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PRODUCTION AND COST OF BROILER MEAT: A CASE STUDY OF KARNATAKA

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FOREWORD

With the advent of Bird Flu, the chicken meat sector has come under scrutiny. This has been one of the important sectors in the livestock economy of Karnataka. The State has a significant share of chicken meat production in the country and poultry sector in Karnataka is developing quite fast. It was conveyed at Ministry of Agriculture, Government of India, that the Ministry should get input from various states on cost of broiler meat and major economic parameters. The present study undertaken by Dr. M.J. Bhende deals with the production and cost of broiler meat in Karnataka with the objectives set by the Ministry of Agriculture, Govt. of India and methodology decided by the Coordinating Centre ie., Agro-Economic Research Centre (AERC), Andhra University, Waltair. We are grateful to Prof. Ratnam, Hony. Director, AERC, Waltair, for the excellent proposal and the comments on the study. This study brings out clearly the basic structure of the poultry industry in Karnataka, cost of meat, net income to the poultry growers and constraints in broiler farming.

I am sure that this report would be quite useful to policy makers and researchers in the field.

March 24, 2006

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PREFACE

This project, ***Production and Cost of Broiler Meat: A Case Study of Karnataka*** was initiated at the instance of the Ministry of Agriculture and Cooperation, Government of India, New Delhi. I would like to sincerely thank Dr. Gopal K Kadekodi, Director, Institute for Social and Economic Change, Bangalore, for providing all the help needed for the completion of the project. I am thankful to Dr. R. S. Deshpande, Professor and Head, Agricultural Development and Rural Transformation (ADRT) Centre for his constant support and useful suggestions during the course of this study. The design of the questionnaire and format for tabulation were provided by the Agro-Economic Research Centre, Andhra University, Waltair (Andhra Pradesh). I would like to place on record my sincere thanks to Dr. Lalith Achhot, Professor and Head, Dairy Economics, Dr. Nadeem, Professor, Poultry Science, Veterinary College, Hebbal, Bangalore for sparing their valuable time for discussion and providing thoughtful insights about broiler farming in Karnataka. I am thankful to Dr. Nandini, Poultry Federation Karnataka, for providing data on poultry farms in the State.

I appreciate and thank Mr. Shiddalingaswamy Hanagodimath for collecting data from the selected sample farms and processing the data meticulously. I am also thankful to broiler farm owners/managers for taking some time out to provide us all the information that we required. Mr. M.K. Mohan Kumar provided the necessary secretarial and official assistance for the project and his help is gratefully acknowledged. Finally, errors of omission and commission are of the author alone.

March 24, 2006 **M. J. Bhende**

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CHAPTER I
INTRODUCTION

1.1. Introduction:

The poultry sector accounts for about two per cent of the Gross Domestic Product (GDP) of India and about 10 per cent of the total Gross National Product (GNP) attributable to livestock. The poultry industry has made great progress after Independence. It has grown rapidly at the rate of 4-6 per cent in layers and 8-10 per cent in broilers in the past two decades. With an annual output of 37 billion eggs and 1,000 million broilers, which yield 5.75 lakh tonnes of poultry meat, India is the fourth highest producer of eggs and eighth highest producer of broilers in the world. Poultry adapts easily to any agro-climatic condition, requires less land and capital and provides quick yields. This industry has provided direct employment to about nine lakh people and given rise to many allied industries like feed, equipment, and pharmaceuticals, etc Fisheries account for 50 per cent of the meat production, followed by 30 per cent through beef, eight per cent by sheep and goats and six per cent each by pig and poultry industries.

India is the fifth largest producer of eggs and ninth largest producer of poultry meat in the world. In 2004, it produced over 34 billion eggs and about 600,000 tonnes of poultry meat. In the overall market for poultry products, India was positioned 17 in World Poultry Production. And analysts estimate that the poultry sector in India has been growing at a fast rate, along with other industries such as BPO and the securities market. Over the past decade. the poultry industry in India has contributed to approximately US $229million GNP. Several breakthroughs in poultry science and technology have led to the development of genetically superior breeds capable of higher production, even under adverse climatic conditions that offer opportunities to expand the export of poultry products on a large scale. The average per capita poultry meat consumption is also estimated to increase from 0.69 to 1.28 kilogrammes, during 2000-2004. Overall, the total egg consumption is estimated to increase from 34 billion in 2000 and to 106 billion in 2020, while poultry meat consumption is expected to increase from 687 million kilogrammes to 1,674 million kilogrammes.

Poultry meat is an important source of high quality proteins, minerals and vitamins to balance the human diet. Specially developed breeds of chicken meat (broiler) that have ability of quick growth and high feed conversion efficiency are now available. Depending on the farm size, broiler farming can be the main source of family income or can provide subsidiary income and gainful employment to farmers throughout the year. Poultry manure has high fertiliser value and can be used for increasing the yield of any crop. Broilers are marketed at an age of around 42 days. These are chickens reared for meat production. Broiler production is a short-term enterprise. Therefore, a number of batches can be raised within a year, or it could be a part-time job. A number of strains exist in various regions of the country for broiler production, which have a genetic potential to achieve 2.0 kg live weight at the age of 42 days.

Although India has all the necessary inputs for the healthy growth of poultry farming, its contribution to the total livestock output is only about 10 per cent. This indicates some crises in the activity. It would not be an exaggeration to say that the escalating demand for protein and growing unemployment in the country would definitely keep this industry on a high growth path. But the constraints under which it has been operating should be removed. In the livestock sector, poultry is the most efficient converter of plant products into high quality animal protein.

The major component in poultry output is the meat. It accounts for two-thirds of the value of the output, while eggs account for the remaining one-third. Broiler meat is the major component in poultry meat. Although broiler meat was not acceptable to the Indian public initially due to its tender nature, people slowly realised that it has low fat, low calorie and high protein, and is more cost effective and started consuming it. Now broiler meat finds ready acceptance not only in urban areas but also in rural areas. Also, Indian meat and meat products found a place in foreign markets. The export of meat and meat products, which recorded a growth rate of 0.34 per cent per annum during 1981-91, accelerated to 11.81 per cent during 1992-2001. In the post-WTO period, it recorded a growth rate of 8.14 per cent, the fourth highest among meat exporting countries after Brazil, Canada and Thailand. So there is potential for developing the broiler industry in the country and it can be exploited to increase the employment and income in rural areas.

However, the development of poultry has been lopsided. Most of the poultry farms are concentrated near cities and metros where there are well-organized markets. Today 75-80 per cent of eggs and poultry meat are consumed by just 25 per cent of the population in urban areas. Presently, the consumption of poultry eggs and meat in urban areas is 100 eggs and 1.2 kg poultry meat per person per annum, whereas, in rural areas the respective consumption values are 15 eggs and 0.15 kg of poultry meat. The National Institute of Nutrition recommends 180 eggs and 11 kg of poultry meat (http://www.tribuneindia.com/2004/20040928/ldh2.htm). Rapid industrialization, economic liberalisation, and monetisation of the rural economy have induced demand for poultry products in domestic markets.

1.2. The Research Problem:

Broiler farming has been given importance in the national policy and a number of broiler development schemes have been implemented successfully, with the financial assistance and support of the central/state governments and poultry corporations. As a result, considerable progress has been made in broiler production during the '80s and '90s. High quality chicks, equipment, vaccines, medicines and market infrastructure are now available in our country. Technical and professional guidance and training are being provided through many institutes. The management practices have improved, the incidence of disease and mortality has reduced now. But in recent times, commercial broiler farming has been caught in a crisis. As per the views expressed by many in the industry, there has been surplus production, a decline in prices, a large price spread, an increase in the cost of production due to high feed costs, and a decline in profits. But these inferences are not based on scientifically conducted studies. In fact, systematically conducted studies examining the above said aspects in India are limited. Also, while drawing such inferences the possibilities of export and import of broiler meat are not taken into consideration.

The new trading arrangements under WTO may have a significant impact on the Indian broiler industry, as the poultry sector all over the world has been characterised by high levels of Government interventions and regulations. Developed countries are offering heavy subsidies on production as well as exports. For example USA is subsidising the export of poultry meat to the extent of Rs 18 per kg, while the European Union's subsidies are up to Rs13.50 per kg. Subsidies are also provided under Blue-

Box measures. On the other hand, subsidies provided to the poultry industry in India are limited. Therefore, it may be difficult for the India poultry industry to compete in the international market.

India has already lifted quantitative restrictions on poultry products and shifted them to the OGL category in April 2001. Under the provisions of WTO, dumping of poultry products may cause great harm to the domestic industry if imports are not checked with adequate tariff protection up to the maximum bound rates of 150 per cent. To protect the poultry industry in the country, it is necessary to protect the producer from the unfavourable fallout of WTO and help him to boost exports by utilising the opportunities of economic liberalization and opening up of world markets. In this connection, a study of the production and cost aspects of broiler meat assumes importance.

Realising the importance of promoting the broiler industry in the country, the Ministry of Animal Husbandry and Dairying, Government of India, proposed a study to examine the production and cost aspects of broiler meat Karnataka. This study is being taken up at the request of the Ministry of Agriculture, Government of India.

Objectives of the Study:

The specific objectives of the study are:

i. to analyse the production related aspects of broiler farming and estimate the total broiler meat production in the state
ii. to analyse the cost of production of broiler meat,
iii. to examine the input purchase and output sale arrangements and estimate the net returns in broiler farming, and
iv. to identify the constraints in broiler farming and suggest remedial measures

1.3. Methodology and Data:

The focus of this study is to estimate production and cost of broiler meat in Karnataka and an analysis of the related aspects. The important production related aspects to be considered are the source of supply of chicks, linkages between hatcheries and the farms, type of sheds and other structures on the farm, other

equipment, feeding and management practices, access to veterinary services and other infrastructure facilities, crop duration i.e. from the day the chicks are placed in the sheds to the day of sale, crop cycle in a year, mortality of birds, weight at the time of sale and the number of birds produced in a year. The cost related aspects include ownership particulars of land, rent of land, cost of sheds and buildings, depreciation of sheds and buildings, cost of other equipment such as feed mixing, feeding set, watering set, cleaning set and health care set, sources of supply of feed and vaccines and their prices, tie up between input suppliers and farmers, the amount fed, employment of labour, wages, power charges, transport charges, source of funds and interest rates. Marketing aspects include marketing channels of broilers, the type of sale, and pricing of products. The data on these aspects are to be collected from broiler farms.

This study is based on primary data collected from a sample of broiler farms. For selecting the farms, a two-stage random sampling technique has been used in this study. The farms are located around major urban centres in the state. A list of poultry farms by districts was procured from the office of the Karnataka Poultry Federation, Bangalore. At the first stage, two clusters were selected randomly i.e., Bangalore rural district and Shimoga district. At the second stage, the farms in each of the selected clusters were classified into three strata, viz. farms with size less than or equal to 2,500 birds, farms with 2,501-5,000 birds and farms with more than 5,000 birds, and from these three strata, a total of 30 farms were selected maintaining the probability proportions. Thus a total of 60 farms were selected from the two clusters. The number of samples selected by farm size category has been presented in Table 2.1. The required data were collected from each selected farm owner/ manager by canvassing a pre-designed schedule covering one year. A trained investigator collected the required data by personally interviewing the owner/manager of the selected farm. The reference period for the study was November 2003 -October 2004.

The data obtained from the farms have been used for analysing production and cost related aspects at the farm level and for identifying the constraints under which they have been operating. For estimating the total broiler meat production in the state, the data on the number of birds produced in the state per year are required. Total production of broiler meat in the state is estimated by multiplying the total number of broilers produced (estimates provided by the poultry federation) by the average weight of live bird, and multiplying by the factor for meat (0.7 for skin-out and 0.75 with skin).

Table 1: Distribution of Sample Household by the Size of a Farm

Farm Size (No of birds)	Bangalore Rural		Shimoga	
	Total Number of Units	No of Units Selected	Total Number of Units	No of Units Selected
Up to 2,500	76	7	68	17
2,500 to 5,000	85	9	40	10
Above 5,000	157	14	9	3
Total	318	30	117	30

An important component in the cost analysis is the average cost of production per kg of meat produced. For estimating this cost, the number of birds produced, their weight and all types of costs incurred in a year are taken into consideration as broiler farming is subjected to seasonality. However, it is more meaningful to measure some costs (fixed costs) per year rather than per batch of birds. Broiler farming involve both private costs and external costs (costs of pollution). The average private cost of production is estimated by the cost accounting method. In the cost analysis, the main focus is only on analysing the private costs. It is not expected to estimate the external costs. However, some pollution related aspects are included in the schedule. This information has been used to comment on externalities associated with poultry farming.

The report is organised into five chapters. Chapter 1 provides a brief introduction about the poultry sector in general and broiler farming in particular. The Chapter also discusses the objectives and methodology adopted for the selection of the sample farms, sample size and collection of data. Chapter 2 provides a profile of the study area, general characteristics of broiler farms, feeding and management practices, mortality of chicks and birds, production and productivity of broiler meat and production of by-products. Chapter 3 presents an analysis of various fixed and variable cost components, the total cost of production and net returns per batch across various farm groups. Chapter 4 presents details of the constraints /problems in factor and output markets and contractual arrangements for the supply of major inputs and sell of output, public opinion about externalities caused by broiler farms. It also presents estimates of broiler production in Karnataka. Finally, conclusions and policy discussions follow in Chapter 5.

CHAPTER II

PRODUCTION OF BROILER MEAT

2.1 Profile of the Study Areas

2.1.1 Bangalore Rural District:

As stated above, Bangalore rural district is selected as one of the cluster for drawing farm samples for the study. Bangalore [Rural] district covers the surrounding area of Bangalore metropolitan city on all sides. Bangalore rural district is located between the Latitudes of 12o 39' & 13 o18' N and the longitudes of 77o 22' E & 77o 52'E at an average elevation of about 900 metres covering an area of about 5,815 sq. km. It is 16th largest district in the state. The average annual rainfall received is 817mm. Bangalore district has no major river. The rivers it has are Arkavati and Dakshina Pinakini. The district has seven taluks – Channapatna, Devanahalli, Doddaballapur, Hosakote, Kanakapur, Magadi, Nelamangala, Ramanagar. The district has nine towns, nine municipal corporations and 1,713 villages with 229 grama panchayats.

The population of the district, according to the 2001 Census, was 1,877,416 with 1,470,542 in rural areas and 406,874 in urban with an overall population density of 323 persons per sq km. The district has 726,202 main workers and 165,188 marginal workers. Among the total workers, 370,689 are cultivators, and 182,433 agriculture labours. Similarly, 42,448 are engaged in household industries and 252,795 are other workers. The district has 225 factories and nearly 22653 workers are engaged in these factories.

Since Bangalore rural surrounds the state capital Bangalore, it forms a peri-urban area of Bangalore city and has good infrastructure facilities. The total length of roads is 5640 km, the national highway running through the district covers 276 km, second highest in the state, whereas the state highway covers 374 km, the major district roads cover 1,045 km, and other roads 3,945 km. The district has a total railway route length of 329 km. It has 353 post offices, 95 telephone exchanges and 74,214 telephones. There are 2,717 primary schools 311 high schools, 59 pre-universities, four polytechnic colleges, six engineering colleges and 137 Libraries. As regard to healthcare

facilities, the district has four state government hospitals with 210 beds and other agency has a hospital with 20 beds. There are 73 primary health centres with 727 beds, 29 primary health units with 36 beds. The district has 188 veterinary institutions. The total livestock population of the district is 2,058,166. The district had 317 broiler and 61 layer farms with 27,68,350 broilers birds and 12,09,050 layers during 2003-04. The marketing of agricultural as well as allied products is done in Bangalore.

