Volume : 3 | Issue : 9 | September 2014 • ISSN No 2277 - 8179

Research Paper

Effects of Feeding Different Levels of Proteins on the Mortality in Khaki Campbell Ducks During Starter Stage

Engineering

KEYWORDS : Feeding, protein, mortality, Khaki Campbell, starter

*** S. K. Joshi**	Department of Livestock Production and Management, C.V.Sc. & A.H, O.U.A.T, Bhubaneswar - 751003. * Corresponding author
S. K. Sahoo	Regional Centre, Central Avian Research Institute – Bhubaneswar
L. K. Babu	Department of Livestock Production and Management, C.V.Sc. & A.H, O.U.A.T, Bhubaneswar - 751003.

ABSTRACT

The present study was conducted on the 225 unsexed day-old Khaki Campbell ducklings in the Regional Centre, CARI, Bhubaneswar during the period between March to June, 2013. The ducklings were randomly distributed into three treatment groups viz. T1, T2 and T3 supplemented with 18, 20 and 22 per cent crude protein and three replicates in each group to study the effect of feeding different levels of proteins on the performance of the ducks during starter stage. It was found that the mortality ranged from 2.67 to 4.00% during first four weeks of age (0-4 weeks) and 2.67 to 6.67% during next four weeks of age (4-8 weeks). The overall mortality (0-8 weeks) during the experimental period was low in T1 with 18% protein diet (5.33%) compared to T2 with 20% protein diet (9.33%) and T3 with 22% protein diet (9.33%). It can be concluded that with increase in the supplementation of protein in the Khaki Campbell ducks during the starter period significantly impact the health and productive traits of the birds by significantly increasing their mortality and thereby decrease the overall economic status of the farm.

INTRODUCTION

Population growth and scarcity of food have emerged as a great problem in a developing country like India. There continues to be increased demand for animal protein to meet the nutritional requirements of growing population of humans. Livestock industry has successfully contributed to the overall economic growth of the country by providing opportunities to the millions of our fellow countrymen to survive their livelihood. Protein from poultry meat and eggs is an indispensable component of meeting this growing need to satisfy human nutritional requirements for high quality protein. According to Indian Council of Medical Research a meat eating adult human being requires about 10.6kg meat per annum from all sources as against the actual availability of 1.6kg. Likewise, the present availability of eggs per head per annum in the country is only 46 against 180 as recommended by the Nutritional Advisory Committee of the Government of India. To minimize the big gap between the demand and the supply the only answer in our hand is to introduce high yielding strains of duck and chicken.

Ducks are the second largest source of table eggs and there are about 27643 thousand ducks in India (BAHS, 2007). Around 16044 lakhs (BAHS, 2010-2011) eggs are produced each year. Ducks constitute about 4.2% (BAHS, 2007) of the total poultry population and contribute about 2-3% (BAHS, 2010-2011) of total eggs production in the country. Duck eggs have a preference over chicken eggs in certain States and areas due to its economic and nutritional importance. Duck rearing is prevalent among weaker sections of rural population which provides them supplementary and steady income on daily basis. Compared to chicken ducks need less elaborate houses. They are hardy, more easily brooded and more resistant to common avian diseases. They flourish well in marshy river side, wetland and barren moons where other birds do not thrive. Ducks require lesser attention and supplement their feed by foraging, eating fallen grains in harvested paddy fields, insects, snails, earth worms small fishes and other aquatic materials in lakes and ponds, hence incurring less feeding cost. They require shorter brooding period and less rearing place. Besides ducks have a longer profitable life and lay well even in second year. Considering importance and scope of duck rearing in our rural economy, more research is required in duck nutrition. Ducks are mostly concentrated in the Eastern and Southern States of the country, mostly in the coastal regions. West Bengal has the highest duck population followed by Assam, Kerala, Tripura, and Bihar. Orissa is well known for its hot humid climate and poor economic condition of farmers having more than 60 inches annual rainfall and more riverbeds, which is suitable for duck rearing. But the drawback with the indigenous variety of ducks is that they produce only about 130-140 eggs/bird/year, making their rearing less economical.

