

## Present Status of Village Chicken Farming System in Coastal Belt of Ampara District

S. Mokanapriya<sup>1</sup>, A.T.A. Akram<sup>2</sup>, A. Sharfan Ahamed<sup>3</sup> & Muneeb M. Musthafa<sup>4\*</sup>

<sup>1,2,3,4</sup>Department of Biosystems Technology, Faculty of Technology, South Eastern University of Sri Lanka, Sri Lanka

<sup>3</sup>Department of Livestock Management, Faculty of Animal Production and Technology, University of Veterinary and Animal Sciences, Lahore, Pakistan

<sup>1</sup>priyasivalingam77@gmail.com, <sup>2</sup>akram.at@seu.ac.lk, <sup>3</sup>asharfan91@gmail.com, <sup>4\*</sup>muneeb@seu.ac.lk

**Abstract-** The study was conducted to assess the characteristics of the village chicken farming system in the Ampara district. Data collection was carried out on 100 village chicken rearing farmers from five veterinary ranges in the Ampara district. Structured interviews, unstructured interviews with farmers, and field observations were the approaches used to collect the data on different farming practices. The average flock size per farm was  $97.5 \pm 72.01$ . The number of birds in the house per farmer per year was  $97.70 \pm 10.3$ . The average egg production per hen per clutch was  $12.3 \pm 1.0$ . The major feed sources were rice bran (31.4%) and paddy (22.9%). Tap water (64%) was given *Ad libitum* (82%) throughout the day. The overall average annual egg production was  $147.6 \pm 12.3$ . In this study, the hatchability rate of Village chicken was 80.53%. Half of the respondents purchasing chicks from the market for their farm. The average motility rate was 13.32%. The major causes of death of chickens during the study were gumbaro disease, fowl cholera, fowl fox. The results of the analysis revealed that there is a significant relationship between gender and reason for rearing and between educational level and reason for rearing. The dominant village chicken farming system of the study area was Semi-intensive (54 %) farming system. The findings revealed that village chickens had a relatively good egg production potential. The mortality rate and feeding practices of village chicken farming in the study site still needed to be controlled by improving management practices and establishing an effective breeding system.

**Keywords:** Ampara, Management practices, Production system, Village chicken

### I. INTRODUCTION

In Sri Lanka, village poultry is one of the most significant livestock components of rural small-holder farming systems (Silva *et al.*, 2009), which contributes 0.38 percent of GDP and accounts for 64% of total livestock

contribution (DAPH, 2020). Indigenous chicken contributes approximately 15% to egg production (Weerahewa, 2004) and has a population of about 1.3 million, accounting for around 11% of the total chicken population in the country (Silva *et al.*, 2016).

Traditional poultry production is almost an omnipresent practice among rural-based smallholders in most countries (Islam & Mustari, 2017). Village chicken production is one of a source of revenue and food for rural farm families. The essential characteristics of indigenous poultry, include disease resistance, hardness, the ability to eat low-quality feed, adapting well to rural environments, and adapting to changes in feed availability (Mufeeth *et al.*, 2018; Miriam *et al.*, 2020). These characteristics accounted for low-input production systems to achieve long-term sustainability (Silva *et al.*, 2016).

The body size, color, shape, and other phenotypic characteristics of village chickens differ widely. The most common village chicken breeds available in Sri Lanka are the normal village chicken with different plumage colors such as red, black, brown, and white or multicolor, the naked neck, the long-legged, the crown chicken, and the frizzled feathers (Silva *et al.*, 2016). In addition, a few distinct rare variants, such as black meat chicken, rumpless chicken, and boot chicken, were also discovered (Liyanage *et al.*, 2015).

Different farming systems are used to raise village chicken include an extensive, backyard, semi-intensive and intensive. Based on a scale of operation, feeding practices, type of genetic resource used, disease prevention and control methods, production efficiency, and other management practices. FAO (2014) classified village poultry production systems into four

categories. Those were small-scale intensive, semi-intensive, extensive scavenging, and small-scale extensive scavenging. Semi-intensive poultry farming is a viable option for resource-constrained rural farmers. It is known to be a combination of comprehensive and intensive systems (Atapattu *et al.*, 2016).