2.1.2 Shimoga District

Shimoga district is situated in the Malnad region surrounded by Sahyadri ghats at a mean elevation of 640 AMSL in the western part of Karnataka. It lies between 13`27' and 14`39' north longitude and 74`38 and 76`4 east latitude. It covers a geographical area of 8,465 sq. km. It is the sixth largest district of the state. The district has 327,000 ha of forest area. The average annual rainfall received here is 1,813 mm. (86"). Important rivers like Tunga, Bhadra, Tungabhadra, Sharavati, Kumudvati and Varada irrigate the district.

The district has been delineated into seven taluks – Badravati, Hosanagar, Sagar, Shikaripur, Shimoga, Soraba and Tirthahalli. It has nine towns, nine Municipal Corporations, 40 hobalies, 260 Grama Panchayats administering 1,440 villages. Shimoga city is the capital of the district and is at a distance of 274 km from the state capital, Bangalore. According to the 2001 Census, the total population of the district was 1,639,595 with a rural and urban break-up of consisting of 1,069,132 and 570,463 respectively. The population density works out to 193 persons per sq. km area. The district has a total of 925,743 workers, of which 586,074 are main and 127,778 marginal workers. Among them, 219,618 are cultivators and 223,908 are agriculture workers. Similarly, 17,531 are engaged in the household industry and 252,795 in other occupations. The main occupation of Shimoga is agriculture, and paddy, maize and sugarcane are the major crops. The district has 160 factories with 5,695 factory workers. The district has a fairly good physical and social infrastructure.

Shimoga has a good network of roads and the total road length is 6,777 km. The national highway running through the district covers 222 kms whereas the state highway covers 402 km, the major districts roads measures to 1,229 km, and municipality roads add another 281 km, and other roads cover 4,643 km. The district has a railway route length of 126 km consisting of 97 km of metre gauge and 29 km of

broad gauge with 13 railway stations. There are 363 post offices, 135 telephone exchanges and 97,280 telephone lines. As regard to education facilities, it has 2,183 primary schools 306 high schools, 74 pre-universities, eight polytechnic colleges, one engineering college two medical colleges, one dental college, and a university. As regard to health care facilities, the district has six state governments hospitals with 975 beds and a private hospital with 200 beds. There are 56 primary health Centres with 572 beds, 38 primary health units with 94 beds. The district has 155 veterinary institutes. As regard to Animal Husbandry, there are 577,063 cattle, 224,504 buffaloes, 18,639 sheep, 100,772 goats, and 3,068 pigs. There were 127 broiler poultry farms with 3,19,850 birds and five layer farms with 1,74,000 layers. Marketing of inputs and outputs generally takes place either in Shimoga or Bangalore.

2.2 Profile of Broiler Farms

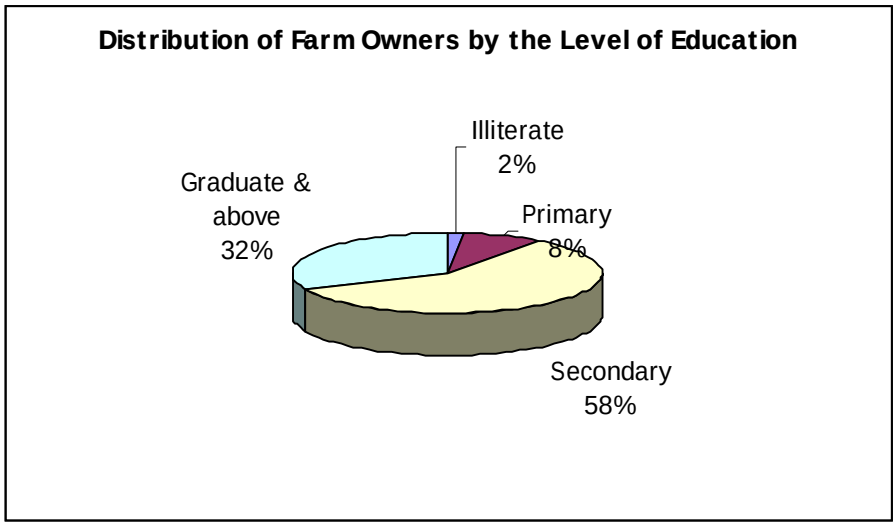
2.2.1 Socio-Professional Characteristics

Tables 2.1a and 2.1b summarise the findings regarding the age, level of education and experience of the sample households. One can see from Table 2.1a that around 62 per cent of unit owners are in the age group of 30-50 years, whereas 18 per cent of the owners are less than 30 years old and 20 per cent are more than 50 years old. Nearly 60 per cent of the farm owners have studied up to secondary level and roughly one third of the unit owners are graduates (Fig. 2.1).

Table 2.1a: Socio Professional Characteristics of Sample Broiler Farmers

Socio Professional Details	Size of the Unit			Total
	<2500	2500-5000	Above 5000	
1 Age of the Farmer				
Below 30 years	25.00	10.53	17.65	18.33
30-50 years	58.33	57.89	70.59	61.67
Above 50 years	16.67	31.58	11.76	20.00
Total	100.00	100.00	100.00	100.00
2 Educational Level				
Illiterate	4.17	0.00	0.00	1.67
Primary	12.50	0.00	11.76	8.33
Secondary	54.17	63.16	58.82	58.33
Graduate & above	29.17	36.84	29.41	31.67
Total	100.00	100.00	100.00	100.00
3 Caste				
Scheduled Castes and Tribes	16.67	15.79	0.00	11.67
Other Backward Castes	75.00	52.63	82.35	68.33
Other Castes	8.33	31.58	17.65	18.33
Total	100.00	100.00	100.00	100.00

Fig. 2.1



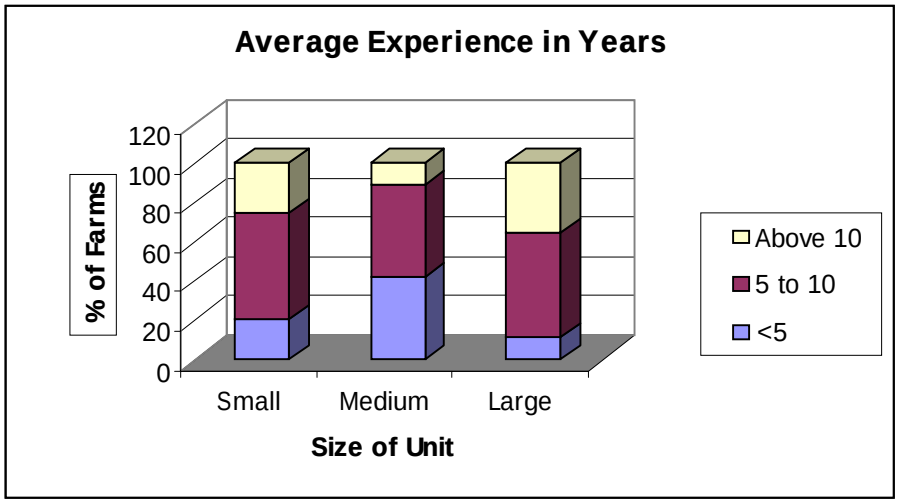
Surprisingly, less than two per cent of the unit owners are illiterate. More than two- third belong to other backward castes. Scheduled Caste and Scheduled Tribe households shared 15-16 per cent of the units with less than 5,000 birds. Among the unit owners, other caste households accounted for 18 per cent of the sample households.

Table 2.1b: Training and Experience of Sample Broiler Farmers

Socio Professional Details	Size of Unit			Total
	<2500	2500-5000	Above 5000	
1. Experience in Poultry (Years)				
<5	20.83	42.11	11.76	25.00
5 to 10	54.17	47.37	52.94	51.67
Above 10	25.00	10.53	35.29	23.33
Total	100.00	100.00	100.00	100.00
2. Training in Poultry Management				
Yes	25.00	11.00	6.00	15.00
NO	75.00	90.00	94.00	85.00
Total	100	100	100	100

It is interesting to note that only 15 per cent of the unit owners have reported to have been trained in poultry management (Table 2.1b). However, about 52 per cent of the sample units reported to having 5-10 years experience in running poultry units, whereas 23 per cent of the units reported of having more than 10 years of experience (Fig. 2.2). Of course, the proportion of experience varied across the size of poultry units.

Fig. 2.2



2.2.2. Accessibility to Infrastructure

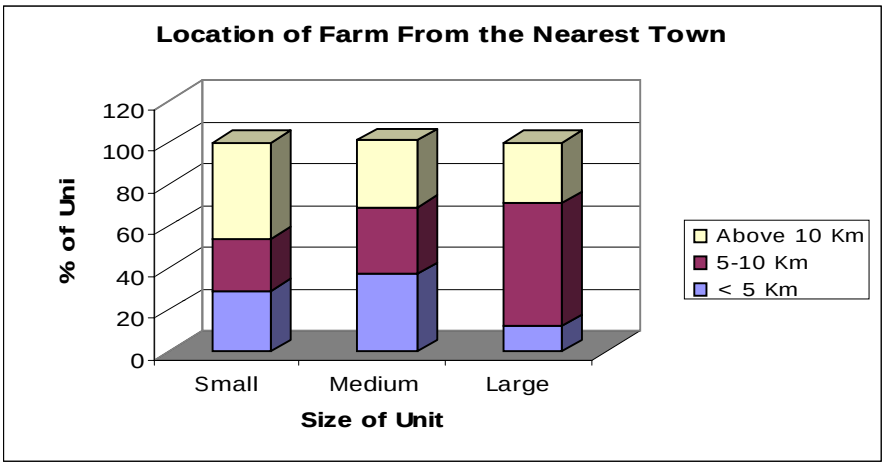
Data was gathered regarding the units, access to urban areas and residential areas. Similarly, the study covered their access to infrastructure facilities. It can be seen from Table 2.2a that only 12 per cent of the large units are located within five km from towns, when compared with 30-37 per cent of the small and medium-sized units in the same radius.

Table 2.2a: Location of the Poultry Units

Location	Size of the Unit			Total
	<2500	2500-5000	Above 5000	
1 Nearest Town				
< 5 Km	29	37	12	27
5-10 Km	25	32	59	37
Above 10 Km	46	32	29	37
Total	100	100	100	100
2 Nearest Residential Settlement				
<5 Km	75	63	53	65
5-10 Km	21	26	35	27
Above 10Km	4	11	12	8
Total	100	100	100	100

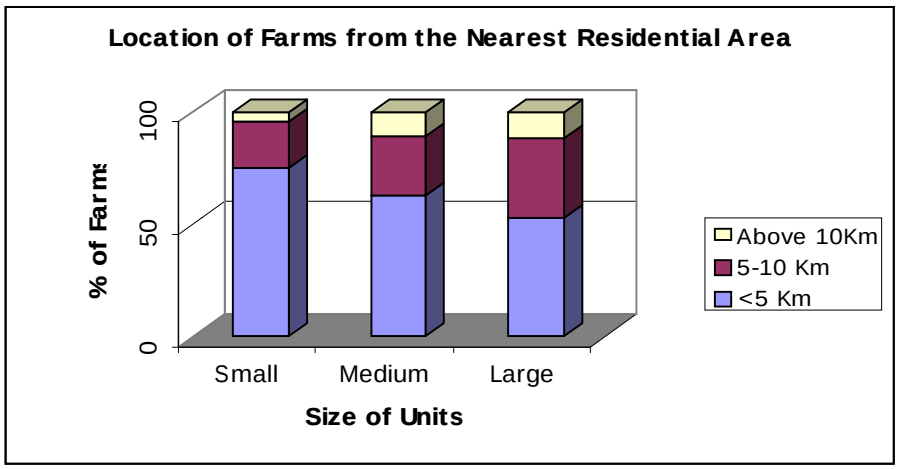
About 59 per cent of the large units are located between 5 and 10 km from towns, whereas 46 per cent of the small units are more than 10 km away from the nearest town (Fig. 2.3).

Fig 2.3



Similarly, three fourth of the small, 63 per cent of medium and little more than half of the large units are found within five km of residential settlements (Fig. 2.4). About four per cent of the small, 11 per cent of the medium and 12 per cent of the large units are located more than 10 km from residential settlements.

Fig. 2.4

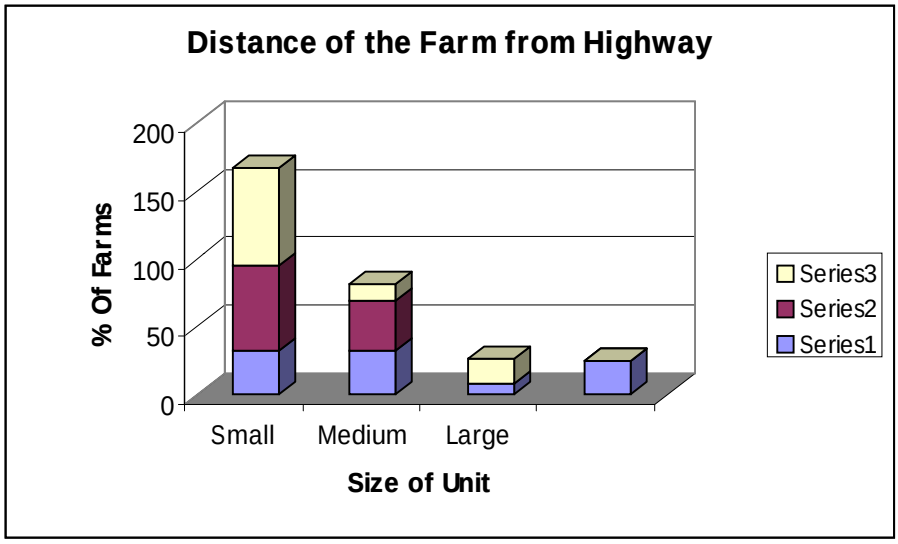


More than 50 per cent of the poultry units are located within two km from the highway (Table 2.2b, Fig. 2.5). About 70 per cent of the large units (above 5,000 birds) and 63 per cent of the medium-sized units (2,500 to 5,000 birds) are within a 2-km radius from the highway. It is surprising to note that about a quarter of the small units are located at more than 10 km away from the nearest highway. One can see from Table 2.2b that a little less than 50 per cent of the small units use kutcha roads to reach the highways, whereas 76 per cent of the large units have pucca approach roads leading to highways.

