13. MONITORY SUPPORT OR BENEFITS

NECC is unique in many ways. With a membership of more than 25,000 it is the largest single association of poultry farmers in the world. Most of today’s egg production in India comes from NECC members.
In the past two decades, NECC has played a significant role for the betterment of the poultry industry in general, and the egg industry in particular, through its various programmes like market intervention, price support operations, egg promotion campaigns, consumer education, market research, rural market development and liaisons with the government on vital issues concerning the industry.

A complete by voluntary effort by farmers, it has no statutory authority to enforce its declared price, nor does it compel anybody to contribute to its funds. It is based on the co-operative spirit and a simple conviction, the right to determine their own selling price.

It makes no profits and subsists entirely on voluntary contributions from the members of layer farmers. To acquire the co-operation of all its widely dispersed members NECC uses a 3-tier democratic set up organized in the form of 40 committees around the country.
3.2 BARRICADES

3.2.1 PRICE FLUCTUATION

Price variations in broiler prices and feed prices are not in sync and poultry players are usually not able to fully pass on the rise in feed prices. Further with a production cycle of 6-7 weeks for broiler DOC, the rise in broiler prices comes with a time lag effect. A broiler farm is typically more sensitive to short term fluctuations in feed price movement compared to a layer farm where the production cycle is much longer. Relative variations in realization and feed costs have a strong impact on the profitability and cash flows of commercial poultry farms.

To assess the relative competitiveness of the Indian poultry production, the Indian variable production cost and farm price data can be compared with data of other countries, including the United States, Brazil, and several Asian countries. The Indian cost data comprise costs of day-old chicks (DOC), feed, mortality, medicines, labour, and power reported on the basis of a kilogram of live weight production, a common industry approach for computing variable costs. Data for other countries are those reported by USDA’s Foreign Agricultural Service in annual “attaché reports” on the poultry industry in each country.
Although the cost accounting methods may vary across countries, it is likely that all the estimates include the key cost items—DOCs, feed, and mortality—which generally account for 80-85 percent of the variable cost of poultry production. Brazil is the lowest cost producer. Production costs in the southern, western, and eastern regions of India are very competitive with those in other countries, including the United States. Poultry costs in these Indian regions appear to be competitive with those in Thailand, a major exporter of poultry meat, and significantly lower than those in East Asia and other parts of Southeast Asia. Given the dominant role of feed costs in the total variable costs of poultry meat production, it is likely that feed prices and feed use efficiency are important factors in India’s apparent competitiveness.

The two other relatively low-cost producers among the countries compared, Brazil and the United States, are, like India, large producers of soybeans and corn. Significant local production of both corn and soybean meal allow producers to benefit from relatively low transport and handling costs, and to avoid the costs of tariffs on imported feeds. India also has the least developed poultry sector, with a relatively small share of production from operations that use the most advanced technology. Indian poultry producers are likely to benefit from lower labour costs but may also pay relatively high real interest rates for operating and investment capital.
3.2.2. MAINTAINING QUALITY OF RAW INGREDIENTS

Poultry farmers have a strong understanding of the importance of balanced feed rations. They recognize corn and soybean meal as technically superior ingredients for broiler rations, with corn generally accounting for most of the energy in the feed ration and soybean meal providing most of the protein. Most operators, however, use substitutes for both the energy and protein ingredients in the ration based on changes in relative market prices. The most common corn substitutes for energy are broken rice, millet, and wheat. Fish meal, sunflower meal (decorticated), and peanut meal are the most common protein substitutes for soybean meal. Given the key role of feed costs in overall costs of production, feed conversion rates (FCR) are a major concern for growers, most of whom have a clear understanding of their FCR, as well as the impacts of alternative ration ingredients on FCRs. Most operators use mash-type feeds, but a number are beginning to experiment with pelletized feeds. Although pelletized feeds are more expensive than mash feeds by Rs0.50 - 1.00 per kg, or about 5-10 percent, they result in less wastage, assure a more balanced ration for each bird, and lower FCR. Several operators that use pelletized feed report about a 0.1-kg improvement in the FCR.
The price volatility of local feeds, particularly corn, and the absence of futures markets to manage price risk make it difficult to control and predict feed prices. Some operators pursue a strategy of buying and storing ingredients when prices are low, but others do not because of the difficulty in accurately predicting price movements. Concerns with feed costs tend to be greatest in southern India, where both corn and soybean meal are not available locally and must be purchased from suppliers in central and northern India.

