

# A STUDY ON THE ECONOMIC ANALYSIS OF DUCK FARMING IN KERALA WITH SPECIAL REFERENCE TO THE KUTTANAD REGION

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## Abstract

Our study is mainly concentrated on the wet land areas of the Kuttanad Belt. Intensive studies were conducted in the areas from Kidangara to Ramankery which is an extensive belt concentrating in duck farming. Unorganized duck farms are concentrated in the roadsides of the A.C. road, which is always a busy route. Larger and much organized duck farms are concentrated in the sub urbs of Kuttanad. Duck cultivation is normally done in areas, which are close to water bodies.

In our study, almost all the farmers concentrate on the production of Kuttanadan duck breeds. Kuttanadan duck breeds are the indigenous duck breeds found in the Kuttanadan wet land belt. The water rich wetland areas inhabit a large number of Kuttanadan ducks. Since these duck breeds are locally available, the farmers concentrate on the production of these

**Keywords:** Duck Farming, Mixed Cropping , Agriculture, Agricultural Credit, Insurance.

## THE BACKGROUND OF THE STUDY

Kuttanad is a region in Kerala which is renowned for its below ocean level agricultural practices. It is a place blessed with abundant water resources. But the aquatic resources are not fully exploited. Rainfall is abundant in that area. The people of that area are concentrated primarily in farming and other allied activities. Rice cultivation is prominent there and it is called the Granary of Kerala. The Kuttanad belt is also rich in with fresh water lakes, kayals (backwaters), ponds, and other local water bodies. The fisheries sector is also a major contributor to the G.D.P. However, our area of concern is the profitability of duck rearing in the Kuttanad region. Ducks occupy an important position next to chicken farming in India. They form about 10% of the total poultry population and contribute about 6-7% of total eggs produced in the country. Ducks are mostly concentrated in the Eastern and Southern States of the country mainly coastal region with non-descriptive indigenous stocks, which however are poor layers.

Duck farming is another viable option for meeting the livelihood. Ducks are very rich in protein. They are reared for their meat and their eggs. Duck eggs are also a source of balanced diet. Rearing of ducks is an economic activity with very low cost of production. Duck farming can be primary source of livelihood or they can be used to supplement the income of the farmers. Ducks can be easily cultivated near ponds and it requires very little space. In the Kuttanad region, ducks are sold in roadside stalls,

which are located in the A.C Road by the side of small ponds. It is the best market spot as A.C road is very crowded. The selling cost is minimal. The producer can easily maximize his profit through duck cultivation.

The Indian sub-continent with its varied agro-climatic zones has favoured the development of wide varieties of plants and animal resources not seen elsewhere on the globe. The total duck population in India was 22 million (A.H. statistics G.O.I, 1999), and out of which 6.6 million is from Kerala. Alappuzha district known as “Venice of east” is a costal district famous for its backwaters and canals. According to 17th quinquennial census (2003) the total duck population of this district was 2, 50,164. Kuttanad area was the main pocket of duck rearing in this area.

## **STATEMENT OF THE PROBLEM**

As we have seen earlier, Kuttanad is a region gifted with abundant water resources. But the people in Kuttanad are not fully exploiting the water resources. If the farmers exploit the full potential of the water resources, they can increase their level of income and standard of living. The prospects of duck farming as a viable substitute for rice cultivation should be thought about. The landless farmers in the Kuttanad region has taken up duck farming as a means of livelihood. The economic analysis of the duck farming in the Kuttanad region is a necessity to analyse about the gains enjoyed from farming ducks.

Another concern for us is the problems faced by the duck cultivators. As we all know duck farming is a marginalized economic activity. The farmers are isolated. Most of the duck rearing is concentrated in the unorganized sector. So the benefits accruing to them are out of their reach. Once their problems are sorted out and solved, they can enhance their profitability. Minimizing the cost of production is one of the major problems that the duck farmers face.

## **OBJECTIVES OF THE STUDY**

The study has the following broad objectives:

- a. To economically analyse the duck farming in the Kuttanad region.
- b. To assess the socio-economic condition of the farmers engaged in duck rearing.
- c. To study the various social, economic and financial problems associated with duck rearing.
- d. To suggest certain measures to improve the prospects of duck rearing in the Kuttanad region.