The current state of the indigenous chicken production system in Sri Lanka is poorly understood and defined. It is vital to understand and describe each component in the production systems (Silva *et al.*, 2016). In this context, the present study was formulated to investigate components of the village chicken production farming system of Sri Lanka include the present status of farm management practices such as housing, feeding, breeding, and level of health care.

## II. LITERATURE REVIEW

The poultry sector in Sri Lanka has recently risen to a higher position, Due to its higher contribution to national GDP (Manjula *et al.*, 2018). In Sri Lanka, the poultry industry is regarded as a fast-growing, well-organized livestock subsector. Within the country, both poultry breeder farms and commercial ranches are in operation, demonstrating the importance of chicken production in the country (DAPH, 2018).

The ability to thrive in a harsh environment in tropical climatic conditions, as well as its adaptability to local nutritional and dietary practices, makes poultry species suitable for use in integrated farming systems in backyard operations throughout the country. which can be divided into four different production systems. Extensive free-range, extensive backyard, semi-intensive, and intensive (Sonaiya & Swan, 2004).

Around 99 percent of the population consists of country chickens and they are mostly managed by scavenging schemes, while the remaining birds are mostly managed intensively on private farms. Furthermore, traditional chicken production systems account for 98.4 percent of national egg production and 99.1 percent of national poultry meat production, respectively in Ethiopia (Hassen *et al.*, 2006). Around 43% of the country's chicken products are consumed at a household level, and backyard poultry contributes to different non-monetary benefits (Liyanage *et al.*, 2015). Hardy, adaptable to rural conditions, able to survive on low inputs, and able to adapt to changes in feed

availability are the main advantages of country chickens (Miriam *et al.*, 2020).

Village chickens are generally multicolored, long-legged, and smooth feathered with a few fizzled feathered, naked necked, and dwarf birds (Olwande *et al.*, 2010). Nevertheless, they exhibit a wide range of appearances as well as production status. Some of the indigenous poultry breeds in Sri Lanka include the Naked leg, Giant, Deep brown, Orange tan, Black, Black with yellow silver, White, Light brown, and White brown (Abeykoon *et al.*, 2013).

## III. PROBLEM STATEMENT

Lack of knowledge about poultry farming management system, the occurrence of diseases (IBD, NCD, etc.) as well as institutional and socio-economic constraints remain major challenges in the village chicken production system in Ampara (Mufeeth *et al.*, 2018). The design and implementation of village-based chicken development programs that can support rural societies require knowledge and understanding of chicken production and utilization processes and opportunities and constraints.

## IV. METHODOLOGY

### A. Study area



Figure 01: Location of the research sites

The study was conducted at Ampara district in coastal area government veterinary ranges namely Kalmunai, Sammanthurai, Karativu, Ninthavur, and Akkaraipattu.

*B. Sample and data collection*

A preliminary survey was carried out to determine the key locations of village chicken rearing in the Ampara district's coastal belt. Following that, a detailed survey was conducted from February to April 2021. A total of 100 village chicken rearing farms were visited in five veterinary ranges of the coastal belt of Ampara district. Three approaches were used to collect data: structured interviews, unstructured interviews with farmers, and field observations.

The size of the village chicken farm was determined based on the number of chickens kept in one farm unit. A small-scale farm is described as one with a population of fewer than 20 birds. Farmers with 20 to 50 village chickens were classified as medium scale, whereas those with more than 50 birds were classified as large scale (Sonaiya & Swan, 2004).

Secondary data were collected from Ampara district Government veterinary ranges, the Department of Animal Production, and Health-EP. Through both methods, data were obtained on rearing, feeding, body weight, hatchability (the percentage of eggs that hatched), overall productivity and sales of the village, mortality (number of birds died in a year), and health management.