Table 2.2b: Distance of Poultry Units from the Highway

Location	Size of the Unit			Total
	<2500	2500-5000	Above 5000	
3 Distance from Highway				
< 2 Km	33	63	71	53
2-5 Km	33	37	12	28
5-10 Km	8	0	18	8
Above 10 Km	25	0	0	10
Total	100	100	100	100
4.Type of Road to Highway				
Kutcha	46	32	24	35
Pucca	54	68	76	65
Total	100	100	100	100

Fig. 2.5

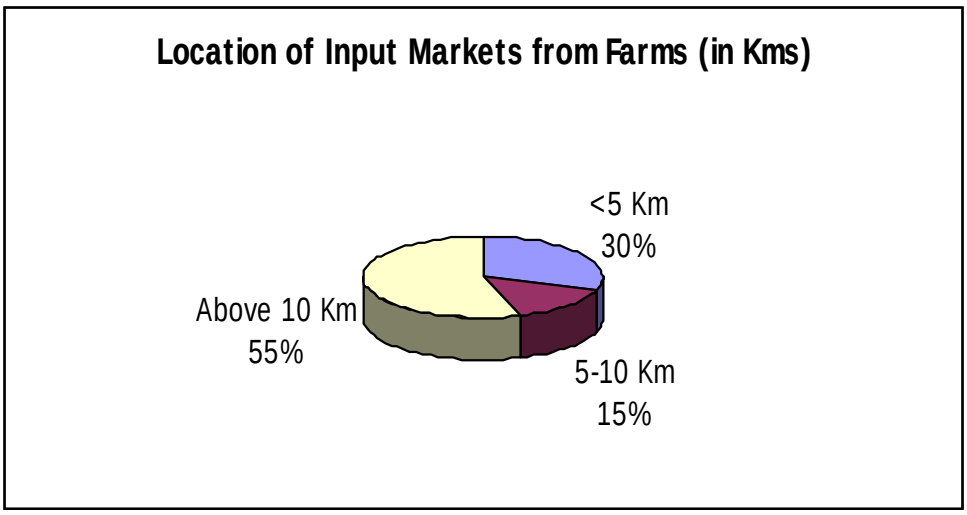


As far as purchasing of inputs is concerned, 30 per cent of the units buy their requirements from agencies/shops within five km, as against 55 per cent of the units who procure their inputs from agencies more than 10 km away (Table 2.2c). About half of the small units (with less than 2,500 birds) sell birds within an area of five km from the units and the remaining half market at places more than 10 km away (Figs. 2.6 & 2.7).

Table 2.2c: Location of Inputs and Output Markets

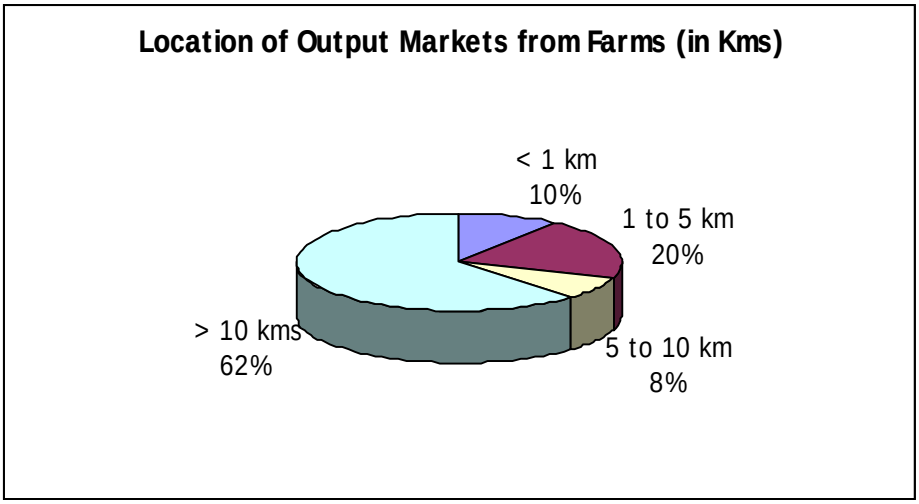
Location	Size of the Unit			Total
	<2500	2500-5000	Above 5000	
5 Source of Input				
<5 Km	33	32	24	30
5-10 Km	4	11	35	15
Above 10 Km	63	58	41	55
Total	100	100	100	100
6 Market for output				
<1	21	5	0	10
1to 5	25	32	0	20
5 to 10	4	5	18	8
Above 10	50	58	82	62
Total	100	100	100	100
7.Location of Other Broiler farms with in vicinity				
With in 1 km	33	29	31	31
1-2 km	67	71	69	69
Total	100	100	100	100

Fig. 2.6



On the contrary, more than 80 per cent of the large units (more than 5,000 birds) sell birds at markets located more than 10 km away. On an average, 30 per cent of the units sell output in markets located within five km, whereas 62 per cent of the units sell their produce (birds) in markets located at more than 10 km away from the units. Poultry units are generally located in clusters. As many as 31 per cent of the units reported the presence of another unit within a radius of less than one km whereas 69 per cent of units reported the presence of other units within a radius of two km.

Fig. 2.7



2.2.3 Characteristics of Broiler Farms

Almost all the sample units selected for the study from different strata are individually owned and none of the units was under partnership (Table 2.2.3a). It can be seen that only 10.5 per cent of the units in 2,500-5,000 category are on lease. On the whole, 96.7 per cent are owner-operated and just 3.3 per cent are leased in. None of the units in the sample follow the cage system and all are found to use the deep litter system (Table 2.2.3b). More than 87 per cent of the sheds of small (<2,500 birds) and large (>5,000 birds) units and those of all the medium sized (2,500-5,000 birds) units are covered with Mangalore tiles. Some 8.3 per cent of the small units have thatched sheds.

Table 2.2.3a: Ownership and Type of Farms

Characteristics	Size of the Unit			Total
	<2500	2500-5000	Above 5000	
1. Ownership Status				
Owned	100.00	89.50	100.00	96.70
Leased	0	10.50	0	3.30
Total	100 (24)	100 (19)	100 (17)	100 (60)
2. Type of Ownership				
Proprietary	100	100	100	100
Partnership	0	0	0	0
Total	100 (24)	100 (19)	100 (17)	100 (60)

Roughly 12 per cent of the large units use cement/asbestos sheets for the roof. Thus, 92 per cent of the units use Mangalore tiles, as against five per cent that use cement or asbestos sheet and the remaining three per cent rearing birds in thatched sheds. The average size of the study units is 1,100 sq. feet, 3,510 sq feet and 7,315 sq feet for small, medium and large size units respectively.

Table 2.2.3b: System of Raring Birds and the Type of Roof

Characteristics	Size of the Unit			Total
	<2500	2500-5000	Above 5000	
3. Type of Unit				
Deep litter	100	100	100	100
Cage	0	0	0	0
Total	100 (24)	100 (19)	100 (17)	100 (60)
4. Type of Shed				
Mangalore tiles	87.5	100	88.2	91.7
Cement /Asbestos Sheet	4.2	0	11.8	5
Hut	8.3	0	0	3.3
Total	100 (24)	100 (19)	100 (17)	100 (60)
5 Average area of Unit (Square Feet)	1100	3510	7315	3691

About 80 per cent of the units use tubewell water and 18 per cent depend on open wells and a little less than two per cent of the units use public tap water (Table

2.2.3 c). It is interesting to note that almost all the large units and 90 per cent of the medium-sized (2,500-5,000 birds) units have tubewells, when compared with 58 per cent of the small units that use tubewells to meet their water needs. All the units selected for the study draw power from the public power supply i.e., the Karnataka Power Transmission Company Ltd (KPTCL) and only 8.3 per cent of the small units used petromax or kerosene lamps.

Table 2.2.3c: Sources of Water and Power for the Study Units

Characteristics	Size of the Unit			Total
	<2500	2500-5000	Above 5000	
6. Source of Water Supply				
Open Well	37.50	10.50	0.00	18.30
Tube Well	58.30	89.50	100.00	80.00
Panchayat Tap	4.20	0.00	0.00	1.70
Total	100 (24)	100 (19)	100 (17)	100 (60)
7. Source of Power Supply				
Public	91.70	100.00	100.00	96.70
Private	8.30	0.00	0.00	3.30
Total	100 (24)	100 (19)	100 (17)	100 (60)

2.3 Feeding and Management Practices

2.3.1 Management of Sheds and Frequency of Feeding

Almost all the units have reported that each batch lasts 45 days. Similarly, all the units use disinfectants to make sheds free from germs, before installing the new batch of chicks (Table 2.4a). It can be seen from the table that 71 per cent of the 24 units with less than 2,500 birds have brooders, when compared with 95 per cent of the medium (2,500-5,000 capacity) and all the large (> 5,000 birds) units. On the whole, 52 of the 60 units i.e., 87 per cent of the 60 sample units, have brooders. Some of the small units (< 2,500 birds) use coal, kerosene lamps or gas petromax to maintain temperature in the poultry shed. Seven per cent of the small, some 84 per cent of the medium and all the large size units use feeders for feeding chicks. However, one third of the units with a capacity of less than 2,500 use other methods for feeding.

Table 2.4a: Management Practices of the Sample Broiler Farmers

Item	Size of the Unit			
	<2500	2500-5000	Above 5000	Total
1. Average Number of Days per Batch	45	45	45	45
2. Disinfecting prior to installing Chicks				
Yes	100	100	100	100
No	0	0	0	0
Total	100	100	100	100
3. Type of Brooder				
Gas	0	0	0	0
Power	71	95	100	87
No Brooder	29	05	00	13
Total	100 (24)	100 (19)	100 (17)	100 (60)
4.Method of Feeding				
Feeder	67	84	100	82
Other	33	16	00	18
Total	100.00	100.00	100.00	100.00

Frequency of feeding chicks varied across the units. About one-fourth of the small units and six per cent of the large units feed chicks only once a day (Table 2.4b; Fig. 2.8). On the contrary, 33 per cent, 68 per cent and 59 per cent of the small, medium and large units respectively feed chicks three or more than three times a day. On an average, 11 per cent of the units feed chicks only once, 37 per cent units twice and 52 per cent of the units feed three or more than three times daily. Similarly, 63 per cent of the units feed birds twice a day when compared to 18 per cent feeding only once and 18 per cent of the units feeding birds three times or more per day.

Fig. 2.8

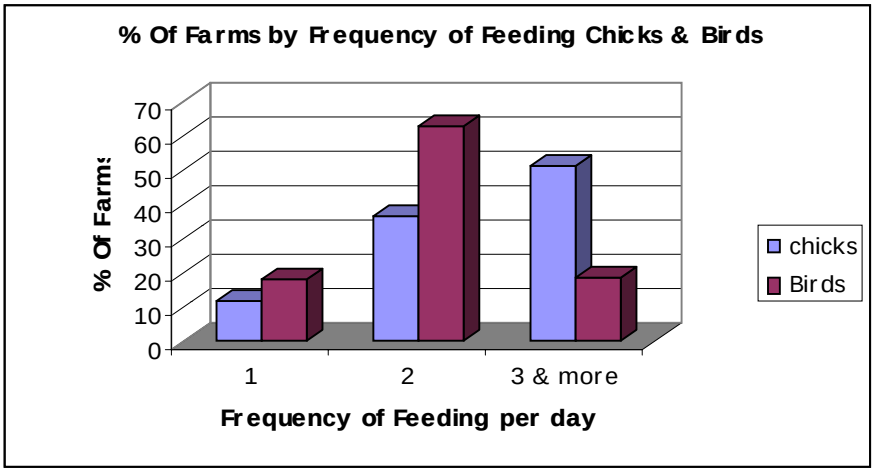
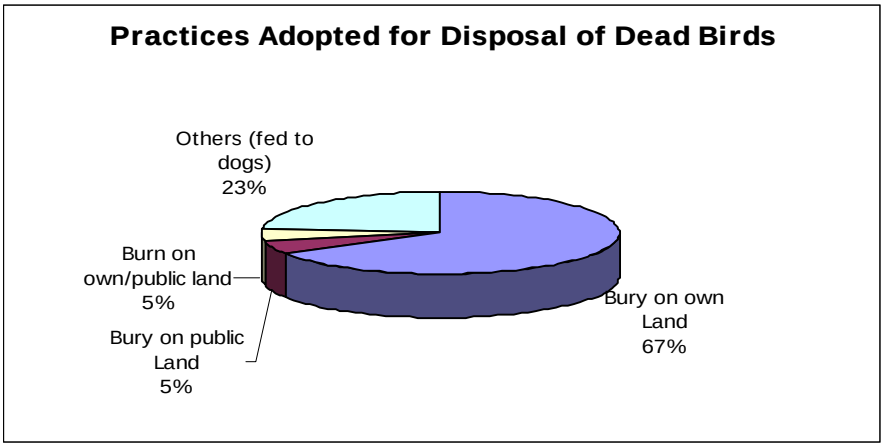


Table 2.4b: Feeding of Birds and Disposal of Dead Birds

Item	Size of the Unit			
	<2500	2500-5000	> 5000	Total
5.1. No. of Times Chicks Fed Per Day				
1	25.00	0.00	5.90	11.70
2	41.70	31.60	35.30	36.70
3 and more	33.30	68.40	58.80	51.60
Total	100.00	100.00	100.00	100.00
5.2. No. of Times Birds Fed Per Day				
1	29.20	10.50	11.80	18.30
2	58.30	68.40	64.70	63.30
3 and more	12.50	21.10	23.50	18.40
Total	100.00	100.00	100.00	100.00
6. Disposal of Dead Birds				
Bury on Own Land	75.00	52.60	70.60	66.70
Bury on Public Land	4.20	10.60	0.00	5.00
Burn on Own Land	4.20	0.00	5.90	3.30
Burn on Public Land	4.20	0.00	0.00	1.70
Others (Fed to Dogs)	12.40	36.80	23.50	23.30
Total	100.00	100.00	100.00	100.00

Data was gathered from the units about their method of disposal of dead birds. More than two third of the units bury dead birds on their own land and only five per cent of the units use public land for burying dead birds (Fig. 2.9). Only five per cent of the units burn the dead birds. In addition to this, a little less than a quarter (23.3 per cent) of the units throw the dead into the open and feed them to dogs. The proportion of units disposing birds in the open or feeding to dogs ranged from 12.4 per cent in the case of small units to 36.8 per cent in the case of medium sized units.

Fig. 2.9



2.3.2 Average Quantity of Different Feeds Used per Bird

Most of the units selected for the study, on an average, raise six batches in a year. The units with a capacity of less than 2,500 birds, instal on an average, 1,325 chicks per batch and it ranges from 1,275 chicks in the sixth batch to 1,381 chicks in the fourth batch (Table 2.5). The hatcheries provide two per cent extra chicks as a back-up against mortality. The medium-sized (2,500–5,000) units raise six batches and the number of birds per batch varies between 3,965 and 4,463 with an average of 4,036 birds per batch.