## **SCOPE OF THE STUDY**

There is immense scope for this study. The topic for our study is the profitability of duck rearing in the Kuttanadu region and the problems faced by the duck farmers. Every economic activity is conducted in accordance with the maximization principle. Every rational producer wants to maximize his profits. As productivity increases, profitability also increases. The reasons that obstruct profitability are the various problems faced by the duck farmers. Once these problems are identified and rectified, the productivity can be effectively and efficiently enhanced. Ducks have a profitable market in Kerala. They are a cheaper source of livelihood and from which the producers can earn maximum profit. Ducks are also cheaper source of protein and have a stable demand among the consumers of Kerala.

## METHODOLOGY OF THE STUDY

Following methodology is used in the study:

A questionnaire was prepared to cover the respondent's profile on important aspects of duck rearing such as socio-economic status of the farmer, procurement of birds, housing, feeding, health care, egg production, management practices, marketing, and incidence of disease, cost, returns, the problems faced by the farmers and constraints. Convenient sampling method was used in the data collection. The questionnaire was administered through personal interview with the farmers at their convenience. Primary data was collected from 20 farmers from various villages in the Kuttanadu Taluk.

## DATABASE

Both primary and secondary data would be used in this study. The data would be directly collected from its stakeholders using a structured questionnaire. Focused interviews will also be conducted. Field observations from direct visit of the unit served as an important source of data collection.

## REVIEW OF LITERATURE

### CENTRAL POULTRY DEVELOPMENT ORGANISATION (SOUTHERN

REGION) (N.d.) has stated that ducks occupy an important position next to chicken farming in India. They form about 10% of the total poultry population and contribute about 6-7% of total eggs produced in the country. Ducks are mostly concentrated in the Eastern and Southern States of the country mainly coastal region with non-descriptive indigenous stock.

**Islam et al (2012)** published an article about the development of value chain: an effective way of profitable duck farming in Haor Areas of Bangladesh. The main obstacles in developing commercial duck farming are lack of improved duck varieties, shortage of vaccines, traditional feeding practices, inadequate duck healthcare supports, unavailability of capital for farming and improper marketing facilities for the farm products and overall lack of effective value chain from production to marketing.

**Alam et al (2012)** has studied about the socio-economic profile of duck farmers and duck management practices in Rajshahi region. Socio-economic profile of the duck farmers like age, education, family size, occupation, marital status, farm size, training received, annual income and management practices particularly housing, feeding, breeding, cleaning, disposal of diseased/dead birds, vaccination program, veterinary services followed by the farmers were investigated during the research.

Ogden Publications (2016) has given a guide about raising ducks. The various processes involved in duck rearing are studied in detail.

**Lee (2007)** notes small-scale duck production substantially contributes to household food security, helps diversify incomes, and serves as a renewable asset in many rural households in developing Asian countries. However, small-scale duck producers are constrained by poor access to appropriate technologies and information, as well as market and support services, which could otherwise translate into improved productivity, increased income, and sustainable duck production systems.

**Jalaludeen (2011)** noted that Duck meat is uniformly dark and more strongly flavoured than either chicken or turkey. In general, duck eggs are larger and heavier than chicken eggs. However, breed difference exists. Duck eggs have slightly higher nutritive value than chicken eggs. He is of that ducks are an important export item in a globalised world.

**Pangemanan et al (2014)** studied about the economic situation of duck breeders' households under traditional rearing system in relation to decision making in production, time use allocation, income, and consumption. The objective of the study was to observe the duck business contribution to the family income and the relationship of factors affecting the economy of the duck farmer's family. This study was carried out in Minahasa regency, North Sulawesi, Indonesia.

**Gajendran and Karthickeyan (2009)** studied about the status of indigenous ducks in Tamil Nadu, India. Indigenous ducks of Tamil Nadu are sturdy and prolific, reared traditionally by the poor farmers for their livelihood. Inland waterways and lengthy coastal line act as excellent natural habitats for ducks to be adapted under range system of management. There was instability in the trend of duck population over the years. The duck flocks are highly concentrated in the paddy (*Oryza sativa*) growing and water shed areas of the state because of their nomadic existence. Even though a well- recognized breed of layer duck, Khaki Campbell, is available in India, the farmers for ease in maintenance prefer indigenous ducks under range system.

**Kumari et al (2014)** stated duck farming as an effective tool for socioeconomic development of rural people. Duck is a very good income generating occupation for those who are small and marginal farmers. This can be even reared by landless classes and women. Duck rearing is profitable and simple in management.

**Abraham and Raveendran (2009)** conducted studies on the 'Aroor System of Sustainable Duck Rearing' in Kerala, India. This system was unique in that the birds were fed on Fresh Prawn Waste (FPW), a waste product of prawn processing industry. The internal and external qualities of eggs laid by ducks fed on fresh prawn waste were compared with ordinary market eggs. The study revealed that this system was the most economical enterprise compared to any other animal husbandry enterprises in this region.