Feed imports are normally not an economically viable option because of large national surpluses of soybean meal and a restrictive tariff-rate quota (TRQ) regime for corn imports.

Most poultry integrators include feed milling as one of their integrated enterprises. Most also indicate significant cost savings, as well as more consistent quality, from producing their own feed. A number of feed milling companies, threatened by integrated operations cutting into their customer base, have evolved into poultry integrators.

The structure and cost of production in the Indian poultry meat industry vary from region to region. While independent and relatively small-scale producers still account for most production, relatively large-scale integrated producers account for a growing share of output in some regions. Integrated operations include large regional firms...
that incorporate all aspects of production, including raising grandparent and parent flocks, rearing day-old-chicks (DOC), contracting production, compounding feed, providing veterinary services, and wholesaling. Most integrated firms also have some presence in retail marketing, largely for the purpose of establishing price leadership and having influence over wholesale-retail margins. Some integrators (about six to eight nationwide) also process a share of their production in modern, automated, or semi-automated plants.

India’s poultry industry also has a number of smaller, partially integrated firms that typically omit one or more of the major input enterprises, such as breeding or feed milling, and may have little or no contract production. Large-scale integrated producers are most prominent in the southern and western regions. Smaller, independent, and sometimes partially integrated producers account for most poultry production in the northern and eastern regions. Commercial broilers and eggs are produced by separate enterprises using specialized broiler and layer breeds and distinct management practices. Joint production of poultry meat and eggs from dual purpose birds is confined to noncommercial “back yard” operations. Although data on noncommercial production of poultry and eggs is not available, industry sources indicate that this industry segment is declining and probably accounts for only 10–20 percent of India’s total output. This study excludes analysis of this component of production.
3.2.3. PREVAILING OLD TECHNOLOGIES

i) NATURAL BROODING

At present, India does not have old technologies to fall back on in poultry farming. The method of chick’s requirement of warmth is fully taken care of by the brooding hens which brood their own adopted chicks. The country fowl is well suited for this purpose. At a time, a country fowl can brood up to 10 chicks. This natural brooding method can be adopted only when smaller number of chicks are reared.

ii) ARTIFICIAL BROODING

This is the most commonly used method in scientific rearing of chicken for egg production. In artificial brooding, a number of equipments like hanging or standing brooders are provided for every 300-600 chicks for warmth. The brooders or hovers used may be of metal or other materials fitted with electric bulbs and in some cases with heating elements. Metal brooders, besides being costlier are less efficient in maintaining inside air temperature when compared to the bamboo baskets. In this device the air temperature under the brooder is kept at a required degree, say 95°F during the first week of the chick’s life. For this, heating is done through 2 to 4 electric bulbs of 60, 100, 300 watts capacity in each brooder as the case may be.
3.2.4. LACK OF SPECIAL BENEFITS (INSURANCE AND NO SUPPORT FOR ANY LOSS)

i) In the event of death of birds immediate intimation should be given to the Company and the Insurer should be supplied with the following documents and required information:

1. Veterinary Health Certificate from a qualified Veterinarian
2. All birds in the farm should be covered.
3. Farm should follow standard package of practices, vaccination schedule, deworming, debeaking.
4. Farm should maintain essential records as per insurers specifications.

Claim Procedure

a. Duly filled in claim form.
c. Daily records of mortality, feeding etc.
d. Purchase invoices of the birds.
e. Any other point to substantiate the loss like photographs, medical bills, etc. as and when required.

ii. In case of alarming death/outbreak of an epidemic nature immediate notice within 12 hours should be given to the Company and all birds should be segregated and shown to the
representative of the Company or to any person authorized by the
Company for inspection.

iii. Daily mortality details should be sent to the Company on a
weekly basis.

iv. Delay in reporting of the claim should be avoided and if there is
delay of more than three days the claim would be treated as non-
standard.

v. In case of doubtful claims/ farms for which claim ratio is
adverse, Technical Report from an expert may be insisted on for
settlement of the claim.

The poultry far do insure their chicks to minimize the loss due to
fatal diseases. They insure their chicks and the expenses are
proportionately divided. The small, medium and large farms
select their own insurance companies and pay premium.