*C. Statistical analysis*

The descriptive statistics such as mean, range, frequency and percentage, charts, were used to analyze the data using the SPSS software package (Version 25, IBM SPSS, Chicago, USA). Cross-tabulation and standard deviations were used to examine the village chicken production system as well as farmers' socio-economic characteristics.

**V. RESULTS AND DISCUSSION**

*A. The present situation of the Village chicken farming system in the Ampara district*

The study revealed that more than half (56%) of the village chicken farmers in the coastal belt of Ampara District are large-scale farmers and 44% of the respondents are doing on a medium scale. So far, there are no small-scale farmers have been recorded in the study area (Figure 02). According to Mandal *et al.* (2006), the majority (72.92%) of the village chicken farmers in Bareilly district in India are medium-scale (5-8 birds) farmers, whereas, 16.67% of the farmers were doing large-

scale (>8 birds) farming and 10.41% of the respondents are small-scale (<5 birds) farmers.

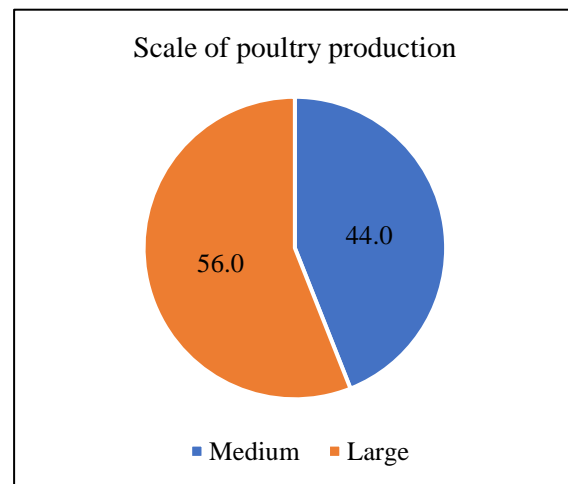


Figure 02: Scale of village chicken farming in Ampara district

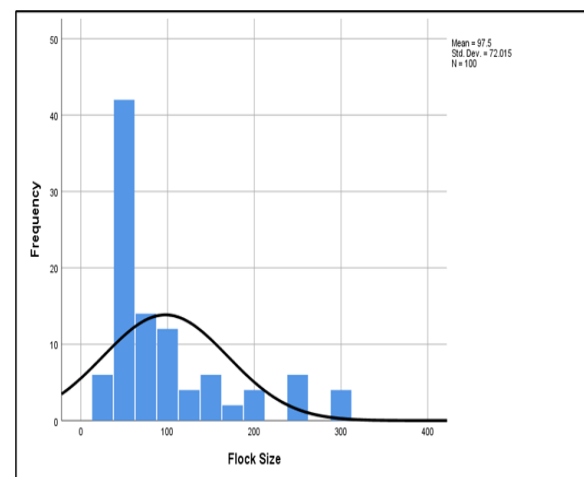


Figure 03: Flock size distribution pattern in Ampara district

Figure 03 shows the overall flock size distribution pattern in the coastal belt of the Ampara district. The flock size was distributed across the study area with a mean of 97.5±72.01.

*B. Management practices*

The majority of village chicken farmers practicing semi-intensive farming (54%) while, 32 percent of farmers were practicing intensive and 14 percent of farmers were doing extensive farming (Figure 04).

1) *Type of Feeds:* In the current study, the poultry farmers are providing different types of feeds (Figure 05). Most of the farmers (33.9%) using Booster for their chicks. Rice bran (31.4%) and paddy (22.9%) are fed by the farmers as major

feed. Only one farmer is providing Alzola for his village chicken (Figure 05). According to Moges et al. (2010), the supplementary feed was offered by the majority of chicken owners (97.5%). Grains and household residues were supplemented by chicken owners (56.4%) as major feedstuffs, from these majority of chicken owners (87.1%) used self-produced crop harvest as supplementary feeds.

