



Research Paper

## Present Scenario Of Traditional Duck Farming With Special Reference To The Upper Kuttanad Villages Niranam And Kadapra Of Pathanamthitta District, Kerala, India.

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**ABSTRACT:** Forty small-hold duck farmers were randomly chosen from the Niranam and Kadapra villages of the Pathanamthitta district, Kerala, for the present study. The data was collected during the year June 2021 to May 2022. The farmer's knowledge of duck rearing was gathered through interviews and questionnaires. Demographic factors, including age, literacy, occupation, and flock features such as size, breed type, feeds, and farming system, and the challenges and problems faced by the small hold household farmers were collected. The study identified three age categories of farmers: 30–40 (22%), 40–50 (63%), and above 50 (15%). Most farmers in the 30–40 age group were rural women. Most of the duck farmers in the area were small-scale household farmers with a flock size of fewer than 500 ducks, reared ducks in a free-scavenging system. The most prevalent duck diseases in the study region were Riemerellosis and Colibacillosis. Duck plague in the region was controlled effectively by vaccination. The number of duck farmers is declining because of the substantial economic losses brought on by natural disasters like floods and abrupt disease outbreaks in the area that cause mass duck mortality. The smallholder farmers suffering huge losses are not coming under the insurance scheme of the government, which is a critical issue to be addressed.

**KEYWORDS:** Smallholder farms, socio-economic status, flooding, disease outbreak, insurance

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### I. INTRODUCTION

Duck meat and egg production for commercial purposes is a global sector that is expanding. One common poultry species that farmers mostly raise in villages in India is the duck. Ducks thrive in areas with lots of water resources, such as ponds and lakes. Duck eggs are generally bigger than chicken, whose egg weight is only roughly 4.5% that of a duck and 3.3% or so of the hen's weight [1]. The Asian subcontinent is home to most of the world's duck population, concentrated in nations like China, Vietnam, Indonesia, Bangladesh, and India. The number of ducks in the globe increased by a factor of six, from 193.4 million in 1961 to 1177.4 million in 2019. Most ducks raised in India are indigenous or local; of the country's 317.07 million backyard chickens, domestic ducks account for 3% of the population [2] and are primarily raised in the eastern, northeastern, and southern regions. In terms of production and population, West Bengal, Assam, Kerala, Andhra Pradesh, Tamil Nadu, Bihar, and Orissa are the states that contribute most to ducks in India.

Duck generates hard cash income, the same as chicken, and job options for rural farmers and landless individuals [3]. The states with the highest concentration of ducks are Kerala, West Bengal, Orissa, and Andhra Pradesh, where 600 million duck eggs worth 180 crores are produced and consumed in rural areas [1]. The quantity of ducks 33.51 million in 2019 is an increase of approximately 42.40 percent from 23.53 million in 2012 [2]. The prominent duck breeds reared in India are Khaki Campbell, Bali, Indian Runner, Nageswari, Chara, and Chembali (Kuttanad ducks) are just a few of the ducks explicitly raised for their eggs. Besides these, a Vietnam breed called Vigova, locally called "Vella" was also reared. The Chara and Chembali have high survival rates and are easy to maintain. They reared the ducks for both egg and meat.

Among the 14 districts of Kerala, Alappuzha, Kottayam, Pathanamthitta, and Wayanad are the prominent area of duck farming. In Kerala, duck farming is one of the main occupations associated with paddy

culture, pisciculture, and cattle farming (Integrated farming). The duck business in this area includes small-scale household farmers and large-scale farmers with flock sizes ranging from 10 to 4000 ducks. The farmers manage the farms based upon their hereditary farming experiences with minimum use of duck rearing technology, such as traditional local feed, free-range system, simple cage, no livestock drug use, and the use of local ducks.