The introduction of improved duck varieties like Khaki Campbell and Indian Runner breeds with production up to 300 eggs/bird/year has gone a long way in overcoming the production drawbacks associated with indigenous duck breeds, but at the same time it has necessitated extensive study and research on balanced feeding ration for the improved duck varieties to cater to their increased production potential. In the management of poultry, feed alone accounts for about 65 to 75 per cent of the total cost of production (Dutt, 1983). Maximum productive and reproductive efficiency can be obtained by feeding balanced ration according to their requirements, which varies with age and level of production of the ducks. Successful duck production depends upon efficient brooding and rearing of ducklings. An economic balanced duck ration is indirectly a matter of correcting deficiency and directly a matter of economic production. The nutritive value of protein of various feed ingredients directly depends upon the availability of critical amino acids. Therefore, a correct level of protein of high biological value in a ration is of prime importance for optimum economic performance. Further Jull (1977) opined that birds on high per cent of protein diet attained maximum weight considerably earlier than those on a low per cent protein diet. Baeza *et al.* (2007) told that diets containing different CP during the starting period affected FCR during the growing and finishing periods accordingly. From the available literature, it is observed that very limited works have so far been done to access the nutrient requirement especially the level of protein requirement of Khaki Campbell ducks for different purposes. Therefore, an attempt has been made in the present study to find out the effect of different levels of protein with isocaloric starter ration (0-8 weeks) on mortality of duck rearing up to 8 weeks of age under hot and humid conditions of Orissa.

MATERIALS AND METHODS

i. Location of the experiment

The research work entitled "Effect of feeding different levels of protein during brooding period on the performance of Khaki Campbell ducks" was carried out in the Department of Livestock Production and Management, College of Veterinary Science and

Volume : 3 | Issue : 9 | September 2014 • ISSN No 2277 - 8179

Animal Husbandry, Bhubaneswar during the year 2013. The biological trial was conducted at the Regional Centre, Central Avian Research Institute (CARI), Bhubaneswar.

ii. Materials and facilities used in the experiment

A total of 225 unsexed day-old ducklings (Khaki Campbell) were procured from the hatchery of Regional Centre, CARI, Bhubaneswar. The ducklings were randomly distributed into three treatment groups with three replicates in each group. There were 9 pens, each having floor areas of 55.485 sqft. (12'4" ′ 4'6") with 25 ducklings in each pen. The individual body weight of ducklings was recorded. Rice husk was used as litter. The starter ration prepared in the Regional Centre, CARI, was fed to the ducklings during the experimental period.

iii. Experimental Programme

The experiment was carried out for a period of 8 weeks to study the effect of feeding different levels of protein during brooding (0-8 weeks) period on growth, feed efficiency, biochemical parameters, mortality and metabolisibility of nutrients.

Two hundred twenty five day old Khaki Campbell ducklings of either sex were divided into three treatment groups with three replicates in each group. There were 25 ducklings in each replicate pen. During brooding period (0-8 weeks of age), the ducklings in the three treatment groups were provided with an isocaloric diet having 18, 20 and 22 percent crude protein (Table 1) with *ad lib* provision of feed and water.

Table 1. Design of the experiment during brooding period (0-8 weeks)

Treatment number	Protein per cent of the ration	No. of ducklings
1	18	25
2	20	25
3	22	25

The birds were given wet mash from day old onwards to 8 weeks of age (Table 2). The feed and drinking water were supplied *ad lib* and necessary health care measures were adopted. Weekly body weight, daily feed consumption and daily mortality were recorded.

iv. General management

Before the onset of experiment the house was cleaned, disinfected and dried thoroughly. Blowlamp was used to kill the leftover organisms at the corners of the house. The walls were white washed with lime. Malathion was sprayed at a concentration of 0.5% in and around the experimental sites. Fresh rice husk was used as litter material. Each pen was provided with a cleaned and disinfected floor brooder, the temperature being provided by fitting incandescent electric bulbs. Cleaned and disinfected feeder and water fountains were provided in the pen as per the requirements of the birds. Water was provided twice daily in clean water fountains up to 4 weeks of age and then replaced by channel type of waterer constructed inside the pen.

The ducklings picked up at random were wing banded and distributed in each pen after recording the individual day-old body weight. To facilitate *ad lib* intake, fresh feed and water was provided daily in the morning and afternoon. The left over feed was collected, weighed and dried to know the daily feed intake. The old litter materials were replaced by new litter in each pen at weekly intervals. Routine managemental practices were adopted for all treatment groups as per standard practices of the farm.

