



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(11): 1671-1675
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www.thepharmajournal.com

Received: 01-08-2023

Accepted: 04-09-2023

Rafiqul Islam

Assistant Professor, Department of Poultry Science, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India

Jakir Hussain

Department of Livestock Production and Management, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India

Mihir Sarma

Assistant Professor, Department of Poultry Science, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India

Joga Dev Mahanta

Assistant Professor, Department of Poultry Science, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India

Deben Sapkota

Assistant Professor, Department of Poultry Science, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India

Arfan Ali

Department of Veterinary Microbiology, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India

J Saharia

Department of Livestock Production and Management, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India

Corresponding Author:

Rafiqul Islam

Assistant Professor, Department of Poultry Science, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam, India

Duck production and management practices in the rural areas of Assam

Rafiqul Islam, Jakir Hussain, Mihir Sarma, Joga Dev Mahanta, Deben Sapkota, Arfan Ali and J Saharia

Abstract

The present study was conducted to investigate flock dynamics, management practices and occurrence of diseases and their prevention of ducks in Assam. Data were collected through questionnaires distributed among 200 duck farmers in Sivasagar, Sonitpur, Dhubri and Nagaon districts of Assam. Fifty duck farmers were selected from each district randomly. Primary data were collected by personal interview method and were analyzed with descriptive statistics using range and percentage. Results showed that flock size, breeds reared, system of management, feeding management, brooding management, occurrence of diseases, causes of mortality and causes of no vaccination practice all differed highly significantly ($p < 0.01$) among the groups as per the chi-square test. The majority (79.0%) of duck farmers had a flock size ranged between 1-10, while some (13.0%) had flock strength of 11-25 and remaining (8.0%) had flock size of more than 25. The most common breed of duck was Pati (82.50%) followed by graded (15.50%) and local (Muscovy) duck (2.0%) reared by duck farmers. Majority (94.0%) of respondents raised duck in extensive system without any supplemental feed except kitchen wastes. However, they provided night shelter/housing (98.0%) and commercial chicken feed (2.0%) for ducks. Cooked rice and rice bran were the most (68.0%) common feed provided for ducks. Most (98.0%) of the farmers practiced natural brooding, while only few farmers (2.0%) practiced artificial brooding. Most prevalent disease of ducks were duck plague (95.0%), duck cholera (2.0%), botulism (2.0%) and miscellaneous (1.0%). Most common causes of mortality in ducklings were cold shock (58.0%), drowning (26.0%) and predators (16.0%). None of the ducks were vaccinated against any diseases. Non-availability of vaccines (93.0%) and non-availability of vaccines in smaller doses (<50 doses) (5.0%) and lack of skilled person (2.0%) were the main causes of non-vaccination of ducks. Improved management practices including proper housing, good nutrition, improved health care practices would go a long way in improving productive performance and reduce occurrence of duck diseases.

Keywords: Duck, flock dynamics, diseases, free range, vaccination

Introduction

Duck (*Anas platyrhynchos*) is one of the most important poultry species in Assam and other north eastern states of India. Ducks were first domesticated almost 4000 years ago in Southeast Asia, during the Neolithic Age, followed by the Romans in Europe and the Malaysia in Asia (Debnath *et al.*, 2020) [1]. It is a most suitable species for integrated farming system in the hilly and plan area where cropping or other livestock rearing cannot be practiced economically. The duck meat is very popular among the common people of Assam especially during the most important festival Bihu. Duck farming is a subsidiary source of income for almost all the farmers who have their ponds. Duck farming is becoming an emerging sector in India (Manogaran, 2023) [8]. People from all strata of the society, irrespective of religion, education, occupation and economic background are involved in duck farming (Islam *et al.*, 2002) [3]. The farmers use to keep ducks at home yard in a simple shelter and let loose in the morning for scavenging and returned to home in the evening. Duck rearing is also very well in the coastal and lowland areas. It is an important component of sustainable livelihood strategies for poor rural communities as an additional source of household income (Hoque, 2010) [2]. In view of cultural popularity and economic importance present investigation was carried to study the flock dynamics, management practices and occurrence of diseases in duck and their preventive measures.