The birds and other assets (poultry sheds, equipments) may be
insured. Wherever necessary, risk/mortality fund may be considered
in lieu of insurance. This is indicative and the applicable input and
output costs as also the parameters observed at the field level may be
incorporated.
3.2.5. HIGH FLUCTUATION IN DEMAND

Climatic extremes of hot and cold make poultry production more management- and capital intensive in the North, compared with the other regions. Lastly, unlike other regions where the integrators have flourished, the Punjab-Haryana-Western Uttar Pradesh area near Delhi is heavily irrigated and productive for crop farming. As a result, allocating management and labour to contract farming for the margins fixed in standard broiler contracts may be less appealing. Contract models that call for farmers to serve only as the owner of the houses, with the integrator providing all labour and management, may be more successful in this Namakkal District.

According to most of the survey respondents, the primary constraint in expanding integrated poultry operations is marketing. Most integrators sell the bulk of their output as live birds in the wholesale markets, with a small share sold in retail markets as either live or dressed birds or products. With limited demand or capacity for frozen products, and the high cost of moving live birds to distant markets, integrators are mostly confined to their local regional market and its seasonal demand patterns.

Another common concern among survey respondents is high interest rates. Producers or integrators looking to expand facilities can expect to pay interest rates of about 15 percent on commercial loans.
that, at the current rate of wholesale price inflation, imply a 9-10 percent real cost of borrowing. In general, the availability of feed grain or oil meal was not considered to be a significant problem, although seasonal shortages of corn can and have resulted in higher prices. Only in northern India did integrators regard enlistment, organization, or management of contract farmers as a significant problem.

3.2.6. ELECTRICITY PROBLEMS

Electricity is a big problem to poultry farmers. Frequent power shut down is the biggest problem in hatching units and chick grower farms and layer farms. The farmers have turned to the alternative solution of gober gas production. Chicken droppings, which do not get a second look even by most poultry farmers, are used in generating electricity in Namakkal, a non-descript Tamil Nadu village. At a time when big power producers are leaving an unmistakable carbon footprint, this method uses clean means, earning the company a clean development mechanism certification.

The chicken droppings produce methane gas. At a farm in Goundampalayam in Namakkal district, the gas is converted into electricity using a patented technology by a local farmer-turned-entrepreneur. The farmer sells the dried litter slurry generated as a residue, as manure to farmers. He uses a method based on an Israel
technology and converts the remaining liquid scum as liquid NPK (nitrogen, phosphorous and potassium) which can be used as a fertiliser. Generating energy is not new to the region since a handful of farmers are producing gober gas to generate power for captive use. The Namakkal district hasn't yet seen the complete conversion of poultry waste into useful products.

3.2.7. LEGISLATION SCHEMES/ STRATUTORY PROTECTION

The egg industry’s trade association – the United Egg Producers (UEP) – has hatched an insidious plan: It is now pushing for federal legislation that, if enacted, would forever keep hens locked in cages, despite the wishes of the vast majority of the American public. Under the guise of “enriching” cages, the egg industry’s legislation would:

- **Nullify** existing state laws that ban or restrict battery cages
- **Deprive** voters of the right and ability to pass ballot measures banning cages.
- **Deny** state legislatures the ability to enact laws to outlaw battery cages or otherwise regulate egg factory conditions.

To accomplish this, UEP’s federal legislation would amend what is known as the “Egg Products Inspection Act.” Specifically, the amendment seeks to federally establish that egg factory cages would
be legally accepted as **a national standard that could never be challenged or changed by state law or public vote.**

The Humane Farming Association and other responsible activists have united to defeat this scheme. At present, India does not have a law covering contract farming and the contracts between farmers and contractors cannot technically be enforced. Integrators and growers in other regions appear to be working together smoothly despite this problem, but this is not the case in North India.

### 3.2.8. **DAY BY DAY MANAGEMENT ISSUES**

There are a number of requirements by which birds should be managed so that the best performance is achieved in a way acceptable to those responsible for the care of the animals and to the community in general. These requirements are the key to good management and may be used to test the management of a poultry enterprise in relation to the standard of its management. These requirements are also called Principles. They are Feed restriction, Drinking water facility, cage system and vaccination, etc.

The importance of each Principle changes with the situation and thus the emphasis placed on each may alter from place to place and from time to time. This means that, while the Principles do not change, the degree of emphasis and method of application may
change. Every facet of the poultry operation should be tested against the relevant principle(s).

If the enterprise is to be successful it is necessary to use stock known to be of good quality and of the appropriate genotype.