Table 2. Composition of duck starter ration (0-8 weeks)

Sl. No.	Ingredients	Parts per quintal		
		T_1 (18%)	T_2 (20%)	T_3 (22%)
1.	Wheat	60	60	60
2.	Soybeans	18	22	26
3.	De-oiled rice bran (DORB)	16	10	4
4.	Fish meal	3	5	7
5.	Mineral mixture (ISI)	2	2	2
6.	Oyster shell	0.5	0.5	0.5
7.	Dicalcium phosphate	0.5	0.5	0.5
8.	Total	100	100	100
9.	DL-Methionine	0.08	0.04	
10.	Lysine	0.36	0.18	
11.	Vit A, D, E, K	0.015	0.015	0.015
12.	B Complex	0.015	0.015	0.015
13.	Toxin binder	0.1	0.1	0.1
14.	Choline Chloride	0.1	0.1	0.1
15.	Trace Mineral	0.1	0.1	0.1
16.	Biovet YC	0.05	0.05	0.05
17.	Salt	0.18	0.18	0.18
	CP (estimated)%	18.38	20.3	22.22
Calculated Values				
	ME (Calculated) kcal/ kg	2610	2638	2666
	Lysine (Calculated)	1.312	1.312	1.312
	Methionine (Calculated)	0.4042	0.403	0.4018
	Cost of feed /kg (Rs)	26.05	27.15	28.25
	Cost of feed /kg on DM basis(Rs)	28.15	29.34	30.52

v. Methods of analysis

Mortality

The daily mortality of ducklings was taken into account and the percentage mortality for each pen was ascertained for all treatments at the end of the experiment.

The data were subjected to standard statistical analysis as per Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

Mortality

It was found that the mortality ranged from 2.67 to 4.00% during first four weeks of age (0-4 weeks) and 2.67 to 6.67% during next four weeks of age (4-8 weeks) (Table 3). The overall mortality (0-8 weeks) during the experimental period was low in T_1 with 18% protein diet (5.33%) compared to T_2 with 20% protein diet (9.33%) and T_3 with 22% protein diet (9.33%) (Table 3). The variation in mortality among different treatments might be due to seasonal influence of summer season The mortality observed in the present study agreed with the report of Panda and Mohapatra (1989) who observed the mortality of layer ducks during brooding (0-11 weeks) to be 10 per cent.

CONCLUSION

It can be concluded that with increase in the supplementation of protein in the Khaki Campbell ducks during the starter period significantly impact the health and productive traits of the birds by significantly increasing their mortality and thereby decrease the overall economic status of the farm.

ACKNOWLEDGEMENT

The authors are very much thankful to the Dean, C.V.Sc. and A.H, Bhubaneswar and the Director of CARI, Bhubaneswar for providing required facilities for the successful completion of this research work in time.

Table 3. Effect of different treatments on mortality (%) of ducks

Age group	T1 (18%)	T2 (20%)	T3 (22%)
0-4weeks	2.67(2/75)	4.00(3/75)	2.67(2/75)
4-8weeks	2.67(2/75)	5.33(4/75)	6.67(5/75)
0-8weeks	5.33(4/75)	9.33(7/75)	9.33(7/75)

The figure in parenthesis represents number dead/total

REFERENCE

B.A.H.S. dahd.nic.in 17th & 18th Livestock Census, Department of Animal Husbandry, Dairying & Fisheries, M/O Agriculture. | Baeza, E., Bernadet, M.D., Guy, G., Lessire, M. and Carre, B. 2007. Determination of protein requirement of the mule duck during the starter period: effect on growth and nitrogen excretion. Actes-des-7emes-Journees-de-la-Recherche-Avicole,-Tours,-France. pp. 164-168. | Dutt, K.K. 1983. Studies on certain economic characters of Miri birds, White Leghorn and their crossbred progeny under different systems of management. A thesis submitted to Assam Agricultural University in fulfillment of requirements for the degree of Doctor of Philosophy in Poultry Production and Management. | Jull, M.A. 1977. Poultry husbandry. Third Edition. Tata Mc Graw-Hill Publishing Co. Ltd. New Delhi. | Panda,B. and Mohapatra, S.C. 1989. Poultry Production. Publication Information Division. ICAR. Krishi Anusandhan Bhavan, New Delhi. 1st Edition.pp. 152 | Snedecor, G.W. and Cochran, W.G. (1994). Statistical methods, 8th Edition. Iowa State University Press, Ames, Lowa. |