Changes in rainfall patterns and disastrous recurrent floods have significantly impacted Kerala State's agriculture and livestock farming sectors, notably rural livestock production, over the past five years. The rapid occurrence of significant and devastating floods in Kerala over the past five years has led to a rise in duck mortality on smallholder farms in the rural sector, in addition to the increased incidence of contagious disease outbreaks during monsoon season. The smallholder farmers are suffering severe losses due to the mass mortality of the ducks, and they are not coming under the insurance scheme of the government, which is a critical issue to be addressed. Several studies were conducted on the socio-economic status of duck farmers in Bangladesh [4, 5, 6 & 7]. Few studies were reported from other duck farming states like Tamil Nadu by [8]; Tripura by [9] The study conducted by [10] in the Alappuzha district of Kerala was the only socio-economic survey of the duck farmers reported from the region.

The study's objective was to observe the present scenario of traditional duck farming in the Niranam and Kadapra Panchayat of Pathanamthitta district, Kerala. The study focused on the socio-economic status of the smallholder duck farmers, their demographic status, flock characters, challenges, and problems faced during the present climatic fluctuations and disease outbreaks.

## **II. MATERIAL AND METHODS**

### **II.I. STUDY AREA**

The upper Kuttanad wetland includes the two main duck farming villages Niranam (Latitude: 9.324°N; Longitude: 76.519°E) and Kadapra (Latitude: 9.265°N; Longitude: 76.857°E) in Kerala's Pathanamthitta district. One of the largest brackish-water lakes in India, Vembanad Lake, is linked to the Kuttanad wetland ecosystem by five rivers that originate in the Western Ghats. The Western Ghats Rivers Pampa and Manimala are close by, which causes the villages of Niranam and Kadapra to regularly flood during the monsoon season while also suffering from a severe freshwater deficit throughout the summer.

### **II.II. METHOD**

Forty small-hold duck farmers were randomly chosen from the Niranam and Kadapra villages of the Pathanamthitta district for the present study. The data was collected during the year June 2021 to May 2022. The farmer's knowledge of duck rearing was gathered through interviews and questionnaires that were filled out. Demographic factors, including age, literacy, occupation, and flock features such as size, breed type, feeds, and farming system, and the challenges and problems faced by the small hold household farmers were collected. The secondary data regarding the Farmer, flock, and diseases were also collected from the Government Veterinary Hospital, Niranam, Government duck farm, Niranam, Avian Disease Diagnostic Laboratory, Tiruvalla, Kerala, and from Kudumbashree Mission Pathanamthitta district collectorate. The results were illustrated using descriptive statistics.



Plate 1: Local breeds Chara and Chemballi



Plate 2: Free-Scavenging flock

### III. RESULT AND DISCUSSION

#### III.I DEMOGRAPHIC INFORMATION OF FARMERS

##### III.I.I AGE

Ages of the duck farmers ranged from 30 to 80. The study identified three age categories of farmers: 30–40 (22%), 40–50 (63%), and above 50 (15%). Most farmers in the 30–40 age group were rural women (Figure 1). According to Rahman (2019), most of the farmers in the study were included in the 40-50 category. Also, the newcomers to this farming field form the category below 30yrs, an interesting fact that most were housewives.

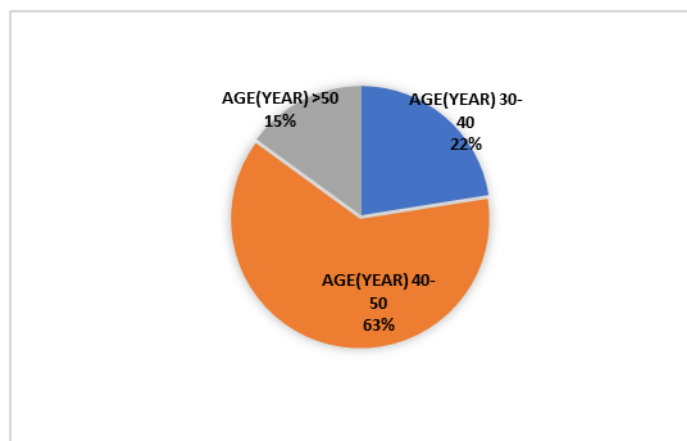


Figure 1: Age of duck farmers

##### III.I.II LITERACY

55% of people in the study area had only completed their primary education, 20% had completed upper primary, 10% had completed high school, 10% had completed their higher secondary education, and 5% had earned a degree (Figure 2).