Confining the birds provide a number of advantages:

- Provides a degree of protection from predators
- Reduces the labour cost in the management of the birds
- Increases the number of birds that can be maintained by the same labour force
- Reduces the cost of production
- Better organisation of the stocking programme
- Better organisation management to suit the type and age of the birds housed.

Importantly, the confinement of the birds at higher stocking densities has a number of disadvantages also

1. Increases the risk of infectious diseases spreading from one bird to another
2. Increases the probability that undesirable behavioural changes may occur
3. Increases the probability of a significant drop in performance
4. Birds housed at very high densities can often attract adverse comments

**Marketing**

There are three important elements to good marketing practice:

1. Production of the commodity required by the consumer – this usually means carrying out continuous market research to relate production to demand.

2. Being competitive – higher price is usually associated with good quality and/or a specialised product. Therefore, it is necessary to relate price to quality and market demand and to operate in a competitive manner with rivals.

3. Reliability – production of a commodity for the market and ensuring that supply, price and quality are reliable.

**3.2.9. AVAILABILITY OF MEDICINES TO CONTROL DISEASES.**

Poultry integrators provide medicines and veterinary services as part of their package of inputs for contract growers. Diagnostic facilities and medicines are readily available. Outbreaks of flock-threatening diseases, though possible, are rare. Chicken eggs are used to produce molecules to treat snakebite. Duck embryos are used in manufacturing anti-rabies vaccine. Diet eggs or designer eggs are
going to boost special eggs for vitamin E substitution, Omega fatty acids and antioxidant requirements.

To protect the poultry from Ranikhet disease, the veterinary department is providing vaccination against this disease on specified days at the veterinary institutions and sub centres every week and also in the camps conducted under ‘Kalnadai Padukappu Thittam’. Apart from this, the department also conducts a Statewide Two Weeks Vaccination drive against Ranikhet disease during the month of February every year.

Also the Namakkal district have the nearest veterinary colleges and veterinary university. So the public awareness and protection method of disease is control is easily to spread the farmers
REVIEW OF LITERATURE:

SELVARAJ. S (1985)

A study entitled “Production and marketing of eggs with reference to Namakkal taluk”, has the objective of finding out the production and marketing problems and the practices followed in egg marketing with reference to Namakkal taluk. It has also examined the price trend from the point of view of the poultry owners. It also studies the activities organized by the Tamilnadu Poultry Development Corporation Limited. (TAPCO). It has further stressed that the poultry industry as a whole, the production as well as marketing of eggs, depends on seasonal factors.

NATRAJAN(1986)

A study of the marketing of poultry products in Rajapalalyam taluk with the objectives of (a) analyzing the cost of producing eggs and rearing broilers, (b) examining the present marketing practices undertaken by poultry farmers and the margin for poultry products and (c) ascertaining the cost of marketing and the margin of poultry products and (d) finding out the problems of marketing and providing solutions. It concludes that production of poultry products need immense care as they have the greatest bearing on their marketability.

Twenty commercial White Leghorn layer farms in and around Namakkal area, which were getting drinking water either from bore wells or open wells were selected for this study. Water samples were collected at two weeks intervals for a 20 weeks period and analysed. The results revealed that except for sulphate and total dissolved solids, chloride, nitrate, nitrite and total hardness were comparatively higher in open wells water than in bore well water. The open well water had higher level of salts. The salt levels in both the water sources were within safety limits. Layers which used bore well water recorded better HDEP, HHEP and feed efficiency when compared to layers using water from open wells. It was concluded that in Namakkal poultry pockets, layer farms with bore well water performed better than the layer farms with open well water as the source of drinking water.

KUMAR V.P AND MAHALATIS (2000)

A study in price spread, cost and margin of the egg in different marketing channels was carried out on 50 respondents in south – west M.P. It showed that the producer’s share of the consumer’s money in egg marketing was the highest under producer – consumer direct channel than other channels where in one or more middlemen existed.

A study based on the number of birds, in the poultry farms in Goa state during the year 1997-98 was classified into three size groups, viz: small (up to 5000 birds), medium (5001-20,000 birds) and large (above 20,000 birds). The study revealed that layer poultry farming is economically viable in the state of Goa. The cost benefit ratio was found to be higher (1.25) for the large size farms and lower (1.11) for the small size farms. The net cost of maintenance was found to be more in the small size group farms. The net returns per layer per year was calculated to be Rs. 62.28 for the large farms followed by Rs. 44.94 for the medium size farms and Rs. 30.78 for the small farms.