**Veeramani et al (2015)** has studied about the genetics of various indigenous and exotic duck breeds in the country. The biological reasons for the difference in the productivity of ducks can derived from this study.

**Khanum and Mahadi (2015)** studied about the correlation between at women empowerment and duck rearing. The study proved the extent of women participation in duck rearing farm and addressed women's economic empowerment in Hakalukihaor area of Maulvibazar district in Bangladesh. In this case haor women played an important role in the duck rearing activities which were carried out to explore the meaningful interpretation of women's present status. The result of the study revealed that duck rearing farming has exerted greater impact on improving socioeconomic condition and economic empowerment of haor women. The successful duck farming provides the women with economic independence and improved livelihood leading to their empowerment.

**Rajput et al (2014)** revealed that duck rising is a lucrative livestock industry in the globe because of its egg, meat, and feather. Like chicken, ducks are reared for eggs and meat. As per livestock census 2007, the duck population of India is 27.43 million constituting 8.52 percent of the total poultry population. The distribution and demographic dynamics of duck population revealed that they are concentrated in Eastern, North eastern and Southern states of the country. Duck farming in India is characterized by nomadic, extensive, seasonal, and is still held in the hands of small and marginal farmers and nomadic tribes.

**Sharma (N.d.)** has studied about the prospective of duck cum fish farming in West Bengal. Such an integrated farming procedure is beneficial for the farmer.

College of Fishery, Raha, Nagaon (N.d.) also studied about the benefits of integrating fish and duck farming.

**Hossain et al (N.d.)** wrote about the effect of integrated rice-duck farming on rice yield, farm productivity, and rice-provisioning ability of farmers. The rice-duck system is not only feasible, but also economically rewarding for the farmers. The yield of rice is, on average, 20% higher in the rice-duck system than the traditional rice system (sole rice), thereby ensuring about 50% higher net return, and rice-provisioning ability.

**Caguan et al (2000)** studied about integrated duck farming. The study proved that the productivity could be enhanced by integrating duck, rice, fish, and azolla. The individual productivity is also increased.

**FISHERIES & ARD DEPARTMENT, GOVT. OF ODISHA (2015)** studied about the various policy measures taken by the Odisha state government to support duck rearing.

**Halder et al (2007)** analysed socio-economic background of duck owners and status of duck rearing in West Bengal. It was found that cultivation was the main occupation followed by labourer among the farmers. The annual average egg production per duck was very poor and most of the duck owners earned a good amount of subsidiary income from duck rearing

**Kabir (2016)** studied about the great market for commercial poultry farming in Bangladesh, and it is already an established business opportunity. The economic system of Bangladesh is mostly dependent on agriculture. Poultry products like meat and eggs are the main source of animal protein for Bangladeshi people.

**NABARD(N.d.)** stated that people in Gujarat, particularly in South Gujarat region and tribal communities kept duck for production of duck eggs and duck meal. Over 10 million duck population exists in the country and ranks 2nd in the world after Indonesia. Around 600 million duck eggs valued at 180 crore are being produced and are being consumed in the rural area,

Kerala, West-Bengal, Orissa, Andhra Pradesh are the states where duck are predominant.

**RESEARCH GAP:**

We have already reviewed the existing paper works and project reports about duck rearing, animal husbandry and Kuttanadu. Our concern is about the economic review of duck rearing in the Kuttanadu region. Extensive studies about duck rearing have come up concentrating on other ecosystems.

Research papers about the Kuttanad wetlands are also very large in number. Our task was to fill in the gaps and to study intensively about the prospects of duck rearing in the Kuttanad region.

**DUCK FARMING- INDIAN SCENARIO**

As per livestock census 2007, the duck population of India is 27.43 million constituting 8.52 percent of the total poultry population. As per FAO [2] statistics, the duck meat production increased from 0.026 million tonnes to 0.15 m tonnes, recording 577 percent increase in growth rate, in two decades.

The distribution and demographic dynamics of duck population revealed that they are concentrated in Eastern, North eastern and Southern states of the country. The leading states in duck population are West Bengal, Assam, Kerala, Andhra Pradesh, Tamil Nadu, UP, Bihar and Orissa. Duck farming in India is characterized by nomadic, extensive, seasonal, and is still held in the hands of small and marginal farmers and nomadic tribes. Traditionally West Bengal and Kerala are the major consumer states for duck egg and meat and one of the reasons is that duck egg and meat highly suits and remains tastier for their fish based culinary preparations.