VARIABLE	CATEGORY	NUMBER OF FARMERS	PERCENTAGE
AGE(YEAR)	30-40	9	23%
	40-50	25	63%
	>50	6	24%
EDUCATION LEVEL	LOWER PRIMARY	22	55%
	UPPER PRIMARY	8	20%
	HIGH SCHOOL	4	10%
	HIGHER SECONDARY	4	10%
	DEGREE	2	5%
DUCK REARING EXPERIENCE	BELOW 5 YEARS	16	40%
	ABOVE 5 YEARS	5	12%
	ABOVE 10 YEARS	19	48%
NUMBER OF DUCK IN FLOCKS	BELOW 50	12	30%
	50-100	21	52.5%
	100-500	7	17.5%
MAIN OCCUPATION	DUCK FARMING	29	72.5%
	AGRICULTURE	7	17.5%
	OTHER JOBS	4	10%

Table 1: Demographic data of the duck farmers

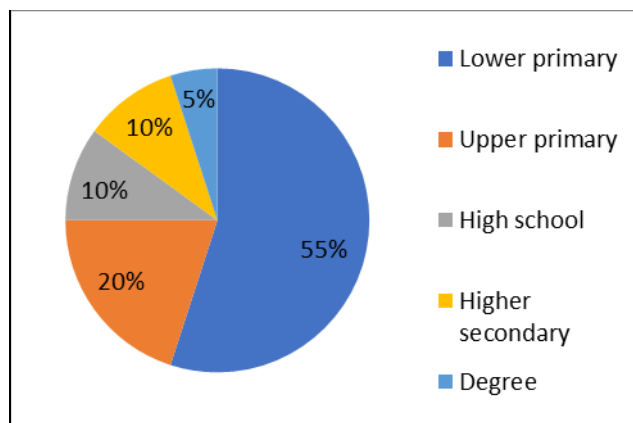


Figure 2. Literacy of duck farmers

### III.I.III EXPERIENCE IN DUCK REARING

Small hold farmers were not professionally trained but practiced duck rearing as their traditional occupation along with other agricultural activities. The number of duck farmers is declining because of the substantial economic losses brought on by natural disasters like floods and abrupt disease outbreaks in the area that cause mass duck mortality. Without considering the financial gain, several farmers were emotionally devoted to this industry and saw duck farming as a normal part of their lives (Figure 3).

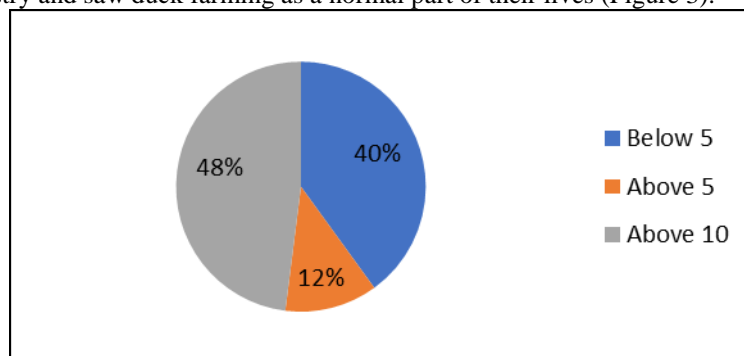


Figure 3. Years of experience in duck rearing

### III.I.IV MAIN OCCUPATION

According to the data from the website of the Department of Panchayat, Government of Kerala, the total population of Niranam panchayat and Kadapra panchayat is 13,445 and 20,827, respectively. Most villagers were middle-class families with an annual income below 1 lakh. Niranam was the predominant area with a greater number of duck farmers, and it is one of their main occupations other than agriculture and cattle rearing (Figure 4).