A study data was collected from 100 small poultry farmers in Uttar Pradesh State to enumerate the technologies practiced. The data reveals that a medium level of technological gap existed with regard to management practices. However, there was low technological gap in feeding and high technological gap in health practices being followed by the respondents. All the recommended scientific package of practices were also not being followed by the respondents. Therefore, there is need for extension of intervention at the grass – root level. The importance of adoption of scientific poultry
rearing for commercial stocks needs to be propagated among the ignorant masses to get better productivity and income.

**PANDEY N.K (2001)**

A study was conducted to develop a highly acceptable egg–based pizza by evaluating 9 egg–crust formulations which consisted of various albumen: yolk ratios, whole egg, foamed all–albumen or albumen with various texture improving ingredients like refined wheat flour, skim milk solids or refined vegetable oil. All formulations were baked at 180 C for 5 minutes and evaluated for yield, proximate composition, microbiological and sensory properties. Sensory evaluation showed that foamed all–albumen (98% liquid albumen), albumen–flour–oil (80, 13 and 5% ) and albumen–skim milk solids–oil (81, 7 and 10% ) crust were perceived as the best in overall acceptability, although foamed all–albumen crust pizza was marginally rated the highest among the three formulations. Ail–albumen and albumen–flour formulations were lower in lipid content, while no differences were found in protein content among the formulation groups. Aerobic plate counts ranged from log 2.93 to 3.26/g with small but significant differences among treatments. Thiobarbituric acid test, microbiological and sensory analysis of foamed all–albumen crust pizza indicated a refrigerated (5+_ C) shelf–life of 6 days in vacuum and 4 days in aerobic packaging without any adverse effect on quality.
A study of a total of 1237, randomly selected poultry industry establishments were contacted to gather information on their technical requirements as well as expectations from researchers. Time frame distribution of poultry industry indicated the fastest rate (35.29%) of growth during the decade of the seventies. Industrialist emphasized the need for a stabilized marketing system, better availability of veterinary services, easy and effective analytical / veterinary diagnostic facilities. Their suggestions revolved around the strengthening of infrastructural aids, education to the customers and diversified means of poultry development. Expectations of the poultry industry from researchers were based on the necessity to develop more suitable strains for Indian environments, cost effective poultry rations, better avenues for vaccination of the germ-plasm, cheap materials for poultry housing management and the regular transfer of scientific information to the users. Based on these observations, it is concluded that the Indian poultry industry requires a faster mode of conveying information to consolidate and highlight their problems for the ready reference of planters, research managers and executive bodies.
SIVAKUMAR K AND MURALIDHARAN M.R (2002)

A study was carried out to find out the changes in the microclimatic elements of commercial layer houses under different roofing and rearing systems and its impact on the production of white leghorn layer. Roof type had highly significant (p<0.01) effect on microclimatic elements. Asbestos roofed houses had a higher maximum temperature, air velocity and lower minimum temperature and relative humidity than the tile roofed houses. Rearing system had little influence on microclimatic elements except for maximum temperature. Cage houses recorded higher maximum temperatures than deep litter houses. Maximum and minimum temperatures have a highly significant negative correlation with hen day egg production. Roof type had little influence on production compared to the deep litter house. Cage houses accounted for better performance than deep litter houses. Asbestos roofed cage house exerted significantly lower mortality rates and better feed efficiency than other houses.


A study was conducted to estimate the demand for eggs and poultry meat in India for 2020. Income elasticity was calculated separately for the urban and rural areas using National Sample Survey (NSS) data and was used to project demand for each of the five income groups within the urban and rural areas. The results revealed a relatively strong growth for eggs and poultry meat both in the urban
and rural areas in the next two decades. Egg consumption was found to grow at a much faster pace than poultry meat with the rise in income and nearly tripling by 2020. Similarly, average per capita poultry meat consumption was found to increase from 0.69 to 1.28 kilograms during the same period. Overall, the study reports that the total consumption of eggs will increase from 34 billion in 2000 to 106 billion in 2020 and total poultry meat consumption will increase from 687 million kilograms to 1,674 million kilograms during the same time period.