**DUCK REARING IN KERALA WITH SPECIAL REFERENCE TO THE KUTTANAD**

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In our study, almost all the farmers concentrate on the production of Kuttanadan duck breeds. Kuttanadan duck breeds are the indigenous duck breeds found in the Kuttanadan wet land belt. The water rich wetland areas inhabit a large number of Kuttanadan ducks. Since these duck breeds are locally available, the farmers concentrate on the production of these.

**SOCIO ECONOMIC STATUS OF DUCK FARMERS**

Since, the duck farmers belong to agricultural landless labourers and thrive on duck farming as their only source of income, they avail ducklings from the egg vendors on loan basis and repay in the form of eggs and spent ducks. The infrastructure facilities such as supply of ducks and ducklings, transportation of birds for foraging, marketing of eggs and vaccination arrangements are made to farmers by the egg vendors and financiers. Therefore, a peculiar lender-debtor relationship exists between them. The vendors also exploit the farmers at every stage of operation. This perhaps, has led to the duck farmers remaining poor for generations. All the farmers engaged in duck rearing gained their knowledge

traditionally from their ancestors. In a recent study (Gajendran et al 2005a), it was found that most of the farmers (95 %) were illiterates while the remaining were educated up to primary school level.

## EXPENDITURE FLOWS

Expenditure is the cost incurred at the various stages of production, distribution, and marketing of ducks. It is the total cost of production incurred for duck farming. It also involves implicit costs like self-labour costs. Another important aspect to be also noted is that duck farming is traditionally a family business. The family members themselves do almost all the activities. The imputed cost of such own occupied labour is not calculated while calculating the total expenditure. As per the present wage rate, we can accrue the value of labour @ Rs 300/ day. Keeping this value as constant, we can now try to identify the various expenditures undertaken in the different stages of duck rearing. We have already seen the various processes involved in duck rearing. Fortunately, all these processes together make up the gross expenditure flows. In accordance with the traditional theory of cost, we can divide the total costs into two

- I. Fixed costs
- II. Variable costs.

Fixed cost is the cost incurred on fixed factors of production. Fixed expenditure is the expenditure that does not depend upon the level of production. Transportation is an example of fixed cost. The transportation cost depends upon the distance.

Variable costs include the costs that vary with the level of output. Variable costs include costs on housing, cost on feeding, cost on hatching etc. Fixed costs and variable costs make up the net expenditure outflows

## INCOME FLOWS

The revenue or income can be generated by the sale of eggs and ducks. Ducks can be sold at the market price Rs. 300 per unit. Eggs are sold at prices ranging from Rs. 8-9 per piece. The egg production and meat production determine the income levels of the farmer. Unlike the ducks, eggs have differential prices. So the duck rearers can adjust the demand of duck eggs by adjusting the price. Another income is the accrued income of the owner- supplied labour. The opportunity cost of hiring a labour is avoided and thus indirectly an income is earned by imputed cost of labour. Thus, the farmer earns the wages of the self-supplied labour and the surplus earned from the sale of ducks and eggs.

## PROBLEMS FACED BY THE DUCK FARMERS

The duck farming sector and the duck farmers face a lot of challenges and problems. The various problems faced by the duck farmers are given below.

- The duck farming in Kuttanad is characterized by a **high cost of production**. The very high cost of production is due to very small scale duck production units. They are forced to sell their

products to middlemen at a low cost as the markets are not accessible to them directly. They have to incur very high input prices while the output price remains more or less sticky.