2) *Feed Supply*: The majority of the farmers (74%) use the feeder for feeding while, 20 % of farmers are using trays for feeding. Few farmers practicing the floor feeding method. Concerning the frequency of feeding, most of the farmers feeding twice a day (64%), and some farmers feeding three times (36%). In Bangladesh, similarly, most of the families providing feed twice a day (72.10%) in the Sylhet region but some of the families providing feed twice (28.00%) and thrice (35.50%) a day (Islam & Mustari, 2017).

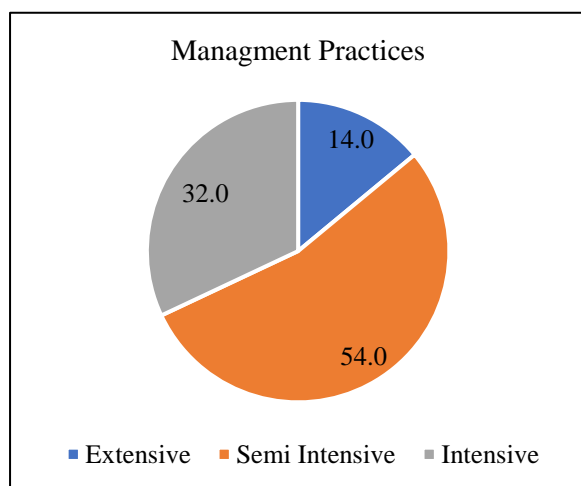


Figure 04: Management Practices

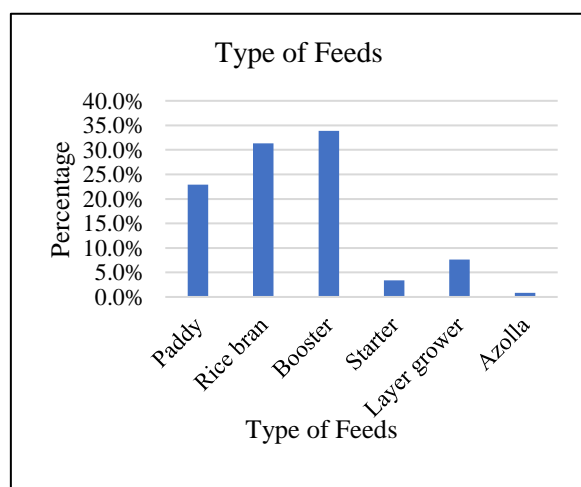


Figure 05: Type of Feeds

3) *Water Supply*: According to the current study, tap water (64%) and well water (36%) were the most common sources of water for village chickens in the study area. The majority of farmers are using waterers (82%) for the water supply of the chicken and 16% of the respondents had water trough. Few farmers were using nipple system 2%. According to Yosefe et al., (2016), Broken clay materials (45.33%), wooden troughs (36%), and plastic-made troughs (11.33%) were the most commonly used forms of watering methods in South West Ethiopia.

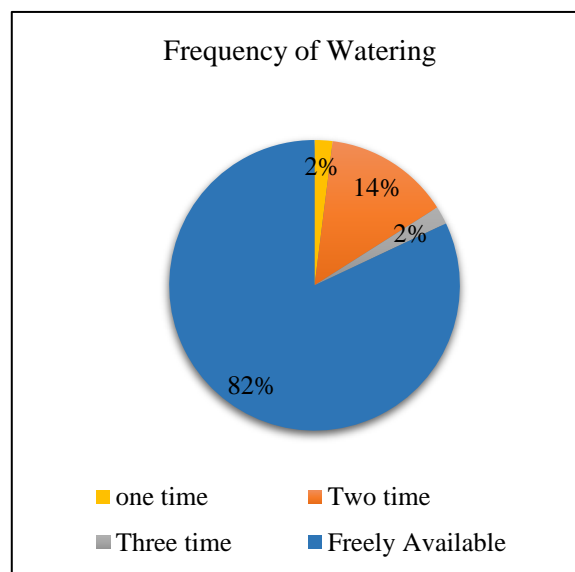


Figure 06: Water Supply

The current study indicated that the frequency of watering, most of the respondents (82%) providing water throughout the day (adlibitum). However, 14% of farmers providing water twice a day, and few farmers (2%) practicing three times and once a time per day (Figure 06). These findings agree with Leta & Endalew, (2010) that, 47% of the respondents providing water throughout the day, 14% once a day, 18% twice a day, 16% three times a day, 5% four times a day in Mid Rift Valley of Oromia, Ethiopia.