NAKANO.T, IKAWA NI AND OZIMEK.L (2003)

This study was undertaken to determine the occurrence of uronic acid in chicken eggshell membranes and to compare chemical compositions among the inner and outer eggshell membranes and the organic matter in an eggshell. Uronic acid concentrations were similar (P>0.05) between the inner shell membrane and the outer shell membrane but approximately five fold higher (P<0.05) in the organic matter of eggshell and higher (P<0.05) in the inner than in the outer shell membrane. Nitrogen concentrations were the lowest (P<0.05) in the organic matter of an egg shell but relatively constant between the two shell membranes. Amino acid analysis showed that the contents of glycine and alanine were higher (P<0.05) and those of proline and hydroxyproline were lower (P<0.05) in the organic matter of an egg shell compared to the shell membranes.
SELVAM(2004)

A study was conducted in 5 villages of Namakkal district to find out the economic potential of free-range desi poultry rearing by rural women. The farms were post-stratified into small (41 farms), medium (40 farms) and large (14 farms). The flock size were 5, 12 and 26 and egg production respectively were 44, 49 and 52. The average annual income from the sale of eggs and birds were Rs.2667.90, Rs.6971.04 and Rs. 15273.44 for small, medium and large farms respectively. The sales price of eggs and birds on free range rearing were much higher than the sales price of commercial eggs and broilers. No periodic vaccination and no proper shelter were provided to the birds.

DR.KHARE S.P (2005)

A study of a random sample of 103 egg buyers was selected from the Institute Marketing Centre and was analysed for post-purchase satisfaction of customers. The analysis of the data revealed that customers tended to be satisfied in terms of store location, product availability, product features and product packaging. Customers were more than satisfied with product quality, price certainty, price reliability and price fairness. Customers were also satisfied with respect to attitude, behaviour, reliability, working skill, knowledge of front line employees and their overall experience. Their visit was pleasant with a high probability of using the services of this store in the future also. Nevertheless, the attributes those call for
immediate improvement were design, space availability in the store, ambient conditions and culture of store, availability and packaging of products, training and supervision of front line employees.

**JOSHI D.K (2005)**

The present investigation was undertaken to study the various parts production records for prediction of the annual egg production of different strains. The phenotypic linear and non-linear correlations between the different part production and annual production showed that those estimates were statistically, significant in all the strains, except at 30 days of part of production. So it may be concluded that part period egg production records may be used for genetic improvement of birds for annual egg production.

**MAHAPATRA C.M PADHI M.K AND SAHOO S.K (2006)**

A study of the status of poultry production in different parts of Orissa during the last decade has been analysed. There is an increase in poultry population in each part during the period. However, in South and the North Zones the increase is more pronounced. Egg production is highest in the South zone followed by the East, West and the North zones respectively. Per capita availability of eggs in the state increased from 13 egg in 1989-90 to 24 eggs in 1998-99. However, in the South zone, the per capita availability of eggs is 44 which is possibly due to the introduction of
commercial poultry farming in addition to backyard poultry. Strategies for further increase in poultry productions are also discussed.

RAVICHANDRAN S. AND KUMAR. V (2007)

A study of the influence of hardness (calcium carbonate) of drinking water on egg production and egg shell thickness was undertaken with four groups of layers. They were fed drinking water supplemented with calcium carbonate at the rate of 750 (T1), 1500 (T2), 3000 (T3) ppm in three groups and the fourth group (T4) served as the control group and was given the available drinking water. A total of 408 day old chicks were reared up to 25 weeks. Body weight gain was significantly (P<0.05) more in groups T2 and T3 than others. Though the hardness of water failed to influence the mean egg weight, yet the mean egg shell thickness was found significantly influenced by the treatment. T1, T2, and T3 groups had produced eggs with thicker shells than the control group.


A study was conducted to know the constraints of poultry farmers in the North Konkan region of Maharashtra and solutions suggested. Four tahsils were randomly selected, then six villages from each tahil were selected randomly. Two to three poultry keepers from each village were selected randomly. In all, 60 poultry farms were
included in the study of which 90 percent were engaged in broiler production and 10 percent in egg production. Data was collected through a schedule specially designed for the purpose and pertains to the year 1998-99. The study revealed that poultry farming was adopted as a subsidiary occupation to agriculture in the region. The main problem encountered by the poultry farmers was in obtaining loans. The major suggestions were that remunerative prices should be given for birds and eggs, poultry feed should be available on time and at cheaper rates, organization of poultry units on co-operative basis and collection, transportation of eggs and broiler must be done through co-operative societies. It suggested ways to poultry keepers to boost the poultry industry in the North Konkan region.