- Another important aspect to be noted is that **the prices of ducks per unit are more or less sticky**. Out of the 30 sample cases that we studied, a notable observation was that the prices remained sticky at about Rs. 300 per unit. This is the current market price. The notable thing in this scenario is that the price per quantity is not determined by weights. The prices are charged per quantity. So if two ducks of 500 grams and 1 kg are sold simultaneously, then the prices of both these ducks would be the same. This pricing is beneficial as well as exploitative. The producer can earn the same level of income by selling ducks of two different weights unlike, chickens which are priced according to their weights.
- **The water and soil salinity** adversely affects breeding and hatching of ducks. The ducks do not lay eggs in the saline water. There is a strong negative correlation between water salinity and breeding of ducks. As salinity increases, the rate of breeding falls and vice versa. The ducks require fresh water to lay more eggs. The higher number of ducks would benefit the farmers in two ways: Firstly, higher egg production means higher income from the sale of duck eggs and secondly, the more the number of eggs, the higher the number of prospective ducklings. Each egg laid can be compared to an additional capital investment from which the farmer tries to maximize his profits and sales volume.
- **The duck farmers suffer from debt crisis**. As we have seen in the previous chapter, debt is one of the major sources of capital. Most of the farmers depend on credit as the source of finance. But the problem is the lack of organized credit sector. The poor duck farmers depend upon the unorganized sector for meeting their financial short comings. Farmers usually borrow money from private financiers, whole-salers and from local chit funds. The problems associated with such unorganized credit is that, it usually bears very high rate of interest. The farmers would be unable to repay the loan if there is a bad harvest. One bad season is enough to put the farmer in a permanent debt crisis. Most of the farmers under our case study have an outstanding debt to be repaid. In order to repay this loan, the farmers need to take another loan. This vicious cycle continues and eventually it will put the farmer in a debt trap.
- One of the main problems associated with duck farming is the **absence of insurance coverage**. The duck farming is a highly risk economic activity. If there is disease outbreak, then all the ducks would die. There is a huge economic loss to the farmer. There is no one ready to bear the risk along with the farmer. Another reason to be noted is that if there is an outbreak somewhere people would become hostile and they would restrict the consumption of healthy ducks even. The doom of uncertainty destroys this sector.
- **Infections and diseases affect the productivity of ducks**. Ducks can suffer from cholera, plague or bird flu. There is vaccination for ducks against cholera and plague. If there is no vaccination taken, and if the ducks are infected then there is no treatment for the ducks. And also there is no prevention or cure for bird flu. Once the ducks are affected by it, the farmers would

lose everything. There are no medicines for the treatment of ducks. The doctors use the same medicines that they use for treating poultry and cattle. The duck farmers themselves use certain traditional medicine combos to treat their ducks.

## FINDINGS

The most important findings from this survey are listed below:

- The majority of the duck farmers, i.e. about 65% are from Ramankary.

Veliyanadu also has its own share of 15 % of the total respondents. The remaining 20% of the duck farmers are distributed equally in the remaining four villages, i.e. Mithrakkary, Kumarankary, Mambuzhakkary, and Muttar.

- About 70% of the respondents are males, while female respondents are 30%. It clearly shows that the men are a majority in the duck farming sector.
- The age of the respondents lie between 40 and 60. The mean age of a duck farmer is 51.50 with a standard deviation of 4.76.
- About 70% of the duck farmers are Christians, while the remaining 30% are Hindus. There are no Muslims engaged in duck rearing.
- At an average, a farmer has education up to class 9th with a standard deviation of 2.87. Even though most of the farmers are literate, they lack quality higher education.
- One fourth of the duck farmers belong to the SC/ST category. Only 10 % of the respondents belong to other backward classes. Others belong to the general category.
- 65% of the duck farmers live below the poverty line. Only 10% of the duck farmers have another source of income. The majority of the farmers depend upon duck farming as their sole source of livelihood.
- 70% of the farmers rear ducks for both meat and eggs.
- Farmers use multiple sources to finance duck farming with institutional debt being the most favoured option.
- The duck farmers have taken loans from the organised as well the unorganised sector. The rate of interest varies to a large extent. The farmers even use a part of personal loans to finance capital requirements. They have outstanding debt to be repaid.
- The self-consumption of the ducks and the eggs are very low.
- The farmers face a variety of problems ranging from salinity to absence of insurance.
- 16% of the farmers sell the products at their farm itself. 84% of the farmers sell their products on roadside. 42.1% and 53% of the famers opt for retail stores and wholesale stores as their point of sale.

## RECOMMENDATIONS

There are some recommendations that we want to put in front of you:

- ❖ The participation of women should be increased in the duck farming sector. Increased participation of women in duck farming is closely associated with women empowerment.
- ❖ The number of labourers involved in the duck farming sector should be reduced. This is because there is underutilized labour in the duck farming sector.
- ❖ The extension of the organised credit is a necessary to sustain this industry. The government should support the duck farmers more through policy changes
- ❖ There should be insurance coverage for the duck farmers to support them from making huge losses.
- ❖ The government should take necessary steps to develop medicines for the treatment of ducks. Preventive measures like vaccines against bird flu and virus infections should also be developed.
- ❖ The duck farmers should find alternative sources of income. They should follow integrated duck farming practices. The farmers who follow integrated farming practice like pisciculture with duck rearing are in a much better position.
- ❖ The duck should be modernised. Technological innovation is an absolute necessity to enhance productivity.

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