Materials and Methods

Data for the present investigation were collected through pre-tested questionnaires distributed among 200 duck farmers in the districts of Sivasagar, Sonitpur, Dhubri and Nagaon in Assam.

Fifty duck farmers were selected from each district randomly. The duck farmers who had a minimum of 5 years of experience in duck farming were selected. To know the duck farming status, purposefully the parameters included were flock size, housing & feeding systems, brooding, types of diseases and vaccination. The primary data regarding these parameters were collected by personal interview method and by direct observation by the researcher. Data were analyzed with descriptive statistics using range and percentage as per Snedecor and Cochran (1989) [15].

Results and Discussion

The frequency of various non-parametric data has been expressed in percentage. The present study revealed that the majority (79.0%) of duck farmers had a flock size ranged between 1-10, while some (13.0%) had flock strength of 11-25 and (8.0%) had flock size of more than 25 numbers of duck (Fig. 1). The flock size was significantly ($p<0.01$) highest with the range of 1-10 numbers (Table 1). The study also revealed that flock size varied with the economic background of the farmers. Kamal (2022) [5] reported that the flock sizes of ducks ranged from 2 to 9 numbers among different households. Mboko (2007) [9] found flock size of 7.7 ± 3 in Dolisie city (Congo-Brazzaville). The range of flock size in the majority cases was almost similar to the present study. This indicated that large scale commercial duck farming had not yet popularized in study areas.

The Table 1 revealed that most common breed of duck was *Pati* (82.50%) followed by graded (15.50%) and local (Muscovy) duck (2.0%) reared by duck farmers and this difference was differed significantly ($p<0.01$). The indigenous duck breed (*Pati* breed) of Assam constituted about 85.60 per cent of the total population in Brahmaputra Valley of Assam (Islam *et al.* 2002) [3]. The home tract of *Pati* duck is Assam and mostly reared for meat and egg in the backyard in rural areas (Naik *et al.*, 2022) [10]. In the present study it was found that significantly ($p<0.01$) majority (94.0%) of respondents raised duck in extensive and scavenging system (Fig. 2). However, they provided night shelter/housing (98.0%) and commercial chicken feed (2.0%) for ducks. In India rearing of ducks was still in the hands of poor rural farmers and duck farming was one of the important sources of livelihood and employment. They reared ducks on natural scavenging system in backyard (Patil *et al.*, 2020) [12]. Cooked rice and rice bran were the most (68.0%) common feed (Fig. 3) provided for ducks ($p<0.01$). They also fed their ducks traditionally with cooked bottle guard and *Khutura* (*Xyloorhiza automnalis*), a local herb along with cooked rice to get faster body weight gain. Ducks were voracious eaters and they were reared on natural scavenging system, duck were allowed to consume insects, snails and waste from kitchen, paddy grains and weeds. Extra feed supplements are also necessary for better production, as per farmer economic condition (Patil *et al.*, 2020) [12]. Ducks acquired their natural food from water bodies like pond, rivers and marshy lands to fulfill their

nutritional requirement. The domestic waste, rice bran, broken rice and pulses are enough feeds for ducks (Ravisankar *et al.*, 2012) [13]. Feed alone constituent about 70 per cent of total production cost (Singh *et al.*, 2009) [14]. Most of the farmers provided broken rice, crushed snails and cooked rice to the ducklings up to 15 days of age. After that they were fed kitchen waste, paddy grains, cooked arum (root), cooked vegetables and cooked rice, in addition to the feed received from foraging (Patil *et al.*, 2020) [12].

Significantly ($p<0.01$) most (98.0%) of the farmers practiced natural brooding, while only scanty farmers (2.0%) practiced artificial brooding (Fig. 4). The artificial brooding was not yet become popular among the duck farmers; it might be due to high price of the equipments and lack of skilled person. Naik *et al.* (2022) [10] reported that hatching of duck egg was done by broody ducks or hens and they were reared by semi-intensive system. Under rural condition in India no artificial heat was used for brooding ducklings (Islam *et al.* 2002) [3], however in South Vietnam it had been reported by Nind and Tu (1998) [11] that electric lamps were used as a heat source for the first 1-2 weeks of age.