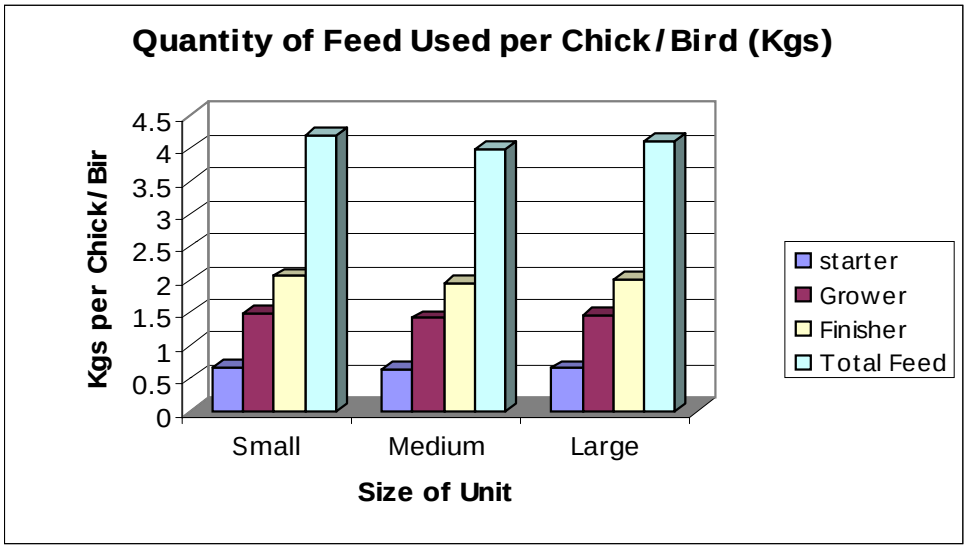
Table 2.5: Quantity of Feed (kgs) Used Per Bird Batch-wise

Group	Batch	Chicks Installed	Starter	Grower	Finisher	Total Feed
1	1	1304	0.67	1.49	2.05	4.21
	2	1287	0.66	1.48	2.03	4.17
	3	1325	0.67	1.50	2.06	4.23
	4	1381	0.67	1.49	2.05	4.22
	5	1360	0.65	1.45	2.00	4.11
	6	1275	0.70	1.55	2.13	4.37
	Total	1325	0.67	1.49	2.05	4.20
2	1	3965	0.63	1.40	1.93	3.97
	2	3976	0.63	1.41	1.93	3.97
	3	3987	0.63	1.40	1.93	3.96
	4	4103	0.63	1.40	1.93	3.96
	5	4089	0.64	1.43	1.97	4.04
	6	4463	0.66	1.46	2.01	4.13
	Total	4036	0.63	1.41	1.94	3.98
3	1	7800	0.66	1.46	2.01	4.13
	2	7800	0.66	1.46	2.00	4.12
	3	7800	0.66	1.46	2.00	4.12
	4	7800	0.65	1.45	2.00	4.10
	5	7964	0.66	1.46	2.00	4.11
	6	6921	0.64	1.42	1.96	4.02
	Total	7754	0.65	1.45	2.00	4.11
Total	1	3987	0.65	1.45	1.99	4.09
	2	3984	0.65	1.44	1.98	4.08
	3	4049	0.65	1.45	1.99	4.08
	4	4157	0.65	1.44	1.98	4.08
	5	4119	0.65	1.45	1.99	4.09
	6	4026	0.65	1.45	1.99	4.09
	Total	4052	0.65	1.45	1.99	4.08

In the case of large units having a capacity of raising more than 5,000 broilers, the average number of chicks installed range from 6,921 chicks in the sixth batch to 7,964 chicks in the fifth batch with an average of 7,754 chicks per batch.

Almost all the units regardless of size, use ready-made compound feeds. Immediately after installation, chicks are given starter compound followed by grower and finisher compound. There is not much variation in the quantity of feed used/ fed per bird on different farms and also across batches. The total quantity of feed per chick varies from 3.98 kg on medium farms (2,500–5,000 birds) to 4.20 kg per bird on small farms (Fig. 2.10). For all the units taken together, the average number of chicks installed per unit range from 3,984 in the first batch to 4,157 chicks in the fourth batch with an average of 4,052 chicks per batch. There are not much variations in the quantity of feed used per bird across batches and farm size groups. On an average, 0.65 kg of starter compound is fed to the chicks in the beginning, followed by 1.45 kg of grower and 1.99 kg of finisher compound, all adding up to 4.08 kg of feed per bird till they are ready for the market.

Fig. 2.10



2.3.3 Vaccines and Vitamins

Data gathered about vaccination and supplement of vitamins to chicks has been presented in Table 2.6. Since we have not gathered data separately on the quantity of vaccines and vitamins separately, we are presenting information only on vaccines.

Moreover, almost all the units used manufactured feed compound which is enriched with vitamins, and hence, do not provide supplementary doses separately. Most of the unit owners reported using Lasota vaccine on the seventh day of installing chicks, IBD on the 14th day, followed by Losota on the 21st day and a liver tonic after a month.

Table 2.6: Quantity of Vaccines Used Per Bird Batch-wise

Quantity in ML

Batch	Size of the Unit			
	<2500	2500-5000	>5000	All
1	2.01	2.47	2.13	2.22
2	1.89	2.47	2.13	2.20
3	2.18	2.48	2.13	2.24
4	2.13	2.47	2.13	2.23
5	1.85	2.56	2.18	2.24
6	1.70	2.58	2.05	2.16
Total	2.00	2.49	2.13	2.22

The average quantity of vaccines used varies between 1.7 ml per chick in batch six to 2.18 ml per chick in batch three with an average of two ml vaccines per chick in small units with less than 2,500 birds. In the case of medium-sized units, (2,500-5,000), the amount of vaccines used range from 2.47 ml to 2.58 ml per chick with an overall average of 2.49 ml per chick for all the batches. The average quantity of vaccines used is 2.13 ml in the case of large units, and it varied from 2.05 ml in the sixth batch to 2.18 ml in the fifth batch. Thus, the quantity of vaccines used per chick is the highest (2.49 ml) in the case of medium-sized units and the lowest (2.00 ml) in small units. All the units taken together, the average amount of vaccines used is 2.2 ml per chick and it ranged from 2.16 ml per bird in the sixth batch to 2.24 ml in the third and the fifth batch.

2.4 Mortality of Chicks and its Reasons

2.4.1 Mortality of Chicks and Birds

As expected the mortality of chicks is the highest during the first three weeks of installation and the lowest between the three and the five week period (Table 2.7). The average mortality ranges from 4.89 per cent for the second batch to 5.92 per cent of the total birds installed in the fifth batch in small units (Fig. 2.11). The average number of birds produced per batch is 1,254 as against 1,325 birds installed. Thus, the overall

mortality of chicks and birds is 5.38 per cent on small (<2,500 birds) units. However, the units procure two per cent extra chicks to ward off the loss due to mortality of chicks in the early stage of installation.

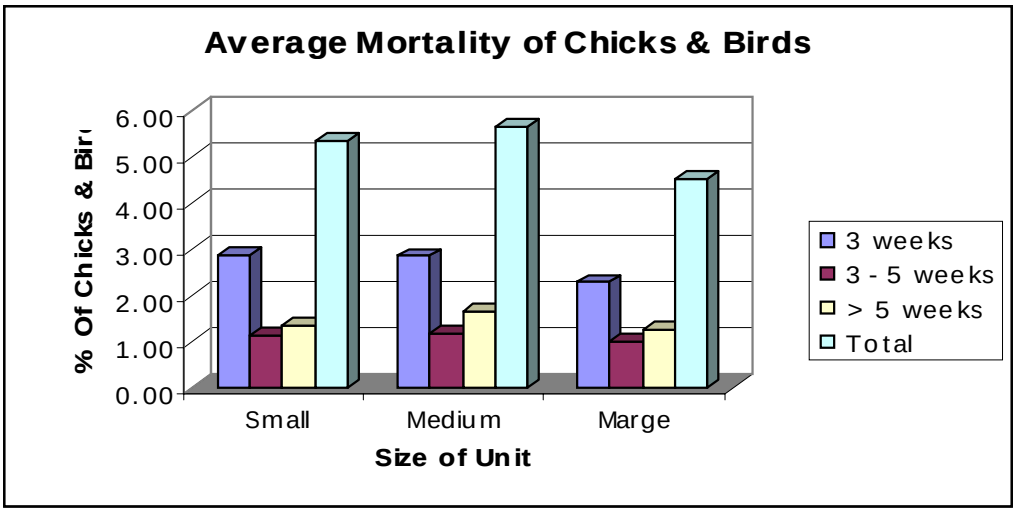
Table 2.7: Mortality of Chicks/Birds by Unit Size and Batches

Group	Batch	Chicks installed	No. Of Chicks Died (In Weeks)			Birds Produced	Mortality Rate
			1-3	3-5	After 5		
1	1	1304	39	16	19	1230	5.67
	2	1287	32	14	16	1224	4.89
	3	1325	41	16	18	1249	5.72
	4	1381	36	15	16	1313	4.91
	5	1360	47	15	19	1279	5.92
	6	1275	32	15	18	1211	5.05
	Total	1325	38	15	18	1254	5.38
2	1	3965	115	50	67	3733	5.87
	2	3976	125	53	70	3727	6.25
	3	3987	118	48	73	3748	5.99
	4	4103	102	42	58	3901	4.93
	5	4089	117	40	60	3873	5.29
	6	4463	99	34	50	4280	4.09
	Total	4036	115	47	66	3809	5.63
3	1	7800	179	76	111	7429	4.70
	2	7800	186	81	106	7425	4.78
	3	7800	190	85	102	7423	4.84
	4	7800	189	81	87	7451	4.57
	5	7964	153	67	85	7656	3.83
	6	6921	139	61	86	6636	4.13
	Total	7754	177	77	98	7402	4.55
Total	1	3987	103	44	60	3779	5.19
	2	3984	105	45	59	3774	5.26
	3	4049	109	46	60	3834	5.31
	4	4157	102	43	50	3963	4.72
	5	4119	98	38	50	3932	4.51
	6	4026	85	36	50	3856	4.24
	Total	4052	103	43	56	3850	4.98

In the case of medium (2,500–5,000) units, the average number of chicks installed is 4,036 per batch and the number of birds produced is 3,809. Thus, the total number of chicks and birds that died from installation to marketing accounted for 5.63 per cent of the total birds installed. The mortality of chicks is higher during the first

three weeks when compared with the later period. The mortality of chicks and birds in medium units rages from 4.09 per cent of chicks installed in the sixth batch to 6.25 per cent in the second batch. The mortality rate after the fifth week is more compared with the 3-5 week period.

Fig. 2.11



The mortality rate of chicks and birds on large (> 5,000 birds) units varied from 3.83 of the installed chicks in the fifth batch to 4.84 per cent in the third batch. As expected, mortality was the highest during the first three weeks from installation, slowed down during the fourth and fifth weeks and increased thereafter. In the case of large (>5.000) units, the average number of birds produced is 7,402 as against 7,754 chicks installed per batch resulting in 4.55 per cent mortality of chicks and birds during different stages of growth.

All the units put together, the number of birds produced ranged between 3,774 during the second batch and 3,963 in the fourth batch when compared to 3,984 and 44,157 chicks installed in the respective batches. The mortality was almost double during the first three weeks of installation when compared to later periods. The mortality of chicks and birds ranged from 4.24 per cent of the installed chicks in the sixth batch to 5.31 per cent in the third batch.

2.4.2 Reasons for Mortality of Chicks and Birds

Data on mortality for each batch was collected from the sample units. It is surprising to note that most of the poultry farm owners aware of poultry diseases. They identified the cause of death of chicks and birds during different weeks. The results are summarised in Table 2.8. The Majority of the deaths during the fist three weeks of installation of chicks are attributed to gout, weakness and Chronic Respiratory Disorder (CRD). The mortality of birds after the fifth week is reported due to over weight and other causes. Death of birds between three and five weeks is attributed to weakness and infections.

Table2.8: Causes of Death of Chicks and Birds

Group	Batch	Disease					
		Gomboro	Gout	Coxci	CRD	Others	Total
1	1	0	41	2	30	1	74
	2	1	32	3	27	0	63
	3	0	42	3	30	0	76
	4	1	37	1	28	1	68
	5	1	47	2	28	3	81
	6	0	22	9	20	13	64
	All	0	38	3	28	2	71
2	1	4	112	8	110	0	233
	2	4	121	1	117	5	248
	3	0	118	4	113	6	239
	4	0	102	2	94	5	202
	5	0	117	2	97	0	216
	6	0	99	0	84	0	183
	All	2	113	3	106	3	227
3	1	10	229	19	112	0	371
	2	9	167	18	181	0	375
	3	12	170	21	175	0	377
	4	10	161	16	162	0	349
	5	10	126	17	155	0	308
	6	0	143	0	142	0	285
	All	9	170	17	156	0	352
All	1	4	117	9	79	1	209
	2	4	98	7	99	2	210
	3	4	103	8	98	2	214
	4	3	94	6	88	2	194
	5	3	90	7	86	1	187
	6	0	83	4	78	6	170
	All	4	100	7	89	2	202

It can be seen from the table that gout and CRD are the major diseases responsible for mortality of chicks and birds in the study area. On small farms, 38 and 28 of the 71 chicks/birds died due to gout and CRD respectively. Similarly on medium farms (2,500 to 5,000 birds), 113 chicks died due to gout as against 106 chicks/birds due to CRD. Less than three birds each died due to gomboro and coxci among the total 227 birds. In the case of large farms (>5,000 birds), on an average 352 birds died between installation and marketing, of which 170 died due to gout and 156 due to CRD. On an average, 3,850 birds were produced out of 4,052 chicks installed, indicating 202 deaths during the growth period. As stated earlier, most of the deaths were reported due to gout (100 birds) and CRD (89). On an average, seven deaths were attributed to coxci, four to Gomboro and the remaining two to other infections.

It was also reported that mortality (death of birds after five weeks) was higher in batches during summer months when compared with batches installed in other seasons. Similarly, mortality in chicks was relatively high in batches installed during the rainy season and winter.

2.5. Production and Productivity of Broiler Meat

The average number of birds produced varied from 1,211 in the sixth batch to 1,313 birds in the fourth batch in small units (Table 2.9). The average weight per live bird hovered around 2.00 kgs with an average meat production of 1.53 kg per bird. In the case of medium farms (units with 2,500–5,000 birds), the average number of birds produced per batch is 3,809. The average weight of live birds ranges from 2.05 kg per bird in the fourth batch to 2.15 kg per bird in the fifth batch. The average amount of meat produced is 1.58 kg per bird in medium farms. The number of birds produced on large farms is more than 7,400 birds per batch except in the sixth batch (6,636). The average weight of live birds is around two kg per bird and the average meat produced is 1.56 kg per bird and it varies from 1.52 kgs per bird in the sixth batch to 1.60 kg per bird in the third batch. Thus, there is neither much variation in the average weight per live bird nor in the quantity of meat produced per bird across the batches and among the farm groups. The overall weight is 2.07 kg per live bird and each bird yields 1.55 kg of meat.

Table 2.9: Production and Productivity of the Sample Broiler Farms

Group	Batch	Average Number of Birds Produced	Average Weight per Live Bird (kgs)	Average Meat Production per Bird (kgs)
1	1	1230	2.08	1.56
	2	1224	2.06	1.55
	3	1249	2.00	1.50
	4	1313	2.01	1.51
	5	1279	2.03	1.52
	6	1211	2.05	1.54
	Total	1254	2.04	1.53
2	1	3733	2.06	1.55
	2	3727	2.12	1.59
	3	3748	2.15	1.61
	4	3901	2.05	1.54
	5	3873	2.15	1.61
	6	4280	2.10	1.58
	Total	3809	2.10	1.58
3	1	7429	2.05	1.54
	2	7425	2.10	1.58
	3	7423	2.14	1.60
	4	7451	2.08	1.56
	5	7656	2.06	1.55
	6	6636	2.03	1.52
	Total	7402	2.08	1.56
Total	1	3779	2.07	1.55
	2	3774	2.09	1.57
	3	3834	2.09	1.57
	4	3963	2.04	1.53
	5	3932	2.07	1.55
	6	3856	2.05	1.54
	Total	3850	2.07	1.55

2.6. Production of By-product – Manure

Poultry manure consists of the litter produced by birds as well as the husk used for bedding material in the sheds. The manure produced by small farms (< 2,500 birds) ranged from 27-29 quintal per batch (Table 2.10). The quantity of manure produced in medium farms (2,500-5,000 birds) is around 87 quintal per batch. Large farms (more than 5,000 birds per batch) produced on an average 161-quintal of manure per batch. The total amount of manure produced in small farms is 134 quintal and 399 and 835 quintal by medium (2,500 to 5,000 birds) and large (>5,000 birds) farms respectively.