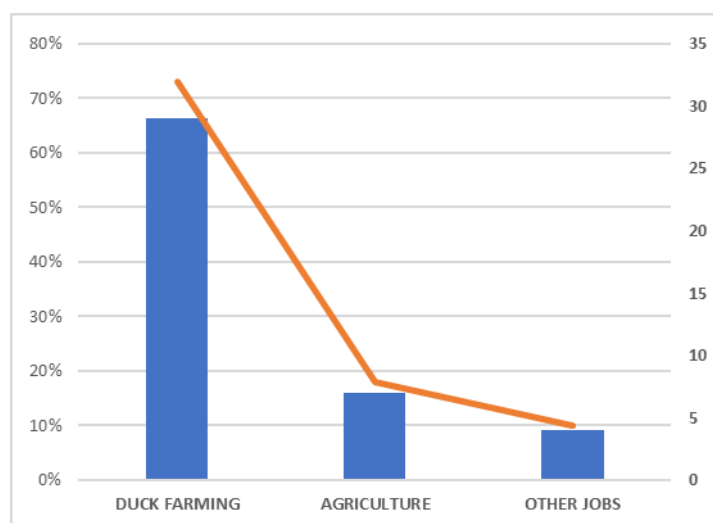


Figure 4. Occupation of the villagers

### **III.II FLOCK CHARACTERISTIC FEATURES**

#### **III.II.I BREED TYPE**

The Kuttanadan ducks namely, “Chara and Chembali” (Plate 1) were the most reared breed of duck. Beside these a Vietnam breed called Vigova, locally called “Vella” also reared. The Chara and Chembali have high survival rate and easy to maintain. The farmers collect ducklings from the Kerala Government Duck Farm Niranam. The Chara and Chembali ducks lay eggs after attaining maturity, an average of 210 eggs annually. To increase the quality and quantity of eggs, the farmers give a mixture of wheat, rice, and other cereals as feed during breeding time.

#### **III.II.II FLOCK SIZE**

Most of the duck farmers in the area were small-scale household farmers with a flock size of fewer than 500 ducks. 52.5% of the farmers with a flock size between 50 - 100, 30% below 50, and 17.5% between 100 - 500 (Figure 5).

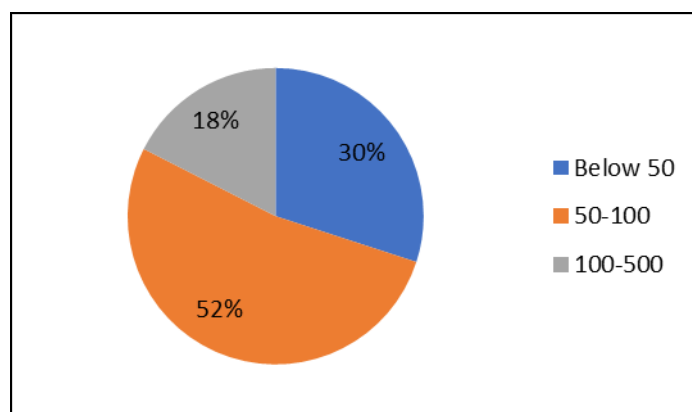


Figure 5: Flock size

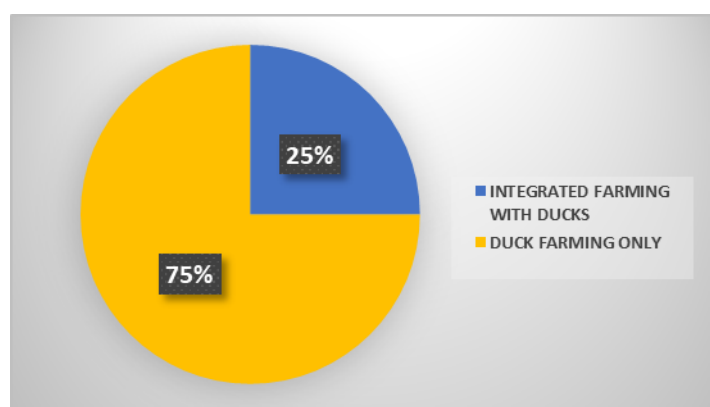


Figure 6: Farming system

#### **III.II.III DUCK-REARING SYSTEM**

Farmers used a variety of materials for duck housing. Most of them use a tin sheet or asbestos sheet for constructing shelters, bricks, etc. Some small-scale farmers use nets for the construction of housing for flocks. Proper ventilation is provided in the shelter. Only 40% of the farmers regularly cleaned the shelter, and 60% did not.

