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Study on adaptability, productive performance, economy and impact of Chara Chambelli duck in backyard system of rearing at Udalguri district of Assam

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Abstract
The present study was conducted on 600 Chara Chambelli duck reared in backyard system at Udalguri district of Assam under Tribal Sub Plan project. The overall body weight of female and male ducks at 5th month of age was recorded as 1364.23 ± 14.86 and 1477.22 ± 18.34 grams, respectively. Average age of duck at first egg laying was 154.57± 9.67 days. Annual egg production and egg weight was recorded as 169.33± 6.43numbers and 64.36 ± 2.25 grams, respectively. The benefit cost ratio of rearing drakes and duck was recorded as 2.27 and 1.82, respectively. Chara Chambelli duck can be reared more economically under backyard system of rearing, with low input traditional system than the local duck of Assam.

Keywords: Chara Chambelli duck, backyard system, body weight, carcass characters, egg quality trait, adaptability, B:C ratio

Introduction
Rural and tribal areas have received little attention in poultry and duck sector. As a result gap in the availability of nutritious egg and poultry meat between urbanites and malnourished tribal people. To overcome the problem the solution is backyard poultry and duck farming with improved variety in rural and tribal areas. In spite of low productivity of local poultry, the contribution of backyard poultry towards egg production is about 30 to 40 per cent [2].
The backyard farming will certainly improve the economic status of a large majority of tribal rural families from lower socioeconomic strata in the rural and tribal areas as it is a low input or no input venture [6, 4]. Backyard duck farming with improved variety will provide subsidiary income from meat and eggs at an earlier age as it requiring minimal external inputs, minimal human attention, and income generating activity especially for the rural women. The demand of duck egg and meat is very high as it has no ethical issues. Introduction of improved breeds, strains, varieties shows an increasing trend in the production. Chara Chambelli is one of the improved varieties with high egg productive performance suitable for backyard or range farming system. Keeping these, in view, Chara Chambelli ducks were introduced in few tribal villages of the district to study their adaptability in this locality, productive performance and economic viability under traditional backyard rearing system.

Materials and Methods
The present study was conducted at Udalguri district under Krishi Vigyan Kendra, Udalguri from 2016 to 2019 under Tribal Sub Plan project. Six hundred (600) day old Chara Chambelli ducklings were provided to forty women of two villages of Udalguri district. The selected farm women were trained on "Improved duck rearing scientifically in backyard system" before providing the ducklings. The day old ducklings were reared under brooder during first thirty days and did not allow going in free range. After that they were reared in backyard system as traditional system of duck rearing.

Health care: Standard vaccination, deworming and supplementation was done according to the following schedule (Table1)

Table 1: Vaccination, deworming and supplementation Schedule adopted for Chara Chambelli duck at Udalguri district of Assam

Age	Supplementation/ Deworming	Vaccination	Booster	Interval
Upto 3 days	Electrolyte	-	-	-
4-7 days	Vitamins	-	-	For 3 days after every 15 days
8-10 days	Antibiotics as preventive measure	-	-	For 3 days after every 20 days
28-30 days	Liver tonic	-	-	For 3 days after every 20 days
32-35 days	Anticoccidiosis as preventive measure	-	-	Repeat every month
40 - 44days	Vitamin	Duck plaque vaccine	Every 6 month	-

Feeding system: The ducks were allowed to scavenge whole day in nearby pond and areas of farmer's house where they eat natural vegetation, insects, earthworm, fallen grains, kitchen waste and other edible items. Besides that adult ducks were provided about 100 g concentrate feed daily.

Performance parameter: Live body weights of duck were recorded at 0 day, 30 day, 45 day, 60 day and 150 days of age and average body weight was calculated. Age of duck at first egg laying, number of egg production, egg weight and mortality was recorded. A total of 100 eggs were collected when birds are 40 weeks of age to assess egg quality traits. The cost of expenditure was recorded as per existing market price for different inputs to assess the cost benefit of rearing Chara Chambelli duck. Means of various traits were calculated using standard statistical methods [7].

Impact: Feedback from farmers who reared Chara Chambelli duck and neighbours was taken to find out the impact of the study.