The average production of manure is 85 quintals per batch, amounting to a total of 417 quintals per farm across the farm size groups.

Table 2.10: Production of By-product (Poultry Manure in quintals)

Batch No.	Size of the Unit			
	< 2500	2500 - 5000	> 5000	All Units
1	27	85	163	84
2	27	85	163	84
3	27	86	163	85
4	28	89	163	87
5	29	88	162	86
6	24	99	146	85
Total	27 (134)*	87 (399)	161 (835)	85 (417)

Note: Figures in the parenthesis are the total quantity of manure produced per farm

2.7. Estimates of Broiler Production in Karnataka

We tried to obtain data from major hatcheries in Karnataka about broiler chicks supplied to farms within the state. However, the hatcheries were not willing to divulge the information. We had discussions with the Karnataka Federation of Poultry Farmers and here; too, we were not able to figure out the total broiler production in Karnataka. Finally, discussions with faculty members of the Department of Poultry Science, Hebbal, Bangalore helped us in estimating the broiler production in Karnataka during 2004. As per the estimates, Karnataka produced about 125 million broiler birds. The average weight per live bird is assumed to range between 1.7 and 1.8 kg with an average of 1.75 kg. A broiler with one kg of live weight yields 0.75 kg of meat when dressed with skin and 0.70 kg if the skin is removed. Thus, the total broiler meat production in Karnataka is estimated to be 1,64,062.5 tonnes (with skin) and 1,53,125 tonnes (skin-out). The estimated broiler meat production during 2004 would be 1,94,062 tonnes (with skin) and 1,81,125 tonnes (without skin), if we consider 2.07 kg as the average weight per live broiler as found in our study.

CHAPTER III

COST OF PRODUCTION OF BROILER MEAT

3.1. Fixed Cost

Fixed cost consists of investment on purchase of land, cost of construction of sheds, purchase of equipment and vehicles and other long-term investment for poultry activities. The various costs incurred by the sample farms are analysed and have been presented in Table 3.1. The average investment on land ranges from Rs. 28,144 on small farms to Rs. 2,85,706 on large farms and the cost of construction of sheds varied from Rs. 32,513 on small farms to Rs. 1,18,529 on large farms (Fig. 2.12). As stated earlier, most of the farms used locally available granite slabs and mud tiles for the construction of poultry sheds.

Table 3.1: Fixed Costs of the Sample Broiler Farms

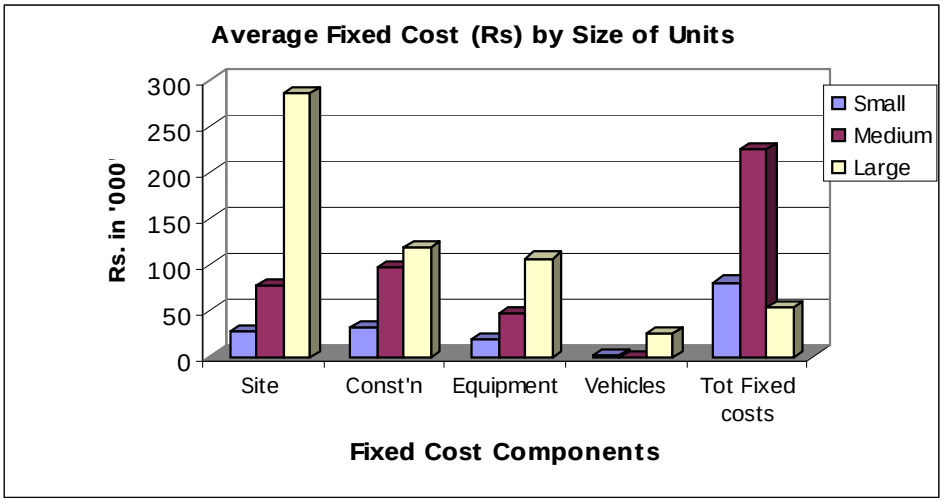
(in Rs.)

Cost Component	Size of the Unit			
	< 2500	2500 to 5000	> 5000	All
Site value	28144	78362	285706	117022
Cost of Construction	32513	97816	118529	77563
Cost of equipment	18775	47581	106933	52875
Value of Vehicles	1333	0	25882	7867
Total Fixed costs	80765	223758	537051	255327
Interest on fixed costs @ 12% pa	9692	26851	64446	30639
Birds produced	6244	17483	38351	18900
Average fixed cost per bird	1.55	1.54	1.68	1.62

The total cost of equipments is Rs. 18,775, Rs. 47,581 and Rs. 1,06,933 on small, medium and large farms respectively. Very few farms owned vehicles in the small farm category and none in the medium farm category. The total investment (fixed cost) per farm on an average ranged from Rs. 80,765 for small farms (2,500 broilers) to Rs. 5,37,051 for large farms (>5,000 birds). The interest on fixed capital or long-term investment has been taken at the rate of 12 per cent to arrive at the cost per bird. The fixed cost per bird works out to Rs. 1.55, Rs. 1.54 and Rs. 1.68 on small, medium and

large farms, respectively. The overall fixed cost works out to Rs. 1.62 per bird for all the farms.

Fig. 3.1



3.2. Variable Cost

Variable costs are recurring costs and include the cost of chicks, feed, vaccines and medicines, expenditure on electricity, coal and gas, cost of husk, disinfectants, transport and communication, etc. It can be seen from Table 3.2 that feed is a major item in variable cost in broiler farming and accounts for roughly 70 per cent of the total variable cost. The cost of chicks is the other major component, accounting for 20 per cent of variable cost. The expenditure on vaccines and medicines, disinfectants, labour, transport and communication, etc together accounted for 10 per cent of the total variable cost (Fig. 2.13).

In the case of small (< 2,500 birds) farms, the average cost of chicks per batch works out to Rs. 14,429 whereas feed cost is Rs. 49,754. The average expenditure on vaccines and medicines is Rs. 2,178. Husk and disinfectants costs Rs. 2,120, whereas expenditure on electricity/coal/gas is to the tune of Rs. 1,838 per batch. Labour wages paid for managing day-to-day work at the poultry farm is Rs.1,444. The expenditure incurred for repairing equipments and machinery is Rs. 1,444, followed by Rs. 474 for transport and communication. The total variable cost per batch varies from Rs. 69,548 for the sixth batch to Rs. 75,677 for the fourth batch on small farms. The average

variable cost per bird ranged from Rs. 56.84 for the fifth batch and Rs. 58.33 for the third batch with an overall average of Rs. 57.61 per bird for all the batches on small farms.

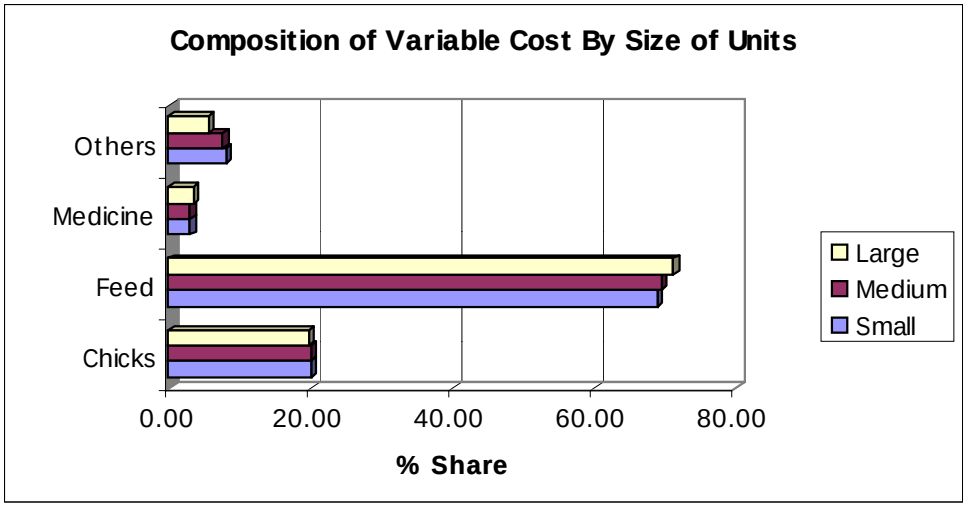
Table 3.2: Batch-wise Variable Costs of the Sample Broiler Farms

Group	Batch	Cost in Rs								Variable Cost/ Bird
		Chicks	Feed	Medicine	Labour	Energy	Transport	Disinfectants/ Husk	Total variable Cost	
1	1	13844	48860	2167	1457	1917	466	2169	70879	57.63
	2	14088	48236	2073	1457	1917	466	2169	70406	57.52
	3	14861	50084	2096	1412	1855	486	2056	72850	58.33
	4	15189	52334	2189	1461	1881	508	2114	75677	57.64
	5	14169	50337	2382	1437	1746	525	2103	72700	56.84
	6	14469	47639	2266	1429	1411	281	2053	69548	57.43
	Total	14429	49754	2178	1444	1838	474	2120	72238	57.61
2	1	41482	142098	6495	4331	5141	253	6190	205990	55.18
	2	40253	142703	6363	4331	5141	253	6190	205234	55.07
	3	44339	143534	6161	4399	5135	267	5831	209667	55.94
	4	42800	147654	6450	4505	5077	282	5885	212653	54.51
	5	39514	148135	6215	4826	4558	371	5378	208996	53.96
	6	41500	162079	5928	6146	4550	375	6847	227424	53.14
	Total	41799	145231	6327	4523	5027	282	5988	209176	54.92
3	1	73971	285340	13969	5631	6995	2284	6942	395132	53.19
	2	80176	284215	13969	5631	6995	2284	6942	400213	53.90
	3	74500	284251	13969	5631	6995	2284	6942	394573	53.16
	4	78706	283031	13969	5631	6995	2284	6942	397558	53.36
	5	84654	290418	14563	6287	6840	2970	6359	412091	53.83
	6	79000	245975	13431	7333	6331	5395	6353	363818	54.82
	Total	78165	282085	14014	5864	6919	2633	6809	396489	53.57
Total	1	39632	145388	6881	3550	4377	914	4795	205536	54.39
	2	41098	145011	6802	3550	4377	914	4795	206547	54.73
	3	41490	147721	6838	3576	4379	945	4660	209609	54.67
	4	42854	151370	7070	3636	4391	991	4704	215015	54.26
	5	42624	150261	7156	3826	4059	1242	4279	213446	54.28
	6	43934	144803	7151	4597	3884	2185	4646	211200	54.77
	Total	41606	147549	6948	3678	4303	1063	4667	209815	54.50

As far as medium (2,500-5,000 birds) farms are concerned, the cost of chicks ranges from Rs. 39,514 in the fifth batch to Rs. 44,339 for the third batch with an average expenditure of Rs. 41,799 per batch for the purchase of chicks. The average expenditure on feed is around Rs. 1,62,079 per batch and it varies from Rs. 1,42,098

for the first batch to Rs. 1,62,079 for the sixth batch. The average expenditure on vaccines and medicines is Rs. 6,327, whereas for energy and labour wages it is Rs. 5,027 and Rs. 4,523 per batch respectively. The average expenditure on husk and disinfectants is Rs. 5,988 per batch. The total variable cost for medium farms ranges from Rs. 2,05,234 for the second batch to Rs. 2,27,424 for the sixth batch with an average of Rs. 2,09,176 per batch. The average variable cost per bird produced in medium farm varies from Rs. 53.14 for the sixth batch to Rs. 55.94 per bird in the third batch. The overall average variable cost works out to Rs. 54.92 per bird for all the batches.

Fig. 3.2



On large (> 5,000 birds) farms, the average cost of chicks varies from Rs. 73,971 for the first batch to Rs. 84,654 for the fifth batch with an average of Rs. 78,165 expenditure for the purchase of chicks per batch. Similarly, the cost of feed per batch ranges from Rs. 2,45,975 for the sixth batch to Rs. 2,90,418 for the fifth batch. The average cost of feed purchased is Rs. 1,45,388 per batch on large farms. The average expenditure on electricity/coal/gas and husk and disinfectants is little less than Rs. 7,000 per batch. It can also be seen that large farms spend on an average Rs. 14,014 on medicines/vaccines and Rs. 5,864 per batch on labour wages and services. The average expenditure on transport and communication is Rs. 2,633. The total variable cost per batch varies between Rs. 3,63,818 for the sixth batch and Rs. 4,12,091 for the fifth batch with an average of Rs. 3,96,489 per batch raised on large farms. The

average cost per bird produced on large farms is Rs. 53.57 and it ranges from Rs. 53.16 per bird produced in the third batch to Rs. 54.82 per bird in the sixth batch.

To summarise, the proportionate expenditure on chicks is marginally lower (19.71 per cent) when compared with small (19.97 per cent) and medium farms (19.98 per cent). On the contrary, the expenditure on feed and medicines is a little higher in large farms when compared with small and medium farms. Similarly, the proportion of labour, energy and transport/communication costs are marginally lower in large farms than small and medium farms. The average variable cost per bird produced on large farms (Rs. 53.57) is lower than the average variable cost per bird produced on small farms (Rs. 57.61) or medium farms (Rs. 54.92). The overall variable cost is Rs. 54.50 per bird produced on the sample farms.

3.3. Total Cost of Production:

The average fixed and variable costs per bird on small farms are Rs. 1.56 and Rs. 57.61 respectively, resulting in a total cost of Rs. 59.17 per bird produced on small farms in the study area (Table 3.3). The variation in the total cost per bird on small farms is due to variations in the variable costs per bird produced during different batches. The average cost per kg of live weight ranges from Rs. 28.45 for birds in batch one to Rs. 29.94 per kg of live weight of birds produced in batch three.

In the case of medium farms (2,500-5,000 birds), the fixed cost per bird works out to Rs. 1.54 and the average variable cost Rs. 54.92. Thus, the average total cost per bird produced on a medium farm is Rs. 56.46 for all the batches. The differences in the variable cost incurred in the production of birds resulted in variations in the average cost per bird produced in different batches. The average cost per bird varied from Rs. 54.68 for birds produced in the sixth batch to Rs. 57.48 per bird produced in the third batch. The average cost per kg of live bird is lowest (Rs. 25.82) for birds produced in the fifth batch and the highest (Rs. 27.53) in the first batch. The overall average cost per kg of live weight work out to Rs. 26.88.

The average cost per bird on large farms ranges between Rs. 54.84 for birds produced in the third batch to Rs. 56.50 for birds produced in the sixth batch, with an overall average of Rs. 55.25 per bird. Similarly, the average cost works out to Rs. 25.62

per kg of live weight for birds produced in the third batch as against Rs. 27.83 per kg weight of live birds produced during the sixth batch. The average cost per kg of live weight is Rs. 26.56 for the birds produced on large farms.