A study was carried out to find out the effect of induced moulting of commercial SCWL laying hens at 60,65 and 70 weeks of age group. A control group was kept without moulting at their respective ages. The layers were reared in cages for the entire experimental period adopting standared managemental and moulting practices. The birds, which were force moulted at the age group of 60,65,70 weeks, had numerically higher egg production, lesser broken and shell less eggs after induced moulting, as compared to their
respective control groups. Moulting improved the egg quality characteristics viz. albumen index and Haugh unit. As per the experimental results observed, it is concluded that moulting can be induced in layers at the age of 70 weeks for improved egg quality characteristics.

**SINGH BEENA AND KONDAIAH (2008)**

This study analyzed factors influencing the consumption of meat and eggs among a sample of 388 consumers in Northern India. Analysis of data revealed significant differences between religion, education, background, family size and income for total meat consumed per person per year and religion, education, income, negatively correlated with family size. Also positive correlation was observed between meat and eggs consumption. The related implications for the Indian Poultry sector were also discussed.

**SWAIN B.K AND KUMAR J (2009)**

A study was conducted to know the various constraints of poultry farmers and ways and means were suggested to minimize these constraints. One hundred poultry farmers were selected in two districts of Goa i.e. North and South Goa. Out of 100 farms 90 percent were engaged in broiler production and the remaining 10 percent were layer farmers. Data was collected through specially prepared questionnaires. Analysis was done by calculating the rank
based quotients (RBQ). The study revealed that the main problems encountered by the farmers, in making their poultry a successful enterprise were high feed cost followed by competition with outside farmers, high labour cost, trading, high cost of electricity, high cost of chicks and non-availability of health services. The major suggestions were provision of subsidized feed, electricity, water and establishment of feed mill with subsided equipments, remunerative prices for broilers and eggs through co-operative marketing.

MOHANASUNDARRAJ.G.B. AND TRIPATHIHEMA (2009)

The present investigation was carried out in four villages of Tamil Nadu to assess the effectiveness of special livestock protection scheme to review and reorient the existing activities and services to make it more clientele oriented and responsive to local requirements and needs. The focus was on knowledge of the beneficiaries about the backyard poultry production practices, socio-economic condition of the beneficiaries and their level of satisfaction about the scheme in the plain and hilly areas. The study revealed that the majority of the poultry farmers in the plain areas had medium knowledge level in brooding, diseases and its control, deworming and supplementary feeding whereas in the hilly areas, knowledge was found at low except in brooding practice. Mean scores in brooding, diseases and its control, deworming and supplementary feeding showed significant differences between the knowledge of both the farmers hailing from
the plains and the hilly areas. Twenty per cent of poultry farmers found the services under the scheme highly effective, whereas 55.00 and 25.00 percent considered it medium and less effective, respectively. They however perceived that services of the scheme helped in improving poultry health, production and socio-economic conditions irrespective of their locale. Knowledge level, education, extension contact, information seeking behaviour of poultry farmers had a positive and significant relationship with overall effectiveness of the scheme. Respondents were satisfied with the health and production services, but were dissatisfied with the extension activities. Based on the findings it is recommended that the scheme be continued with improvement of extension activities.

**SRINIVASA REDDY AND VENU GOPAL (2011)**

The paper entitled, “Marketing of poultry eggs – new issues and competitive challenges” says that the Indian poultry industry has registered a significant growth during the last four decades. India ranks fifth in the annual egg production. It produces 1.61 million tones of eggs. Poultry exports are mostly made to Maldives and Oman. Within Andhra Pradesh, Hyderabad is the city with maximum poultry and hatcheries. Besides the state of Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra, Gujarat, Madhya Pradesh, Orissa and North Eastern States are the major contributors of eggs. Poultry egg processing units have come up in a very big way in the
country. Karnataka’s egg production accounts for 2.5 million eggs/day to 7.5 million eggs. In Punjab production of eggs expanded from 5.0 million 15.0 million eggs per day in the past two years. Tamil Nadu was producing 8.0 million eggs/day while Maharashtra 6.0m, Rajasthan 1.5m, Gujarat 2.5m, Madhya Pradesh 4.5m, and Orissa 1.5 m eggs per day. Egg output in the north – eastern states is estimated at 1.5m.