Out of different diseases, most prevalent disease of ducks was duck plague (95.0%) and very few cases of duck cholera (2.0%), botulism (2.0%) and miscellaneous (1.0%) were affirmed by the farmers in the present investigation ($p<0.01$). The present result was the evident of very less diseases in ducks but only duck plague, which could be controlled by timely vaccination and thus mortality could be greatly reduced. But in the present investigation, the farmers stated that non-availability of vaccines (93.0%) and large numbers (< 50) of doses in a single vial (5.0%) and lack of skilled person (2.0%) were the main reasons for no vaccination practices at all. Improved management practices including proper housing, good nutrition, improved health care practices would go a long way in improving productive and reproductive performance and reducing diseases of ducks. Earlier authors revealed that vaccination drive was sporadic and used by few farmers (28%) in Bangladesh (Hoque *et al.* 2010) [2]. On the other hand, Delabougliise *et al.* (2019) [16] recommended higher vaccination coverage to maintain herd immunity.

According to the present study it was also revealed that most common causes of mortality ($p<0.01$) in ducklings were cold shock (58.0%), drowning (26.0%) and predators (16.0%). Such tendency of disease occurrence and mortality pattern were noteworthy to make proper and effective protocol for duck management practices under field condition. Therefore, artificial heating arrangement will go a long way in controlling mortality of ducklings as the cold shock was the main cause of death for the ducklings. Karim (1987) [6] and Mahanta *et al.* (2001) [7] found that highest mortality in local ducks in Assam was due to duck cholera. In the previous study, most farmers ranked duck plague as the most important disease, followed by duck cholera, botulism, and duck viral hepatitis (Hoque *et al.* 2010) [2].

Table 1: Management Practices of Duck in the Rural Areas of Assam

Parameters	%	Chi-square value
Flock size in the field:		
1-10	79	68.77**
11-25	13	
>25	8	
Breeds reared by the farmers:		
Pati	82.5	111.00**
Graded	15.5	
Muscovy	2.0	
System of management:		
Extensive system	94	77.44**
Intensive	6	
Feeding management:		
Cooked rice bran & scavenging in ponds & surroundings	68	65.85**
Supplemented with commercial feed	2	
Scavenging in ponds & surroundings	30	
Brooding management:		
Natural	98	92.16**
Artificial	2	
Diseases occurrence:		
Duck plague	95	261.36**
Duck cholera	2	
Botulism	2	
Miscellaneous	1	
Causes of mortality:		
Cold shock	58	28.88**
Drowning	26	
Predators	16	
Causes of no vaccination practice:		
Non-availability	93	160.39**
Large no. in single vial	5	
Lack of skill person	2	