Table 3.3: Cost of Production Per Bird in Different Batches and Farm Size Groups

Group	Batch	Average Cost per Bird			Average Cost per Kg of Live weight
		Fixed Cost	Variable Cost	Total Cost	
1	1	1.56	57.63	59.19	28.45
	2	1.56	57.52	59.08	28.68
	3	1.56	58.33	59.89	29.94
	4	1.56	57.64	59.20	29.45
	5	1.56	56.84	58.40	28.77
	6	1.56	57.43	58.99	28.78
	Total	1.56	57.61	59.17	29.00
2	1	1.54	55.18	56.72	27.53
	2	1.54	55.07	56.61	26.70
	3	1.54	55.94	57.48	26.74
	4	1.54	54.51	56.05	27.34
	5	1.54	53.96	55.50	25.82
	6	1.54	53.14	54.68	26.04
	Total	1.54	54.92	56.46	26.88
3	1	1.68	53.19	54.87	26.76
	2	1.68	53.90	55.58	26.47
	3	1.68	53.16	54.84	25.62
	4	1.68	53.36	55.04	26.46
	5	1.68	53.83	55.51	26.94
	6	1.68	54.82	56.50	27.83
	Total	1.68	53.57	55.25	26.56
Total	1	1.62	54.39	56.01	27.06
	2	1.62	54.73	56.35	26.96
	3	1.62	54.67	56.29	26.93
	4	1.62	54.26	55.88	27.39
	5	1.62	54.28	55.90	27.01
	6	1.62	54.77	56.39	27.51
	Total	1.62	54.50	56.12	27.11

The average total cost per bird produced on the sample farms works out to Rs. 56.12 comprising Rs. 1.62 asf fixed cost and Rs. 54.50 as variable. The average cost varies from Rs. 55.88 per bird to Rs. 56.35 during different batches. The average cost per kg weight of live bird is around Rs. 27.11 for all farms and batches.

3.4. Gross Income

The returns from any production process are largely determined by factor costs and output prices. Input prices are controlled by the suppliers of inputs and represent the organised sector. The cost of production has fixed and variable cost components and both influence the total cost of production. However, the cost of variable inputs has more bearing on the poultry industry. The cost of feed (supply controlled by manufacturing companies) and prices of chicks (supplied by big hatcheries) impinge on the total cost. The output market for broiler is controlled by wholesalers and producers do not have much say in prices. Moreover, Broiler production is analogous to production of perishables in agriculture. Producers have to dispose off the broilers within a specific period from the date of installation of chicks, otherwise the cost of maintenance (feeding) exceeds the gain in weight and the probability of dying birds increase.

It can be seen from Table 3.4 that the average number of birds produced per batch on small farms is 1,254 and the average weight of live bird produced on small farms is 2.04 kg. The price of birds ranges from Rs. 30.63 per kg of live weight of the bird from the second batch to Rs. 32.43 per kg of live weight of birds produced in the third batch. The average gross income from the sale of birds varies from Rs. 62.28 per live bird to Rs. 65.60 on small farms, with an average income of Rs. 64.02 per bird. The sale of poultry manure and empty feed bags fetches on an average, Re. 1.00 per bird. Thus, the total gross income per bird produced on small farms is Rs. 65.02. The average gross income is a little less than Rs. 32.00 (Rs. 31.92) per kg of the weight of live bird.

In the case of medium farms (2,500-5,000 birds), the average number of birds produced in six batches ranges from 3727 in the second batch to 4,280 birds in the sixth batch with an average of 3,809 birds per batch. The average weight of live birds produced on medium farms is at 2.10 kg per bird. The price of live birds ranges from Rs. 31 per kg of live weight of birds from the sixth batch to Rs. 34.64 per kg of live weight of birds produced in the fifth batch. The average income per bird is Rs. 67.94 and it varies from a minimum of Rs. 65.10 per bird in the sixth batch to a maximum of Rs. 74.30 per live bird from the fifth batch. The average income from the sale of poultry manure and empty feedbags is Rs. 0.84 per bird. The average income per kg of live weight rangs from Rs. 31.37 for birds produced in the sixth batch to Rs. 35 per kg of

live weight in the fifth batch. The average gross income works out to Rs. 32.72 per kg of live weight of birds produced in all the six batches on medium farms.

Table 3.4: Returns from Sale of Output

Group	Batch	Birds produced	Average Live Weight	Price per kg of Live weight	Gross income/ Bird	Income from sale of manure & bags	Average Gross income per bird	Income per kg of Live weight
1	1	1230	2.08	31.17	64.68	1.01	65.69	31.66
	2	1224	2.06	30.63	63.10	1.01	64.11	31.12
	3	1249	2.00	32.43	64.99	0.98	65.97	32.92
	4	1313	2.01	31.00	62.28	0.97	63.25	31.48
	5	1279	2.03	31.83	64.55	1.03	65.58	32.34
	6	1211	2.05	32.00	65.60	0.94	66.54	32.46
	Total	1254	2.04	31.43	64.02	1.00	65.02	31.92
2	1	3733	2.06	31.79	65.58	0.86	66.44	32.20
	2	3727	2.12	31.74	67.16	0.86	68.02	32.14
	3	3748	2.15	32.33	69.51	0.86	70.37	32.73
	4	3901	2.05	32.38	66.38	0.86	67.24	32.80
	5	3873	2.15	34.64	74.30	0.78	75.08	35.00
	6	4280	2.10	31.00	65.10	0.77	65.87	31.37
	Total	3809	2.10	32.32	67.94	0.84	68.78	32.72
3	1	7429	2.05	31.71	65.10	0.95	66.05	32.17
	2	7425	2.10	31.94	67.07	0.95	68.03	32.39
	3	7423	2.14	31.29	66.80	0.95	67.76	31.74
	4	7451	2.08	30.65	63.81	0.95	64.76	31.11
	5	7656	2.06	30.15	62.17	0.90	63.07	30.58
	6	6636	2.03	29.57	60.00	0.98	60.98	30.05
	Total	7402	2.08	31.07	64.72	0.94	65.66	31.52
Total	1	3779	2.07	31.52	65.09	0.93	66.02	31.97
	2	3774	2.09	31.35	65.49	0.93	66.42	31.80
	3	3834	2.09	32.07	66.96	0.93	67.89	32.52
	4	3963	2.04	31.29	63.96	0.93	64.89	31.74
	5	3932	2.07	32.05	66.31	0.89	67.20	32.48
	6	3856	2.05	30.89	63.42	0.95	64.36	31.35
	Total	3850	2.07	31.59	65.39	0.93	66.32	32.04

The average number of birds produced on large (> 5,000 birds) farms is around 7,400 for most of the batches except the sixth batch where the total birds produced is 6,636 only. The average live weight per bird in all the batches is marginally higher than two kg. The average price per kg of live bird varies between Rs. 29.57 and Rs. 31.94. Gross income per bird was higher for a batch when the prices per kg of live weight were higher and vise versa. The value of manure and empty feedbags is a little less than a

rupee per bird produced in different batches. The gross income per bird ranges between Rs. 61 per bird in the sixth batch and Rs. 68 per bird produced in the second batch with an overall average of Rs. 65.66 per bird. The average gross returns works out to Rs. 31.52 per kg of live weight of birds produced on large farms.

Thus, there is not much variation in the average live weight of birds produced in different batches across the size groups. It was expected that the average price per kg of live weight would be higher for birds produced in large farms as they may have leverage in the market. However, we are surprised to note that the average price per kg of live weight is the lowest (Rs. 31.07) in large farms, small farms receive Rs. 31.43 and medium farms Rs. 32.32 for their produce. The same is reflected in the gross returns per bird as well as gross returns per kg of live weight of birds produced in different groups of farms. On an average, sample farms earned Rs. 66.32 per bird resulting in gross earnings of Rs. 32.04 per kg of live weight across the farm size groups.

3.5. Net Income

It can be seen from Table 3.5 that the average gross return per kg of live weight is Rs. 31.92 as against the total cost of Rs. 29.00 leaving a net income of Rs. 2.92 per kg of live weight of birds produced on small farms. The net returns per kg of live weight of birds varies across batches due to differences in variable costs, the average weight of bird, and prices received during different seasons for the output (birds, manure and empty feed bags) from different batches. The net returns ranges from Rs. 2.03 per kg of live weight for birds produced in the fourth batch and Rs. 3.68 for birds produced in the sixth batch. The average net returns per bird works out to Rs. 5.95 for all batches on small farms and these vary from Rs. 4.08 per bird in the fourth batch to Rs. 7.55 per bird in the sixth batch.

The average gross income per kg of live weight of birds produced on medium farms (2500-5000 birds) is Rs. 32.72 as against the average cost of Rs. 26.88, leaving Rs. 5.84 as net returns per kg of live weight of bird (Fig. 3.3). The average net returns in medium farms vary from Rs. 4.67 per kg of live weight of birds produced in the first batch to Rs. 9.19 per kg of live weight for birds produced in the fifth batch. The average weight of live birds is 2.15 kg and the prices per kg of live bird are the highest during marketing of birds from the sixth batch and this is reflected in the higher margins or net

returns per kg of live weight of birds produced in the fifth batch. The net returns per bird ranges from Rs. 9.62 per bird in the first batch to Rs. 19.76 per bird produced in the fifth batch with an overall average of Rs. 12.26 per bird produced on medium farms.

Table 3.5: Net Income from Broiler Farms in Different Batches and Farm Size Groups

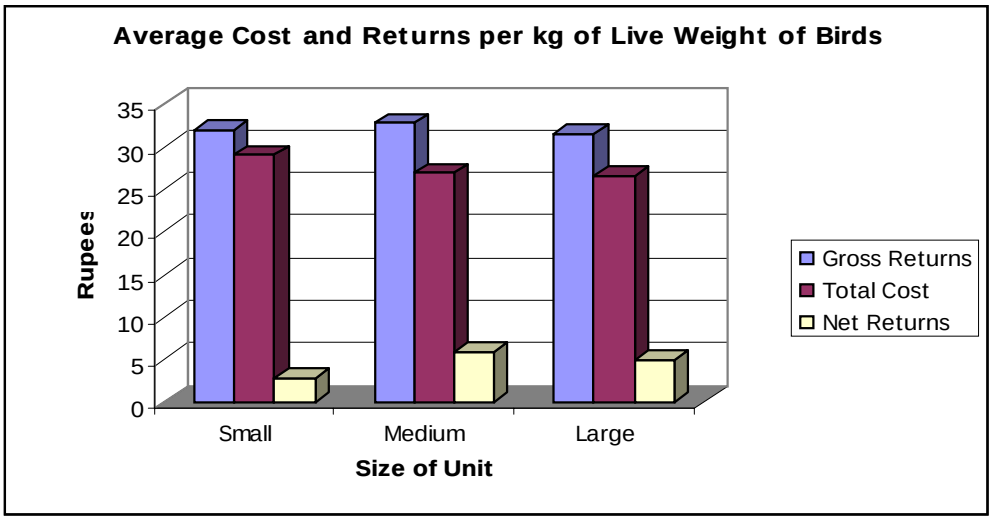
(Costs and income in rupees)

Group	Batch	Average per kg of Live Weight			Average Net Returns per Bird
		Gross Income	Total Cost	Net Returns	
1	1	31.66	28.45	3.20	6.66
	2	31.12	28.68	2.44	5.03
	3	32.92	29.94	2.98	5.95
	4	31.48	29.45	2.03	4.08
	5	32.34	28.77	3.57	7.25
	6	32.46	28.78	3.68	7.55
	Total	31.92	29.00	2.92	5.95
2	1	32.20	27.53	4.67	9.62
	2	32.14	26.70	5.44	11.54
	3	32.73	26.74	5.99	12.89
	4	32.80	27.34	5.46	11.18
	5	35.00	25.82	9.19	19.76
	6	31.37	26.04	5.33	11.19
	Total	32.72	26.88	5.84	12.26
3	1	32.17	26.76	5.41	11.09
	2	32.39	26.47	5.93	12.45
	3	31.74	25.62	6.11	13.08
	4	31.11	26.46	4.65	9.66
	5	30.58	26.94	3.64	7.50
	6	30.05	27.83	2.22	4.50
	Total	31.52	26.56	4.96	10.32
Total	1	31.97	27.06	4.91	10.17
	2	31.80	26.96	4.84	10.11
	3	32.52	26.93	5.58	11.67
	4	31.74	27.39	4.35	8.88
	5	32.48	27.01	5.47	11.33
	6	31.35	27.51	3.84	7.88
	Total	32.04	27.11	4.93	10.20

In the case of large farms (>5,000 chicks), the average income per kg of live weight of birds is around Rs. 31.52 and the average cost is Rs. 26.56 per kg of live weight leaving a margin of Rs. 4.96 as net income per kg of live weight of birds produced in different batches. The net returns over total costs ranges from Rs. 2.22 per kg of live weight of birds produced in the sixth batch to Rs. 6.11 per kg of live weight for birds produced in the third batch on large farms. Similarly, net returns also vary

between Rs. 4.50 per bird produced in the sixth batch to Rs. 13.08 per bird in the third batch with an average of Rs. 10.32 per bird for all the batches. As stated earlier, modestly higher live weight as well as relatively higher (than other batches) prices per kg of live weight resulted in the highest net return per kg of live weight and per bird produced in the third batch.

Fig. 3.3



It is observed that the average gross returns per kg of live weight of birds produced on medium farms is higher than their small and large counterparts. On the other hand, the average cost per kg of live weight is inversely related to the size of the unit i.e., the average cost per kg of live weight is the highest in small farms and the lowest in large farms. This is basically due to lower average variable cost per bird resulting due to scale economy. The average return net of the total cost per kg of live weight is the highest (Rs. 5.84) in medium farms and the lowest (Rs. 2.92) in small farms. The same is true for the average net returns per bird.

On an average, the gross returns across farm size and batches works out to Rs. 32.04 per kg of live weight and the average cost is Rs. 27.11, resulting in net returns of Rs. 4.93 per kg of live weight and Rs. 10.20 per bird produced on the sample farms in the study area. The average profit or returns net of cost are the lowest (Rs. 7.88 per bird) in the sixth batch and the highest (Rs. 11.67 per bird) for the birds produced in the third batch.

CHAPTER IV
CONSTRAINTS IN BROILER FARMING

4.1. Constraints in the Supply of Chicks and Other Inputs

The Producers face different kinds of problems in factor as well as output markets. We collected data from broiler farms about the problems/constraints faced by them in both factor/input and output markets. The respondents were asked about the problems faced in terms of timeliness in supply of inputs, prices (higher) of inputs, quality of feed compound, transport, etc. The problems/constraints faced by the sample farms in the study are analysed and are presented here according to the size of units.

It can be seen from Table 4.1 that as many as 96 per cent of the small farms reported that input prices are high. Similarly, 46 per cent of the farms complained about spurious feed. Roughly one-fifth of the small farms reported delay in the supply of inputs and four per cent of the small farms faced problem of transportation. The complaints about higher input prices; spurious feed and timeliness are not unique to small farms and are faced by medium and large farm owners too.

