



Seasonal effect on hatchability of pati duck eggs

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Abstract

The study was conducted in the Govt Duck and Poultry farm, Joysagar, Sivasagar district of Assam with the objective to know the hatchability percentage of Pati duck. The nos. of eggs set in the incubator and the no. of eggs hatched was used to determine the hatchability percentage. Artificial incubation was used for hatching the eggs. Eggs were collected from progressive farmers near Sibsagar district of Assam who reared the pati duck in backyard system. Eggs were collected in different seasons i.e. spring (February to April), summer (June to August), autumn (September to November) and winter (December to February). The study revealed that hatching percentage was highest in spring season and lowest in summer season. Therefore, it can be summarized that there may be seasonal effect on hatchability of Pati Duck eggs.

Keywords: egg, hatchability, pati duck, season

Introduction

Duck farming takes a significant role next to chicken and an important occupation for strengthening livelihood security in the farming community of Assam. In North-east India, Assam is the home tract for indigenous breed of Pati Duck which was recognized by National Bureau of Animal Genetic Resources in 2017. Considering the hardiness, active foraging ability, adaptability of the ducks to grow in free range system and the low cost input in rearing system, duck farming proved as an alternative source for poverty alleviation for many poor rural farmers of Assam. Pati duck is extensively reared by the rural woman of Assam in backyard system and proved as a major source of livelihood as well as machinery for women empowerment and an effective tool for socio-economic upliftment of rural people. It is one of the most important domesticated species of poultry next to chicken primarily reared for table egg production in India.

Duck eggs contains more magnesium, calcium, iron, vitamin B12, vitamin A, thiamine and a great source of omega 3 fatty acids, which are vital for the nutritional point of view. Hatchability is an important economic trait of domestic poultry and represents a major component of reproductive fitness (Hassan and Nordskog, 1971) ^[4].

Hodgetts, 1991 ^[5] reported that the main factors that influence duck hatchability in artificial incubation are variation in size, age and degree of contamination of eggs. Optimal incubation conditions may be defined as those leading to maximum hatchability of healthy hatchlings (Ar, 1995) ^[1]. Factors attributed to the breeding birds, such as genetic selection, management and

feeding, handling and storage of eggs and conditions inside the incubator can influence the hatchability of duck eggs. Archer *et al.* (2017) ^[2] and Ramli *et al.* (2017) ^[8] stated that the temperature, relative humidity, ventilation and turning of the eggs throughout incubation and hatching were environmental factors that can modify hatchability.

Material and Methods

The study was conducted in the Govt Duck & Poultry Farm, Joysagar, Sivasagar district of Assam where artificial incubator is accessible. For the study eggs were collected in four batches in different seasons viz. spring (February to April), summer (June to August), autumn (September to November) and winter (December to February) periods and hatchability percentage were calculated in each batch. Eggs were collected from the farmer's house where they reared ducks in the backyard systems and stored at room temperature. Eggs were stored in a cold-humid area.

The eggs were cleaned with potassium chloride and disinfected materials for set up in the artificial incubator available at the government farm with the temperature set at 37.5°C and relative humidity at 58%. Graded eggs were incubated in the automated incubator in the hatchery of the farm where automatically turned occurred hourly.

Eggs were sprayed with lukewarm distilled water three times a week (starting from the beginning of incubation) and cooled at room temperature for 30 min. Candling was performed twice on 7th and 14th days of incubation to cull the infertile eggs. Incubator

temperature was maintained between 99^oF and 100^oF and eggs were initially set in the incubator with the large end up for proper hatching. As soon as the chicks were dry and fluffy they were removed from the incubator.

Fumigation of the incubator was done in every successful operation. Hatchability was calculated on the basis of the no. of eggs set into the incubator and the number of ducklings hatched.

Results and Discussion

Seasonal variation is one of the principal non-genetic factors influencing performance of poultry in tropical environment. Different hatching percentage of Pati duck in different seasons *i.e.* spring, summer, autumn and winter in five batches were shown in Fig.1. The Hatchability percentage is highest in spring season (54.01%) followed by autumn (53.9), winter (51.21%) and summer (48.48%).

Similar results were observed by Farooq *et al.* 2003, where the observed hatchability of chicken egg was higher in Spring (78.0±1.03%) than in Summer (46.5±3.01%). Sastry *et al.* 1996 reported that temperature was the most important factor for incubation and temperature affected both quantity and quality of hatch and also reported that high humidity during incubation prevents sufficient evaporation from the eggs, as a result reduced hatchability.

Das *et al.* 1999^[3] found that the fertility and hatchability rate in summer season are low than winter.

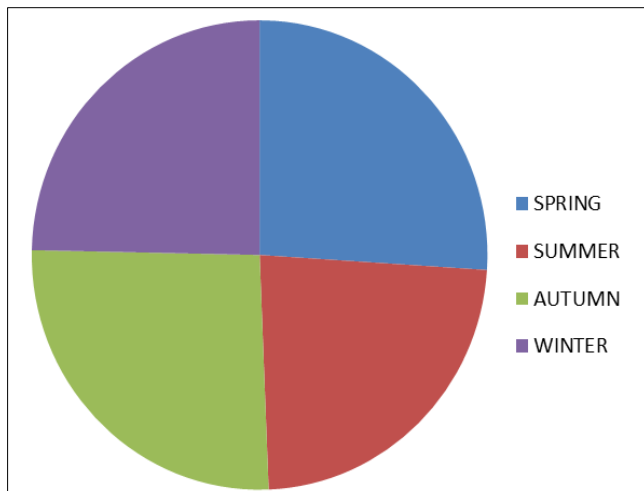


Fig 1: Hatching percentage of Pati Duck

In the present study spring was the best season of hatchability of Pati duck eggs; it may be due to pleasant ambient temperature with low humidity.

Low hatchability is one of the retarding factors in duck raising practices.

Hatchability percentage was lower in summer due to the high ambient temperature. The main one may be that duck eggs contain a high percentage of fat (Leung, Recot and Watt, 1952)^[6], which deteriorates rapidly during the holding period and resulting lowest hatchability having these fat deposits (Pritsker, 1941)^[7].

This suggests the preservation of eggs in cool places during the holding period to prevent spoilage. On the other hand, normal duck eggs have relatively porous shells, resulting in great losses

of moisture, either during the holding period or during incubation.

For this reason, duck eggs require a humid environment and somewhat low temperature during holding and incubation periods (Romanoff, 1943)^[9].

Widiyaningrum *et al.*, 2016^[11] compare the egg production and hatchability of local ducks under different management systems, namely semi-intensive and extensive and found egg production in the semi-intensive was 12.3% higher than the extensive and it does not affect the average of egg weight, fertility and hatchability.

Conclusion

These results may provide constructive information for the progressive farmer and youth of Assam who start up the duck husbandry at large scale for self-employment in scientific management system.

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