C. Productivity of village chicken Farming per Farmer

Table 01: Productivity of village chicken Farming Per Farmer

Production Parameters	Average/year ± S.E
No. of birds in the house	97.7 ± 10.3
Eggs per hen per clutch	12.30 ± 1.0
Egg Production	147.54 ± 12.3
Hatchability (%)	80.54 ± 1.47
Mortality (%)	13.32 ± 2.75

The productivity of village chicken farming per farmer is presented in Table 01. The number of birds in the house per farmer per year was 97.7±10.3. The average dimensions of the house: the height was 2.3 ± 0.14m, the width was 3.28 ± 0.36m and the length was 5.58 ± 0.57m. The average egg per hen per clutch was 12.30±1.0, which also fell within the range of 10-14 average egg/clutch/hen reported by Ssewanyana *et al.*, (2004) in Uganda. The overall average annual egg production was 147.54 ±12.3. According to the results, village chickens have a strong egg production potential in comparison with other studies. Gueye, (2003) reported 37-95 eggs for Africa, Barua and Yoshimura (2001) reported 44 eggs for Bangladesh and Ssewanyana *et al.* (2004) reported 40 -50 eggs for Uganda. In this study, the hatchability rate of Village chicken was 80.53% (Table 1). Similar results were reported by Kondombo, (2005) hatching rate of 83%, and Wantasen *et al.*, (2014) hatching rate of 79.3%. The mortality rate of village chicken farming in the study site still needed to be controlled with better management. A mortality rate of 13.32% was recorded in the study area.

D. Sources of chicks

Figure 07 shows the information regarding the source of chicks of the village chicken management system in the coastal belt of the Ampara district. For breeding purposes, farmers use eggs from their flock or eggs purchased from others. The majority of the farmers (50%) are purchasing chicks from the market. Whereas, 40% of the farmers practicing natural incubation and 10% of the farmers practicing artificial incubation

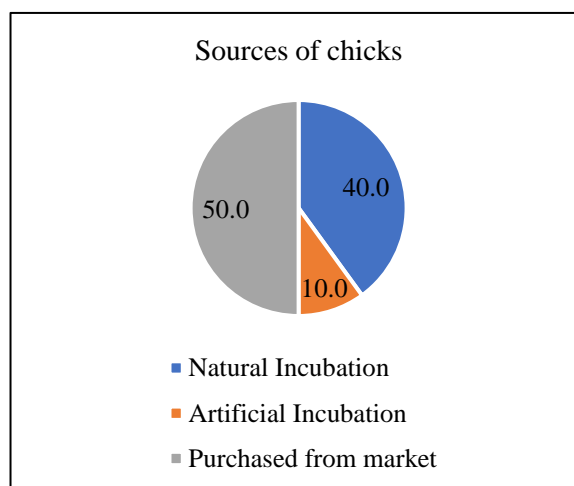


Figure 07: Source of chicks

using their own flock eggs. In Ethiopia, most of the respondents (91.9%) obtained the initial chicken stock by purchasing and the rest was by hatching (4.4%) and gift (3.7%) from parents or relatives (Morenda *et al.*,2013).