**PROF. M.A. KOLI (2011)**

A study entitled “Poultry has influenced human civilization in many ways” buys that eggs and meat of birds are being consumed since pre-historic times. There is no other single food of animal origin which is eaten and relished by many people the world over and none is served in such a variety of ways. Its popularity is justified not only because it is so easily available, but also because it is almost an unsurpassed product in nutritive value. Poultry meat is also used extensively as a delicious food, and it is served to please gods and goddesses.
**Terry Evans (2012)**

**Chicken Meat Trade Grows in Africa**

Africa is growing in importance to the global trade in chicken meat. Back in 2000, imports amounted to around 260,000 tonnes, which represented approximately 3.8 per cent of the global trade in fresh/frozen chicken meat totalling some 6.9 million tonnes. By 2009, this region's imports had escalated by almost 12 per cent a year to reach 763,000 tonnes or some seven per cent of the world total of 10.7 million tonnes.

Furthermore, the available data for 2011 and 2012 point to this total climbing to around 1.3 million tonnes, which would represent about 11 per cent of world trade estimated at around 12 million tonnes. The importance of this area has been underlined by a USDA report indicating that in 2011, the sub-Saharan region - Africa excluding Algeria, Libya, Morocco, Sudan, Tunisia and Western Sahara - was the fourth most important market for US broiler and turkey exports, as this region's total imports had risen from 500,000 tonnes in 2001 to just over a million tonnes in 2011.

**JERRY SARVEN BALE, YUSUF PAM MANCHA, MOHAMMED SANUSI AND UMAR DASS DOMA (2013)**

A feeding trial was conducted to determine the effect of graded levels of baobab seed meal on growth performance and cost benefit in broiler chicken production. A total of two hundred one-week old
broiler chicks of the Anak breed were randomly distributed to five dietary treatments and replicated four times with 10 birds each for a period of 8 weeks. Baobab seed meal was included in the broiler chicken diets at 0, 10, 20, 30 and 40% levels designated as diets 1, 2, 3, 4 and 5, respectively for both the starter and finisher phases. At the starter phase, feed intake (65.18-71.73 g), daily weight gain (30.36-36.16 g) and feed conversion ratio (1.96-2.39) were not significantly (p>0.05) affected by the dietary treatments. However, at the finisher phase, the daily feed intake (133.40-148.40 g) and weight gain (37.23-55.00 g) were significantly affected at (p<0.001) and (p<0.05) respectively. Feed conversion ratio was not significantly (p>0.05) different among all the treatments. The overall performance showed a significant difference of (p<0.001 and p<0.01) for daily feed intake and daily weight gain, respectively. The birds fed 20% diet had the highest daily weight gain (44.55 g) and the lowest (33.80 g) was recorded for diet 5. The feed cost per gain (N/kg gain) was cheaper (N142.44) on diet 4 and most expensive (N163.69) on diet 1 during the starter phase, while at the finisher phase diet 5 was cheaper (N176.36) and diet 1 being the most expensive (N193.91). Similar trends were observed at the overall phase. It was therefore concluded that baobab seed meal can be incorporated into broiler chicken diets up to 30% without any deleterious effect on performance with concomitant reduction in feed cost.
ATTILA SALAMON AND JOHN P. KENT (2013)

The external dimensions, weight and contents (yolk, albumen, shell) of Double Yolked (DY) and Single Yolked (SY) eggs of ducks (*Anas platyrhynchos domesticus*) were measured and compared. The yolks in DY eggs did not differ in weight (*p* = 0.144), although each double yolk was significantly lighter than the yolk of a SY egg (*p*<0.001). DY albumen weight was below that expected of a SY egg of comparable weight. However, DY eggs had 24.5% more albumen than the SY eggs. In DY eggs, the yolk closer to the airspace (Yolk 1) was heavier in 62.5% of the eggs and heavier yolks are regarded as the first in the ovulation sequence. Thus, DY eggs were divided into two groups based on yolk weight. In Group A, Yolk 1 was heavier. In Group B, Yolk 2 was heavier. Significantly more albumen was found in Group B (Group A: 51.37% vs. Group B: 53.29% albumen; *p* = 0.031). This supports the mechanical stimulation hypothesis, with the larger Yolk 2 stimulating the secretion of additional albumen by the magnum wall. It is suggested that work with DY eggs could provide a useful non-invasive tool to examine the mechanisms underlying albumen secretion.