Table 4.1: Problems in Purchase of Inputs

Group	Percentage of Farmers	Type of Problems in Purchase of Inputs				
		Timeliness	Higher prices	Spurious feed	Transport	Any Other
1	Expressing Problem	20.80	95.80	45.80	4.20	0.00
	Having No problem	79.20	4.20	54.20	95.80	100.00
	Total	100.00	100.00	100.00	100.00	100.00
2	Expressing Problem	21.10	89.50	47.40	5.30	5.30
	Having No Problem	78.90	10.50	52.60	94.70	94.70
	Total	100.00	100.00	100.00	100.00	100.00
3	Expressing Problem	17.60	94.10	64.70	0.00	0.00
	Having No Problem	82.40	5.90	35.30	100.00	100.00
	Total	100.00	100.00	100.00	100.00	100.00
All	Expressing Problem	20.00	93.30	51.70	3.30	1.70
	Having No Problem	80.00	6.70	48.30	96.70	98.30
	Total	100.00	100.00	100.00	100.00	100.00

About 90 per cent of the medium and 94 per cent of the large farm owners expressed unhappiness over high input prices. Similarly, a little less than half of the medium farms and roughly two thirds of the large farms complained about spurious feeds. Moreover, 21 per cent of the medium and 18 per cent of the large farms express problems related to timely delivery of inputs from the service providers in the area. Large farms do not face any problem of transportation whereas, a little more than five per cent of the medium farms reported problems in arranging transport. On the whole, some 93 per cent of the sample farms complained about higher input prices, followed by 52 per cent who reported problems associated with the supply of spurious poultry feed by the dealers and traders in the study area. The majority of the farms were satisfied with the timely delivery of inputs, as against 20 per cent of the sample farms, who reported otherwise. Similarly, 97 per cent of the farms did not face any transport problem and only three per cent of the farms expressed difficulty in hiring transport facilities. Finally, less than two per cent of the farms reported other problems in acquiring inputs.

4.2. Constraints in Marketing/Selling of Output

As stated earlier, broiler farms face problems not only in the factor markets in acquiring inputs but also while marketing/selling of the output. Information was elicited from broiler farms on problems like delay in lifting of birds, delay in payment, low prices, rejection of supplies on the ground of quality, etc. The results indicate that almost all the small farms, roughly 90 per cent of the medium and 94 per cent of the large farms complained about low prices of broilers (Table 4.2). Similarly, 75 per cent, 68 per cent and 59 per cent of the small, medium and large farms faced problems of delayed payment from whole sellers and commission agents. Delay in lifting the birds is the third major problem and as many as 46 per cent of the small, 37 per cent of the medium and 35 per cent of the large farms reported this problem. None of the medium or large farms reported rejection of birds on the basis of quality but less than 10 (8.3) per cent of the small farms reported rejection of birds by buyers on the ground of poor quality. Less than five per cent of the small farms reported other problems in marketing broilers.

On an average, 95 per cent of all the sample farms complained about low prices for broilers and 68 per cent reported delay in payment by whole-sellers and traders. About 60 per cent of the farms did not report any problem in lifting of produce, whereas 40 per cent reported delay.

Table 4.2: Problems in Sale of Output

Group	Percentage of Farmers	Type of Problems in Sale of Output				
		Delay in lifting the birds	Delay in Payment	Low Price	Rejection on quality ground	Any other
1	Expressing Problem	45.80	75.00	100.00	8.30	4.20
	Having no problem	54.20	25.00	0.00	91.70	95.80
	Total	100.00	100.00	100.00	100.00	100.00
2	Expressing Problem	36.80	68.40	89.50	0.00	0.00
	Having no problem	63.20	31.60	10.50	100.00	100.00
	Total	100.00	100.00	100.00	100.00	100.00
3	Expressing Problem	35.30	58.80	94.10	0.00	0.00
	Having no problem	64.70	41.20	5.90	100.00	100.00
	Total	100.00	100.00	100.00	100.00	100.00
All	Expressing Problem	40.00	68.30	95.00	3.30	1.70
	Having no problem	60.00	31.70	5.00	96.70	98.30
	Total	100.00	100.00	100.00	100.00	100.00

The proportion of farms reporting various problems in selling of output is higher among small farms than medium and large farm counterparts. The problem of rejection of birds by the buyers is reported by only 8.3 per cent of the farms.

4.3. Contracts for Credit Facilities

A few farm owners experience resource crunch and they enter into contract with the supplier of inputs on the basis of deferred payment. In the case of crop cultivation, most farmers buy fertilisers and plant protection chemicals from input dealers on credit. Similarly, broiler farm owners also buy day old chicks from hatcheries on credit. However, the proportion of farms buying chicks on credit is low. As many as 4.2 per cent of the small and 5.30 per cent of the medium farms purchased chicks on credit from the hatcheries/suppliers (Table 4.3). The reason for formalising credit contract

with the supplier of chicks is lack of funds among farm owners. Suppliers of chicks extend credit only for chicks and do not extend any other service under the contract.

Table 4.3: Sample Farms' Contract With Chick Suppliers

Nature of Contract and Problems if any	Group/Size of Unit			
	<2500	2500-5000	>5000	All Units
% of Farms having contract	4.20	5.30	0.0	3.30
Nature of Contract				
i) Supply of Chicks on Credit	4.20	5.30	0.00	3.30
ii) Supply of Feed on Credit	0	0	0	0
iii) Supply of Vaccines on Credit	0	0	0	0
iv) Provision of Veterinary Service	0	0	0	0
v) Purchase of the Product	0	0	0	0
vi) Supply of all Inputs viz. Chicks, Feed, Veterinary Services and taking away the product paying the Commission	0	0	0	0
Reasons for the Choice of Contract (Reasons to be Specified)				
I) Lack of Funds	4.20	5.30		3.30
Problems in the Execution of Contract (Type of Problems to be specified)	Nil	Nil	Nil	Nil

4.4. Contracts in Feeding and Management Practices

As discussed earlier, paucity of funds induces farm owners to enter into a contract with suppliers of inputs or service providers. It can be seen from Table 4.4 that 12.5 per cent of the small farms, 21 per cent of the medium and 15 per cent of the large farmers entered into a contractual arrangement to buy feed on credit. Thus, on the whole, 15 per cent of the total sample farmers have a contract with feed suppliers. Almost all the farm owners who purchased feed on credit reported paucity of funds as the main reason in buying feed on credit. The contract was limited only to supply feed compounds and no other services. None of the farms reported any problem in execution of the contract with feed suppliers.

Table 4.4: Farms' Contract with Feed Suppliers

Nature of Contract and Problems if any	Group			
	<2500	2500-5000	>5000	All Units
% of Farms having a contract	12.50	21.10	11.80	15.00
Nature of Contract				
i) Supply of Feed on Credit	12.50	21.10	11.80	15.00
ii) Provision/Arrangement of Veterinary Services	0.00	0.00	0	0.00
iii) Purchase / Arrangement to Purchase the Product	0.00	0.00	0	0.00
Reasons for the Choice of Contract (Reasons to be Specified)				
I) Lack of Funds	12.50	21.10	11.80	15.00
Problems in the Execution of Contract	Nil	Nil	Nil	Nil

4.5. Contracts for Sale of Output

It is expected that the broiler farms would enter into a contract with buyers to sell their output at regular intervals. However, none of the farms regardless of the size has reported any contractual arrangement for the sell of broilers. There was no contract for sale of birds either at the pre-determined price (hedge) or the prevailing market price. Farms sell their produce at regular intervals to whole sellers and retailers at prevailing market prices. It can be seen from Table 4.5 that 8.3 per cent of the small farms and 15.80 per cent of the medium farms have regular buyers. The output (birds) sold to the regular buyers accounted for 6.25 and 5.35 per cent of the total output on small and medium farms respectively. Surprisingly, none of the large farms reported any regular buyer for birds produced in these farms.

The quantity of birds sold to regular buyers is a little more than five per cent of the birds produced in small and medium farms. The rest are sold to whole-sellers, retail traders and directly to consumers. In small farms, 48 per cent, 31 per cent and 15 per cent of the total birds produced are sold to whole-sellers, retail traders and consumers respectively. In the case of medium farms, 68.40 per cent of the total produce is sold to whole-sellers, 23.76 per cent to retail traders and the remaining 2.5 per cent to consumers. Large farms sold roughly 60 per cent of the total output to whole sellers, 37.4 per cent to retail traders and the balance three per cent to consumers directly.

Table 4.5: Sale Particulars of Farms Having No Contractual Arrangement

Nature of Sale	Group/Size of Unit			
	<2500	2500-5000	>5000	All Units
% Of Farms Having Regular Buyers	8.30	15.80	0	8.30
% Of Output Sold to Regular Buyers	6.25	5.35	0	4.25
In Case of Absence of Regular Buyer % of Output Sold to:				
a) Wholesale Trader	48.28	68.40	59.71	57.89
b) Retail Trader	30.87	23.76	37.35	30.46
c) Consumer	14.60	2.49	2.94	7.40
Total	100	100	100	100

Thus all the sample farms taken together, 8.3 per cent of the farms sold 4.25 per cent of the total output (birds) to regular buyers. A major part of the total number produced in sample farms i.e., 58 per cent of the total birds are sold to whole sellers, 30.46 per cent to retail traders and the balance 7.4 per cent to consumers.

4.6. Major Out-Breaks of Diseases

Information was elicited from broiler farm owners about major out-breaks of diseases during the past five years. None of the sample farms reported any out-break during the year 2000. Medium farms reported the occurrence of Coxci during 2001 and about 20 per cent of the birds died during that year (Table 4.6). Small farms reported 40 per cent mortality due to the outbreak of Gomboro (IDB) and 75 per cent of the birds died due to Ranikhet Disease (RD) in 2002. Similarly, medium and large farms reported the occurrence of Chronic Respiratory Disease (CRD) during 2002 and lost 25 per cent and 40 per cent of the birds on the respective farms. In 2003, small farms reported the outbreak of IBD, Gout and Coxci diseases in their farms which resulted in the death of 50 per cent, 100 per cent and 70 per cent of the birds respectively. In 2004, 50 per cent of the birds in medium farms and 30 per cent in large farms died due to CRD and Gout respectively.

Table 4.6: Instances of Major Out-Breaks of Diseases: 2000-2004

Year	Disease	% Of Birds Died		
		Group/Unit Size		
		<2500	2500-5000	5000
2000		0	0	0
2001	Coxci	0	20	0
2002	IBD/Gomboro	40	0	0
	Raniket /RD	75	0	0
	CRD	0	25	40
2003	IBD	50	0	0
	Gout	100	0	0
	Coxci	70	0	0
2004	CRD/Weak	0	50	0
	Gout	0	0	30

4.7. Access to Extension Services And Information

Access to various extension services (both private and public) and information is measured using indicators such as the number of pharmaceutical companies, hatcheries and also visits by the personnel from the department of Animal Husbandry and poultry. It is expected that higher the frequency of visits by these officials, better are the possibilities of updating the knowledge of farm owners and exposing them to new techniques and technologies in the poultry sector. The data gathered from sample broiler farms indicate that representatives of pharmaceutical companies visited broiler farms on an average twice a year and the frequency of visits to small farms is less than one when compared to more than three visits to medium farms (Table 4.7). The number of visits made by representatives of hatcheries is found to be more than double that of representatives from pharmaceutical companies. Representatives of hatcheries, on an average, visit small farms for more than three times, whereas they visited medium and large farms for more than six times in a year. The average number of visits per farm works out to more than five a year.

The department of animal husbandry and poultry is responsible for extension of poultry farming in the state and is expected to convince enterprising individuals to take up poultry farming and also provide the latest information about developments in the poultry sector to the farm owners. However, if we consider the frequency of visits of personnel from the animal husbandry department to broiler farms as an indication of

the extension activity than the department faired badly. The average number of visits paid to broiler farms ranges from less than one (0.46; 0.42) to small and medium farms, to a little more than one (1.29) visit to large farms. In other words, personnel from the Animal Husbandry department visited seven out of 10 broiler farms in a year.

Table 4.7: Sample Farms' Access to Extension Services and Information on Broiler Farm Management

Indicators of Access to Extension Services and Information	Group/ Unit size			
	< 2500	2500-5000	> 5000	All Units
Average number of times representatives of pharmaceutical companies visited the farm in 2004	0.83	3.37	2.29	2.05
Average number of times representatives of hatcheries visited the farm	3.5	6.11	6.65	5.22
Average number of times extension personnel of Animal Husbandry Department visited the farm	0.46	0.42	1.29	0.68
% Of farms receive market information regularly	All	All	All	All
% of Source of information for farms				
i) Radio	0.00	0.00	5.88	1.67
ii) T.V.				
iii) News Papers	0.00	5.26	0.00	1.67
iv) Phone to Local Market	All	94.74	94.12	96.67
% Of Farmers attended Seminars/Workshops/Training on Broiler Farming	0.00	5.30	0.00	1.70

Almost all the broiler farm owners reported receiving market information regularly. The majority of the farms get required market information by phone from the local market. Roughly, six per cent of the large farm owners reported that they get market information through radio. Similarly, a little more than five per cent of the medium farms receive market information through local newspapers. On an average, 97 per cent of all the sample farms obtain market information by making a phone call to the local market as against 1.7 per cent of the farms each receiving market information through newspapers and radio. It is interesting to note that only 5.3 per cent (one farm owner) among the medium farms attended a training programme on poultry management.

4.8. Public Opinion on Environmental Problems

Poultry farms give rise to environmental problems and create externalities. The externalities arise due to improper disposal of dead birds, storage of manure as well as flies and odour produced due to poultry farming. Fortunately, most of the broiler farms are located away from human habitats (villages/towns). Hence, there is not much opposition for or complaints against broiler farms in the study area. Moreover, the data about public opinion is gathered from broiler farms and it may be biased to some extent. The data gathered on public opinion shows that 4.2 per cent (only one) of the 24 small farms faced public complaint (Table 4.8). The complaint is made orally and is related to disposal of dead birds by the unit. None of the sample farms received any written complaint or none has gone to court to redress the grievances.

Table 4.8: Public Opinion on Environmental Problems and Remedial Measures Taken By Farms

Factors indicating Public View and Remedial Measures	Group/ Unit size			
	< 2500	2500-5000	> 5000	All Units
% Of Farms who faced public complaint	4.2 (1)	0.0	0.0	1.67 (1)
Nature of Complaint				
i) Odour	0.0	0.0	0.0	0.0
ii) Flies	0.0	0.0	0.0	0.0
iii) Others	4.2 (1)	0.0	0.0	1.67 (1)
Method of Complaint				
i) Oral Representation	4.2 (1)	0.0	0.0	1.67 (1)
ii) Written Representation	0.0	0.0	0.0	0.0
iii) Court Case	0.0	0.0	0.0	0.0
% Of farmers taking up remedial measures	0.0	0.0	0.0	0.0
Average amount spent per year	73.92	78.95	2441.18	745.83

Even though the sample broiler farms do not received any complaint from the public for the externalities generated by them, the farms spent some amount to appease the local population by way of contributions to public functions and celebrations. Small farms spent, on an average, Rs. 74 per annum, as against Rs. 79 and Rs.2441 per annum by medium and large farms respectively.

CHAPTER V
SUMMARY AND CONCLUSION

5.1. Introduction

Poultry is one of the fastest growing segments in the agricultural sector in India today. While the production of agricultural crops has been rising at a rate of 1.5-2 per cent per annum, that of eggs and broilers has been rising at a rate of 8-10 per cent per annum. As a result, India is now the world's fifth largest egg producer and the eighteenth largest producer of broilers (Mehta et al. 2000). Access and availability of high quality chicks, equipment, vaccines and medicines and technical guidance by professional and access to credit from financial institutions helped in the expansion of the poultry industry in India. Management practices have improved and the incidence of disease and mortality has reduced. In addition to this, growth in per capita income, a growing urban population and falling real poultry prices also facilitated the expansion of the poultry industry in the country.