E. Disease

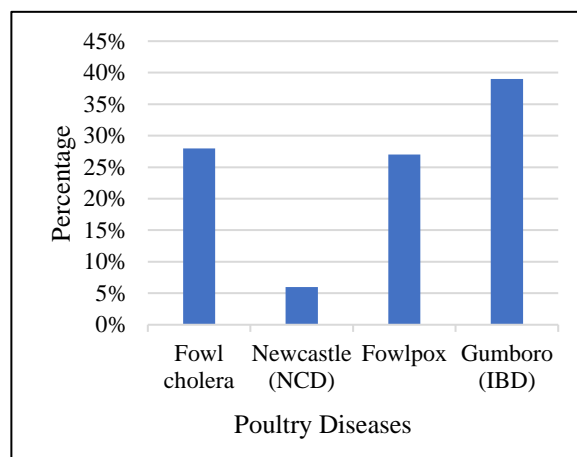


Figure 08: Poultry Diseases reported in Study Area

Figure 8 represents the prevalence of diseases in the study area. The farmers observed the health status of poultry on a daily basis, by judging the poultry from their external appearances and confirmed by the veterinary officers of relevant regions. Even though indigenous poultry has fewer disease outbreaks than commercial poultry, disease outbreaks can pose a significant threat to indigenous chicken management. The prevalence of diseases has been identified as a key issue in village chickens in a free-range environment which resulted in low productivity and significant financial losses

(Silva *et al.*, 2016). Gumboro (39%), Fowl cholera (28%), Fowlpox (27%), and Newcastle disease (6%) were seemed to be the most common disease condition in the study area. And many farmers did not aware of many diseases which are not common. Permin (2009), defined sickness in village chickens as "any change or impairment of normal body function that impacts the survival, growth, and reproduction of birds." Diseases, on the other hand, are frequently caused by a combination of variables including husbandry, nutrition, environmental factors, and flock management (Silva *et al.*, 2016).

#### F. Socio-economic factors

1) *Gender vs Reason of Rearing*: In this study, the majority of the male respondents (44%) were rearing village chicken as part-time and the majority of the female respondents (28%) were doing as full-time. only 4% of male respondents had a reason for rearing hobbies (Figure 9). These findings agree with Ullah *et al.*, (2019) that, in Bangladesh, women play the main role in native chicken farming and they mainly rear the native chicken for home consumption and sell the surplus for income generation. Moreover, village chicken production is predominantly under the management of women in Kenya too (Justus *et al.*, 2013).

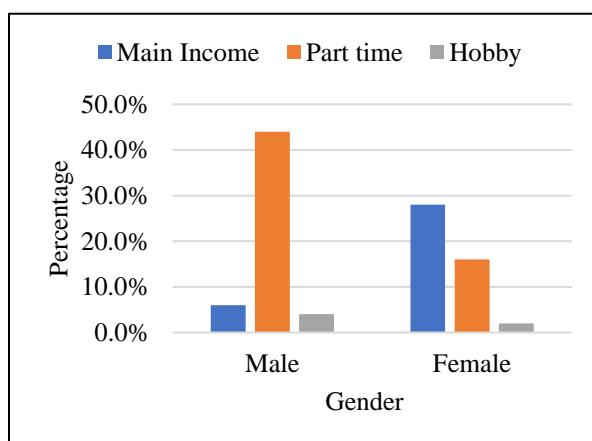


Figure 09: Gender vs Reason of Rearing;  
P=0.000 at a significant level of 0.05

2) *Education Level vs Reason of Rearing*: Education is one of the most important factors which accelerates the growth and development of enterprise. There is a significant relationship between the reason for rearing and the level of education. The majority of secondary (16%) and primary (10%) educated farmers were rearing

village chicken as their main income. Farmers with education level of Advance level and above doing the farming as part-time. Only 6% of Tertiary educated respondents were rearing village chicken as a hobby. Prakash *et al.* (2003) stated that, in Meghalaya most (61.66%) of the respondents are none educated farmers, followed by 28.33% village chicken rearing farmers who had completed up to primary education while 10% of the respondents had completed up to high-level school and above. This reveals that, majority of the primary and secondary educated farmers doing poultry farming as their major income source.

#### VI. CONCLUSION

The village chicken farming system has great potential in the Ampara district and can improve the livelihood of poor farmers in the area. The egg production is considerably high, which can be used to increase the economic benefits to the rural farmers. The mortality rate and feeding practices of village chicken farming in the study site still needed to be controlled by improving management practices and establishing an effective breeding system.

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