Results and Discussion

The mean for various traits of Chara Chambelli duck reared in backyard system at Udalguri district of Assam has been presented in Table 2.

Body weight: The mean body weight of Chara Chambelli duck (Combined sex) at 0, 30, 45, 60 and 150 days of age was recorded as 39.26 ± 0.82, 314.52 ± 6.27, 724.23 ± 16.44, 1096.36 ±18.23 and 1386.82 ± 12.62 grams, respectively. While body weight of drake and duck at 150 days of age was 1477.22 ± 18.34 and 1364.23 ± 14.86 grams, respectively. The present findings were in agreement with the findings of [5], while [1] recorded lower body weight in case of Khaki Campbell and local duck of Assam. The dressing percentage of duck (combined sex) was recorded as 58.67 ± 1.34.

Table 2: Mean ± S.E. for various traits of Kamrupa and local birds reared in backyard system at Udalguri district of Assam

Parameters of study	Chara Chambelli duck
Mean Body weight (g) (Combined sex) at	
0 day	39.26 ± 0.82
30 day	314.52 ± 6.27
45 day	724.23 ± 16.44
60 day	1096.36 ± 18.23
150 day (Combined sex)	1386.82 ± 12.62
150 day (Drake)	1477.22 ± 18.34
150 day (duck)	1364.23 ± 14.86
Age at first egg laying (days)	154.57± 9.67
Egg production (number / duck / year)	169.33± 6.43
Average Egg weight (g)	64.36 ± 2.25
Egg quality traits	
Shape index	72.98 ± 1.92
Albumin index	0.532 ± 0.22
Yolk index	0.385 ± 0.02
Shell thickness	0.423 ± 0.01
Egg colour	White
Mortality (%)	
0-15 days	4.11
16-60 days	1.24
61-150 days	2.91
Dressing percentage (Combined sex)	58.67 ± 1.34
Earning	
From drake at 3 months (Rs.)	280/
From duck per year (Rs.)	533/
B:C ratio	
Drake at 3 month	2.27

Egg production and egg weight: Average age at first egg laying of Chara Chambelli duck 154.57 ± 9.67 days. Mean annual egg production was recorded as 169.33 ± 6.43 numbers while average egg weight was recorded as 64.36 ± 2.25 grams. The present findings in terms of egg weight was in agreement and in terms of egg production was disagreement with the findings of [5] while [1] found lower egg weight and egg production in local ducks of Assam.

Egg quality traits: Egg shape index, yolk index, albumin index and shell thickness of Chara Chambelli duck were recorded as 72.98 ± 1.92, 0.385 ± 0.02, 0.532 ± 0.22 and 0.423 ± 0.01, respectively. Present findings were comparable with the report of [5] in Chara Chambelli and [3] in Nageswari duck eggs.

Adaptability: Mortality of Chara Chambelli duck from 0-15 days, 16-60 days and 61-150 days of age in the present study was recorded as 4.11, 1.24 and 2.91 per cent, respectively, which indicates adaptability of duck in the climatic condition of Udalguri district of Assam.

Economics: The benefit cost ratio of Chara Chambelli drake and duck was recorded as 2.27 and 1.82, respectively, which indicates that the rearing of Chara Chambelli duck is economic and more beneficial for both meat and egg purposes than local ducks of Assam as reported by [1].

Impact of rearing Chara Chambelli duck: The farmers were very satisfied with the performance of Chara Chambelli duck as it can be reared in traditional system without more extra effort. The fast growth rate, egg size and egg production highly satisfied farmers. Currently, eggs are hatched and new ducklings are producing by the farmers and the hatchable eggs are being sold to the neighbouring villagers as well as distant villages making possible the horizontal spread of the technology.

Conclusion

It is perceptible from the present study that the Chara Chambelli duck adapted well in agro-climatic condition of Udalguri district of Assam. The productivity in terms of fast growth and higher egg production was found higher than the existing local ducks of Assam. Thus, it can be concluded that Chara Chambelli duck can be reared economically under backyard system of rearing, with low input traditional system.

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