**Highly significant ($p < 0.01$).

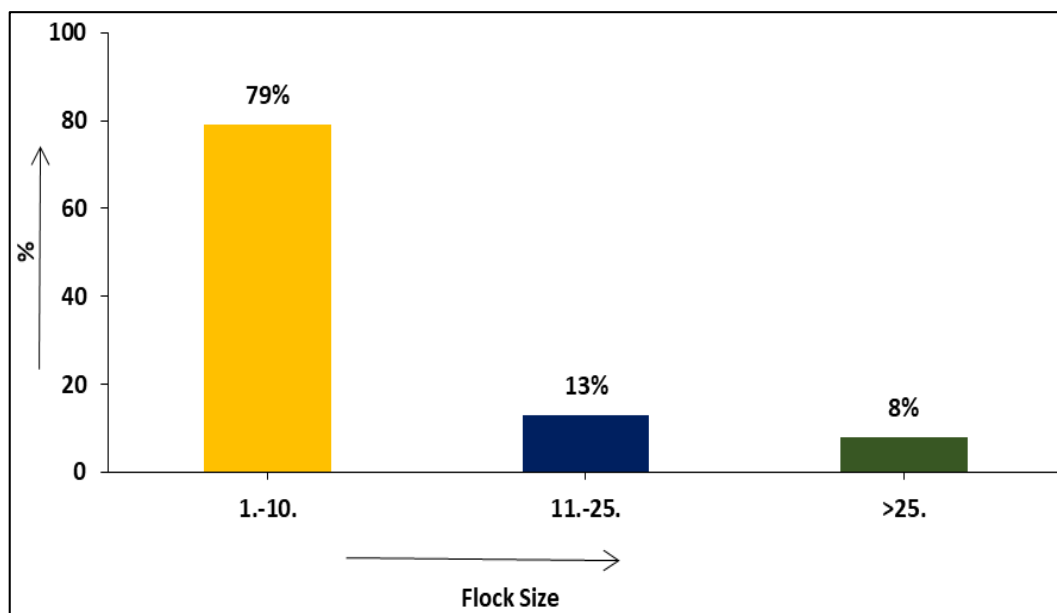


Fig 1: Average flock size of duck in the rural areas of Assam

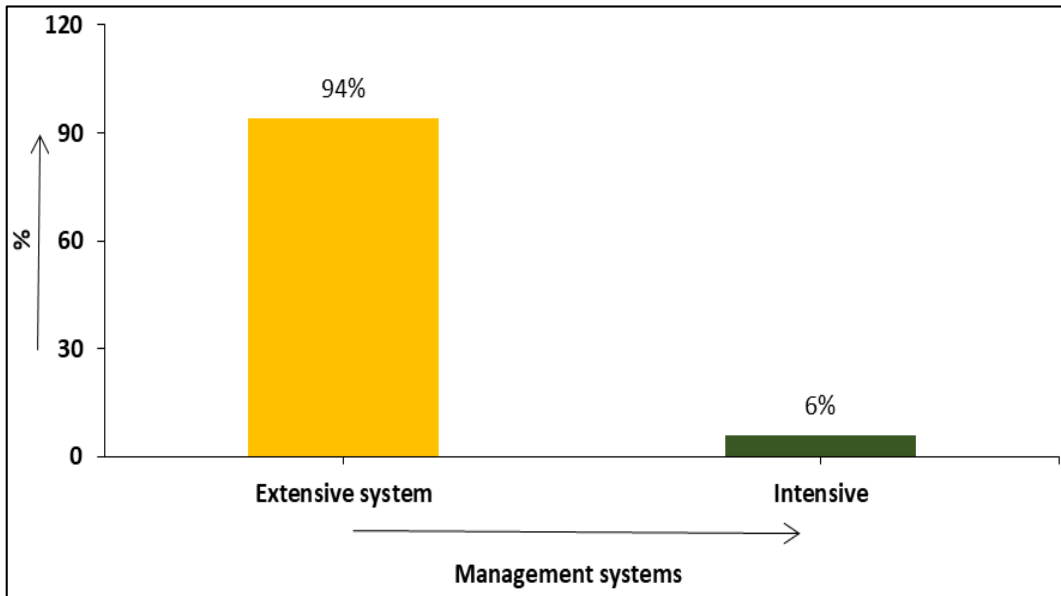


Fig 2: Management systems of duck in the rural areas of Assam

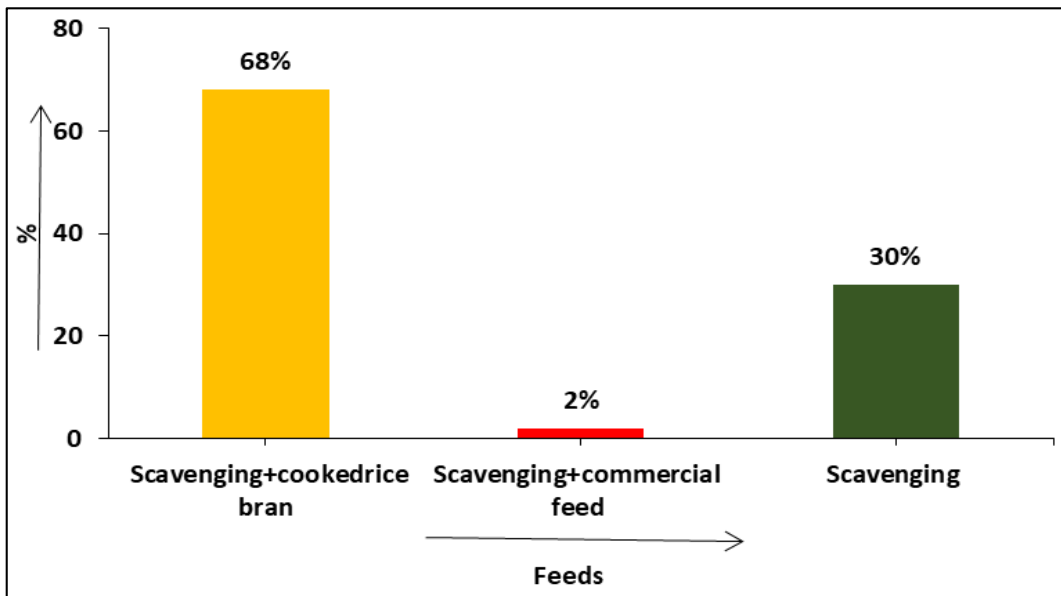


Fig 3: Feeding of duck in the rural areas of Assam

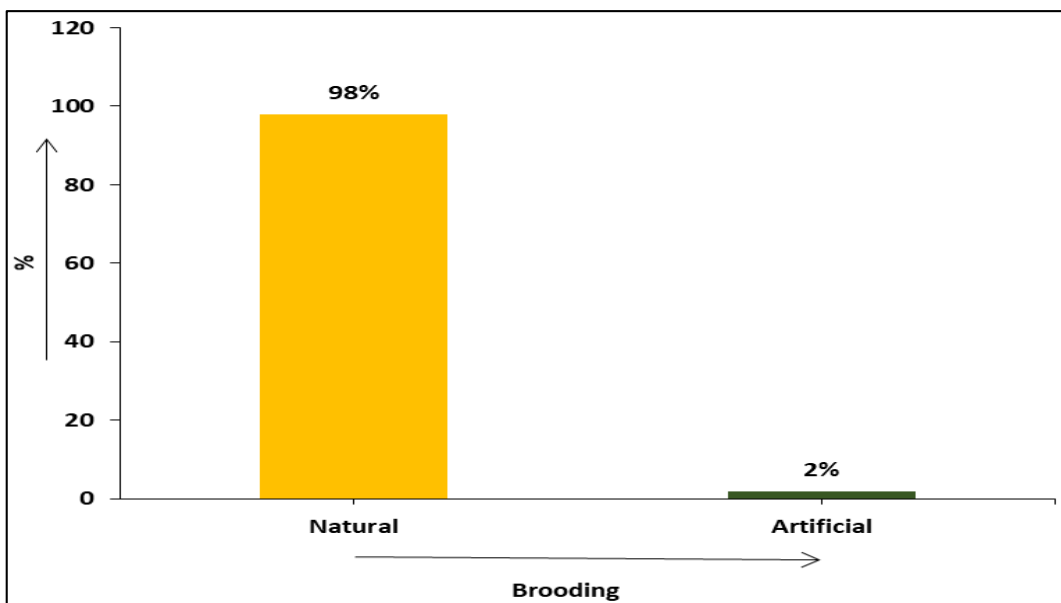


Fig 4: Brooding of duck under rural condition of Assam

Conclusion

The present investigation provided the message that ducks were mostly reared by extensive or free range scavenging system in Assam with simple night shelter and supplemented with cooked rice and rice bran. The few diseases are prevalent and duck plague was the most common disease. Inadequate vaccination and improper shelter led to mortality due to the predisposing factor as cold shock. Most of the farmers followed natural brooding. The present investigation showed that scientific intensive system was not popular among the duck farmers, which would be needed for commercial duck farming. But point to be noted here that with the present free range system, there was a small number of diseases and mortality. It can be concluded that with the need based technical input into the present duck farming system this sector of poultry can contribute a lot as a source of human protein food. The farmer must be trained up for duck farming to equip them with relevant skills to merge scientific methods for improving their productivity (Jha and Chakrabarti, 2017) [4].

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