All the farmers in the study area reared ducks in free- a scavenging system (Plate,2). The presence of paddy fields and water bodies like ponds, streams, and canals were favorable for the flock for scavenging. From dawn to dusk, the duck can be seen in the study area for scavenging.

#### **III.II.IV FEEDS AND FEEDING OF DUCK**

The flock naturally feeds by a free-scavenging system. Farmers also use a wide variety of supplementary feed for their ducks. Usually, the duck feed included rice, wheat, and food waste from the kitchen.

### **III.II.V DISEASES AND MORTALITY**

The most prevalent diseases of duck in the study region were Riemerellosis and Colibacillosis. Duck plague in the region was controlled effectively by vaccination. About 85% of farmers stated that the maximum duck loss was not due to disease outbreaks but due to flooding. The high mortality rate reported during the summer was due to heat stress in poultry due to elevated temperatures. The mortality rate was highest during the monsoon due to floods and monsoon-related diseases. Only 20% of farmers surveyed had the right idea about diseases that affected their flock, 50% had a partial idea, and 30% were unaware of the different diseases.

### **III.II.VI VACCINATION**

Timely vaccination of the ducks played an essential role in reducing the mortality of ducks during disease outbreaks. The ducklings brought from the Government Duck Farm were regularly vaccinated from the center. Most farmers avoided booster vaccination doses at regular intervals to reduce the transportation expense to veterinary hospitals. Only a few farmers (12.5%) vaccinated the flock by themselves.

### **III.II.VII INTEGRATED FARMING SYSTEM**

[11] reported the effect of integrated rice-duck farming on rice yield, farm productivity, and the rice-provisioning ability of farmers. The rice-duck system is feasible and economically rewarding for farmers. The rice yield 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.

A major portion of their economy depends on regular duck farming compared to the integrated farming population. So, the sudden outbreak of diseases and environmental factors will economically affect those farmers who were not engaged in integrated farming. Integrated farming with ducks can be associated with paddy cultivation, cattle rearing, and fish culture (Figure 6).

### **III.II.VIII RURAL WOMEN EMPOWERMENT**

[12] investigated the relationship between duck rearing and the empowerment of women. The study examined women's economic empowerment in Bangladesh's Maulvi Bazar district and demonstrated the level of women's participation in duck farming operations. In the present study also, most of the new duck farmers belonged to housewives below the age group thirty, which is significant for the current situation of rural women. The present study's findings showed that duck rearing farming had had a more significant influence on the socioeconomic status and economic empowerment of rural women—the women's empowerment results from the successful duck farming business giving them increased livelihood and financial freedom.

### **III.III. MARKETING PROBLEMS**

The duck farmers were dependent on traders and neighbors to commercialize their products. The smallholder duck farmers were forced to sell their products to other local traders at a low cost as the markets were not accessible to them directly. Another essential aspect noted was the price of ducks per unit. The price was not determined by weight but by quantity. 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 would be beneficial as well as exploitative. The producer can earn the same income level by selling ducks of two different weights, unlike chickens which are priced according to their weights.

### **III.IV. LACK OF INSURANCE COVERAGE FOR SMALLHOLDER FARMERS**

Another major problem with duck farming is the need for proper insurance coverage. During the unpredictable climatic conditions and disease outbreaks [13], the lack of insurance coverage for the smallholder farmers put them at high economic risk. In addition to the enormous loss of ducks due to being washed away, flooding promotes the movement of pathogens, which raises the occurrence of infectious diseases due to devastating floods. Lack of feed, clean water, and shelter for the ducks during the floods are among the issues that farmers face. During rainy seasons when there is water contamination from domestic sewage following the flood, ducks are more susceptible to *E. coli* infections [14].

## **IV. CONCLUSION**

The reduction in the population of duck farmers in the study area indicates that certain constraints influence their farming practices. Global climatic fluctuations have severely affected the duck farms in the study region. Recurrent floods and increased temperatures during summer and the sudden outbreaks of diseases resulted in the mass mortality of ducks in smallholder farms. Insurance coverage should be extended to the smallholder farms, too, with a smaller number of flocks to support the traditional smallholder farmers who depend on duck farming for their livelihood.

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