Poultry meat is an important source of high quality proteins, minerals and vitamins to balance the human diet. Specially developed breeds of chicken meat (broiler) are now available with the ability of quick growth and high feed conversion efficiency. Declining income and employment opportunities necessitate diversification of farm activities. Depending on the farm size, broiler farming can be a main source of family income or can provide subsidiary income and gainful employment to farmers throughout the year. Poultry manure is high in fertiliser value and can be used for increasing the yield of crops. Broiler farming has an edge over other complementary or supplementary activities, which can be taken by both farmers and other enterprising un/under-employed persons to augment family income. Broiler farming needs less space and more number of flocks can be taken in the same shed, The rearing period is 6-7 weeks only. The returns to investment are faster as the gestation period is short.

The structure of India's poultry industry is changing fast. While independent and relatively small-scale producers account for the bulk of production, integrated large-scale producers do account for a growing share of output in some regions. Integrators include large regional firms that incorporate all aspects of production, including the raising of grandparent and parent flocks, rearing DOCs, contracting production, compounding feed, providing veterinary services, and whole-selling. Independent farms who do not

have any say or control over factor and output markets have to compete with large corporate producers. Opening of domestic market for international trade and rising input prices is a matter of concern considering the importance of the broiler industry in terms of diversification, employment, etc. The present study is undertaken to study the production and cost of broiler meat in Karnataka. The specific objectives of the study are:

Objectives:

v. to analyse the production related aspects of broiler farming and estimate the total broiler meat production in the state
vi. to analyse the cost of production of broiler meat,
vii. to examine the input purchase and output sale arrangements and estimate the net returns in broiler farming, and
viii. to identify the constraints in broiler farming and suggest remedial measures

5.2. Methodology and Data:

The focus of this study is to estimate production and cost of broiler meat and an analysis of the related aspects. The important production related aspects to be considered are the source of supply of chicks, linkages between hatcheries and the farms, type of sheds and other structures on the farm, other equipment, feeding and management practices, access to veterinary services and other infrastructure facilities, crop duration i.e. from the day chicks are placed in the sheds to the day of sale, crop cycle in a year, mortality of birds, weight of birds at the time of sale and the number of birds produced in a year. The cost and returns per kg of live weight and per bird produced in different size farms are estimated. Similarly, environmental problems and externalities created by poultry farms in the study area are also addressed in brief.

This study is based on the primary data collected from a sample of broiler farms. For selecting the farms, a two-stage random sampling technique has been used in this study. A list of poultry farms by districts was procured from the office of the Karnataka Poultry Federation, Bangalore. At the first stage, two clusters were selected randomly i.e., Bangalore rural district and Shimoga district. At the second stage, the farms in each of the selected clusters were classified into three strata, viz. farms with size less than or

equal to 2,500 birds, farms with 2,501-5,000 birds and farms with more than 5,000 birds, and from these three strata, a total of 30 farms were selected maintaining the probability proportions. Thus, a total of 60 farms were selected from the two clusters. The sample consisted of 24 small farms (< 2,500 birds), 19 medium farms (2,500-5,000 birds) and 17 large farms (> 5000 birds). The required data was collected from each selected farm owner/ manager by canvassing a pre-tested schedule. A trained investigator collected the required data by personally interviewing the owner/manager of the selected farm. The reference period for the study was November 2003 -October 2004.

5.3. Major Findings

5.3.1. Socio-professional Characteristics

Around 62 per cent of the unit owners are in the age group of 30-50 years, whereas 18 per cent of the owners are less than 30 years old and 20 per cent are more than 50 years old. Nearly 60 per cent of the farm owners have studied up to secondary level and roughly one-third are graduates. More than two=third of the unit owners belong to other backward castes. It is interesting to note that only 15 per cent of the unit owners reported to have received training in poultry management and the majority of the units are managed by the personnel without any formal training in poultry management. However, about 52 per cent of farm owners have 5-10 years of experience in running poultry units, whereas 23 per cent of unit owners have more than 10 years of experience.

5.3.2. Accessibility to Infrastructure

About 29 per cent, 37 per cent and 12 per cent of the small (< 2,500 birds), medium (2,500-5,000 birds) and large units (> 5,000 birds) respectively are located within five km from the nearest town, whereas 46, 32 and 29 per cent of small medium and large units respectively are located at more than 10 km and the rest within a 5-10 km range. Similarly, three-fourth of the small, 63 per cent of medium and a little more than half of the large units are found within five km of residential settlements.

More than 50 per cent of the poultry units are located within two km from the highway. About 70 per cent of the large and 63 per cent of the medium-sized units are located within a 2-km radius from the highway. On the contrary, nearly one-fourth of the small units are located at more than 10 km away from the nearest highway. The same is true about access road from poultry farms to highway. It is observed that a little less

than 50 per cent of the small units use kutcha roads to reach the highway, whereas 76 per cent of the large units have pucca approach roads.

As far as purchasing of inputs is concerned, 30 per cent of the units bought their requirements from agencies/shops located within five km as against 55 per cent of the units procuring inputs from agencies located more than 10 km from the units. On an average, 30 per cent of the units market their output in markets located within five km, whereas 62 per cent of the units sell their produce (birds) in markets located more than 10 km away from the units. Poultry units generally are located in clusters and as many as 31 per cent of the units reported the presence of another unit within a radius of less than one km, whereas 69 per cent of units reported the presence of other units within a radius of 1-2 km.

None of the units in the sample follows the cage system and all are found to use the deep litter system. Roughly 90 per cent of the sheds in small and large units and all in the medium sized units are covered with Mangalore (baked earthen) tiles. All the large units, 90 per cent of the medium units, and 58 per cent of the small units have tubewells. Rest of the farms use public taps for their water needs.

5.3.3 Feeding and Management Practices

On the whole, 87 per cent of the 60 sample units have brooders. Some of the small units rely on coal, kerosene lamps or gas petromax to maintain the temperature in poultry sheds. Most of the units use feeder except one-third of the small units that use other methods of feeding. On an average, 11 per cent of the units feed chicks only once, 37 per cent units twice and 52 per cent of the units feed chicks three times or more a day. Similarly, 63 per cent of the units feed birds twice a day when compared to 18 per cent feeding only once and 18 per cent of the units feeding birds three times or more per day.

Most of the sample units raise six batches a year. On an average, 1,325, 4,036 and 7,754 chicks were raised on small, medium and large farms respectively. Hatcheries provide two per cent extra chicks as a back-up for mortality. Almost all the units, regardless of size, use ready-made compound feeds. The total quantity of feed per chick varies from 3.98 kg in medium farms to 4.20 kg per bird in small farms. The vaccination schedule is uniform across units and most owners reported use of Lasota

vaccine on the seventh day of installation of chicks, IBD on 14th day, followed by Losota again on the 21st day and some liver tonic when the chicks are a month old.

5.3.4. Mortality of Chicks/ Birds and its Disposal

Mortality varies across batches and units. The average mortality ranges from 4.55 per cent in large farms to 5.63 in medium farms. The majority of deaths during the first three weeks of installation of chicks are attributed to Gout, weakness of the chicks and Chronic Respiratory Disorder (CRD). The mortality of birds after the fifth week is reported due to overweight of birds and other causes. Death of birds between three and five weeks is attributed to weakness and infections. More than two-third of the units bury dead birds on the own land and five per cent use public land. Only five per cent of the units burn dead birds. In addition to this, a little less than a quarter (23.3 per cent) of the units throw dead birds into the open and feed them to dogs.

5.3.5. Production and Productivity of Broiler Meat

The average number of birds produced per batch differs depending on the number of birds installed and the mortality rate. However, on an average 1,254, 3,809 and 7,409 birds per batch were produced in small, medium and large farms respectively. The average weight per live bird is around two kg with an average meat production of 1.53 kg per bird. The total amount of manure produced in small farms was 134 quintal and 399 and 835 quintal in medium and large farms respectively.

5.4. Cost of Production of Broiler Meat

5.4.1. Fixed cost

Fixed cost consists of investment on purchase of land, cost of construction of sheds, purchase of equipment and vehicles and other long-term investment for poultry activities. The total investment (fixed cost) per farm on an average ranges from Rs. 80,765 on small farms, 2,23,758 on medium and Rs. 5,37,051 on large farms. The fixed cost works out to Rs. 1.55, Rs. 1.54 and Rs. 1.68 per bird produced on small, medium and large farms respectively.

5.4.2. Variable costs

Variable costs are recurring in nature and include cost of chicks, feed, vaccines and medicines, expenditure on electricity, coal and gas, cost of husk, disinfectants,

transport and communication, etc. Feed cost is the major component of variable cost in broiler farming and accounts for roughly 70 per cent of the total variable costs, followed by the cost of chicks that account for 20 per cent of the variable cost. The expenditure on vaccines and medicines, disinfectants, labour, transport and communication, etc together account for 10 per cent of the total variable cost. The average variable cost per bird produced on large farms (Rs. 53.57) is lower than the average variable cost per bird produced on small farm (Rs. 57.61) as well as medium farm (Rs. 54.92). The overall variable cost is Rs. 54.50 per bird produced on the sample farms.

5.4.3. Total Cost of Production

There are variations in the total cost per bird across the batches and units. The average total cost varies between Rs. 55.25 per bird produced on large farm to Rs. 59.17 per bird on small farms and it ranges from Rs. 26.56 per kg of live weight of bird produced on large farms to Rs. 29 per kg of live weight of bird on small farms. The overall average cost per kg of live weight of bird is around Rs. 27.11 for all farms and batches.

5.5. Gross and Net Returns

The returns from any production process are largely determined by the factor costs and output prices. The gross income per bird inclusive of the sale of manure and empty feed bags was Rs. 65.02, Rs. 68.78 and Rs. 65.66 per bird in small, medium and large farms respectively, and the corresponding gross income per kg of live weight of bird works out to Rs. 31.92, 32.72 and Rs. 31.52 in that order. On an average, sample farms earn Rs. 66.32 per bird, resulting in gross earnings of Rs. 32.04 per kg of live weight across the farm size groups.

It is observed that the average gross returns per kg of live weight of birds produced on medium farms are higher than small and large counterparts. On the other hand, the average cost per kg of live weight is inversely related to the size of the unit i.e., the average cost per kg of live weight is the highest in small farms and the lowest in large farms. The average return net of total cost per kg of live weight is the highest (Rs. 5.84) in medium farm and the lowest (Rs. 2.92) in small farms. The same is true for the average net returns per bird. On an average, the gross returns across farm sizes and batches works out to Rs. 32.04 per kg of live weight and the average cost is Rs. 27.11, resulting in net returns of Rs. 4.93 per kg of live weight and Rs. 10.20 per

bird produced on the sample farms. The average profit or returns net of cost are the lowest (Rs. 7.88 per bird) in the sixth batch and the highest (Rs. 11.67 per bird) for the birds produced in the third batch.

5.6. Constraints in the Input and Output Markets

Complaints about higher input prices; spurious feed and timeliness are not unique to small farms and are faced by medium and large farm owners too. About 93 per cent of the sample farms complained about higher input prices, followed by 52 per cent reporting problems associated with the supply of spurious poultry feed by the dealers and traders in the study area. Similarly, about 95 per cent of all the sample farms complained about low prices for broilers and 68 per cent reported delay in payment by the whole-sellers and traders. About 60 per cent of the farms reported no problem in lifting of produce whereas 40 per cent reported delay.

The proportion of farms reporting various problems in selling of output is higher among small farms than medium and large farms. The problem of rejection of birds by the buyers is reported by only 8.3 per cent of the farms.

5.7. Contractual Arrangements in Factor and Output Markets

As many as 4.2 per cent of the small and 5.30 per cent of the medium farms purchase chicks on credit from hatcheries/suppliers. Pausity of funds was the sole reason to buy chicks on credit. It was observed that 12.5 per cent of the small farms, 21 per cent of the medium and 15 per cent of the large farmers enter into a contractual arrangement to buy feed on credit.

About 8.3 per cent of the small farms and 15.80 per cent of the medium farms have regular buyers. The output (birds) sold to regular buyers account for 6.25 and 5.35 per cent of the total output in small and medium farms, respectively. Surprisingly, none of the large farms reported any regular buyer for the birds produced on these farms. All the sample farms taken together, 8.3 per cent of the farms sold 4.25 per cent of the total output (birds) to regular buyers. A major part (58 per cent) of the total birds produced by the sample farms are sold to whole-sellers, 30.46 per cent to retail traders and the balance 7.4 per cent to consumers.

5.8. Access to Extension Services And Information

Representative of pharmaceutical companies visit broiler farms, on an average, twice a year and the frequency of visit to small farms is less than one and more than three to medium farms. Representatives of hatcheries, on an average visit small farms for more than three times when compared with more than six visits to medium and large farms in a year. Personnel from the Animal Husbandry department visit small and medium broiler farms not even once (0.5 times) a year, as against one visit to large farms. On an average, personnel from Animal Husbandry department visited (0.7 visits per farm) seven of the 10 broiler farms in a year.

On an average, 97 per cent of all the sample farms obtain market information by making a phone call to the local market as against 1.7 per cent of the farms each receiving market information through newspaper and radio. It is interesting to note that only 5.3 per cent (one farm owner) among the medium farms attend a training programme on poultry management.

5.9. Public Opinion on Environmental Problems

Among the sample farms, only 4.2 per cent (only one) of the 24 small farms faced any public complaint. The complaint was made orally and was related to disposal of dead birds by the unit. None of the sample farms received any written complaint or none has gone to court to redress the grievances. Even though broiler farms did not receive any complaints from the public for the externalities generated by broiler farms, the sample farms spent some amount to appease the local population by way of contributions to public functions and celebrations. Small farms spent, on an average, Rs. 74 per annum as against Rs. 79 and Rs.2, 441 per annum by medium and large farms respectively.

5.10. Concluding Remarks and Policy Measures

- The poultry industry has a multiplier effect. It generates direct employment in farming, hatcheries and pharmaceutical sectors. It also generates employment in processing and marketing sectors and, thus, helps in augmenting employment in

both rural and urban areas. Hence, it is imperative to promote broiler farming even by providing some subsidised services to farmers.

- Poultry is high in protein and the increasing use of poultry products in the diet will improve nutrition of the poor and thus help in human resource development. The availability of poultry products at the reasonable prices would help the poor include poultry products in their diet
- The demand for poultry products in the domestic market would increase in the near future due to an increase in the per capita income. Similarly, earnings from the export of broiler meat are showing an increasing trend. Hence, it is imperative to encourage broiler farming by proving incentives to small producers.
- Almost all the broiler farm owners complained about high input prices in general and feed prices in particular. Hence, there is a need to search for cheaper alternatives in feed compounds.
- Maize and soybeans are the major constituents of feed compound and hence efforts should be made to improve production and productivity of maize and soybeans so as to meet future demands by the feed industry.
- The mortality rate of five per cent seems to be on the higher side and hence extension personnel should improve awareness about better management practices among broiler growers.
- A large number of broiler growers complained about the supply of spurious feed compounds by dealers/traders. The government should have a check on quality control of poultry feed supplied to farms.
- The marketing system for broiler is inefficient. The wholesalers and commission agents control output prices. Since broilers cannot be retained in the farm beyond a specific period (due to increasing feed cost), broiler output becomes analogous to perishable commodities and the producer has to sell the produce (birds) at the market price. The development of processing units and cold storage may help broiler farms to earn better returns.