

**A PRELIMINARY INVESTIGATION ON THE  
EFFECT OF SEASON ON SOME PERFORMANCE  
CHARACTERISTICS OF BLACK HACO LAYERS IN DELTA STATE,  
NIGERIA**

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**ABSTRACT**

With a sample of 70 laying, 26 weeks old hens, a preliminary study of the effect of season on some performance characteristics of the Black Haco was carried out at Abraka, Delta State. Percent hen-housed egg production, mean daily and weekly egg production were significantly ( $P < 0.05$ ) higher in the wet season than in the dry season. On the average this breed of layer was observed to lay heavier eggs in the wet season and in this same season had higher hen-housed egg mass values. There was no significant difference ( $P > 0.05$ ) between the seasons with respect to the incidence of egg cracks, weekly changes in egg number and egg weight. These findings suggest the need for more adequate management measures in the dry season for the Black Haco layer to enhance its performance in the Delta State of Nigeria.

**INTRODUCTION**

A high level of performance, no doubt, is the aim of any enterprise involved in the production of eggs. Apart from the genetic qualities of a layer, various environmental factors

are known to affect its level of productivity (Oluyemi and Roberts, 1979). Amongst these factors in the tropics are temperature and humidity and to a very little extent, day length, which varies depending on the season of

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the year (Dafwang, 1987; Smith, 1990). The Nigerian climatic environment is characterized by high temperature (32°C and above) and humidity and these factors have been reported to reduce the total number of eggs laid (Daniel *et. al.*, 1981; Ogunshina, 1983) as well as egg weight and shell strength (Loh and Reece, 1981).

In terms of profit, commercial egg producers tend to emphasize more on egg number, egg weight and egg cracks (Oluyemi and Roberts, 1979; Omeje *et. al.*, 1987; Oguntona, 1988; Asuquo, *et. al.*, 1992) amongst others.

Although much has been done on egg production of exotic breeds, Akinokun (1975) however observed that few of them deal with their performance in tropical and subtropical environments. The following report is therefore a preliminary comparison of the effect of season on some performance characteristics of the Black Haco in a Nigerian environment.

## MATERIALS AND METHODS

The study location in Delta State of Nigeria (latitude 5.10N and longitude 5.20E) is at an altitude of 45m above sea level, with distinct rainy (April - October) and dry (November - March) climatic seasons. It has an annual rainfall of 3000mm while the mean temperature is 27°C.

Thirty-five Black Haco layers were selected from the commercial flock of Patrick Poultry Farm, Umutu, in each of the seasons (dry and rainy), when they were 26 weeks old. Egg collection during the rainy season lasted from 1st May through July 23rd while that of the dry season was from November 1st to 23rd January. The birds were raised intensively in open sided deep litter houses in the two seasons and fed *ad libitum* on commercial layer ration (18% CP and 270K<sub>cal</sub> ME/kg). The house was adequately sanitized between the seasons and litter changed regularly. The eggs were collected at 0700hrs and 1800hrs each day and then converted to hen-housed percentages. Cracks, if any, were noted and then the eggs were then weighed individually and recorded. Data gathered were then subjected to statistical analysis using the student t-test as described by Zar (1984).

## RESULTS AND DISCUSSION

A summary of the means of the different performance characteristics of the Black Haco layer evaluated are presented in Table 1. Percentage hen-housed production, daily egg production, weekly egg production, egg weight and hen-housed egg mass were significantly different ( $P < 0.05$ ) between seasons. Generally, the average performance of the Black Haco layer was better in the wet season for all the parameters compared with the dry season with the exception of weekly

change in egg weight.

Percentage hen-housed production was observed to be on the low side, it however was better in the wet season by 0.29 while daily and weekly egg production were better by 0.11 and 1.16 respectively also in the wet period. A significant difference in the egg weight between the seasons may be suggestive of the fact that the birds were more efficient in converting feed consumed to animal protein in the wet season. This point is supported by an also better average hen-housed egg mass in wet season compared to the dry season.

There was no significant effect between the seasons with regards to egg cracks and progressive weekly differences in egg weight and number, with this breed. The average number of egg cracks, apart from being low, was slightly lower in the wet season (0.58) than in the dry season (0.83). This is in agreement with the earlier reports by Oluyemi and Roberts, (1979), Oguntona, (1988) and Smith, (1990) that the incidence of shell cracks is a major problem at temperature above 26°C especially during the hot season of the year. The low values for egg cracks could probably have been due to high calcium levels in the diet fed or the presence of enough body calcium reserves that was capable of supporting optimum shell thickness throughout the 12 weeks of study. Moreover, the non-significance in the occurrence of egg cracks between the seasons is an

advantage in terms of transportation of these eggs over distances for sale.

Differences in egg number from week to week was significantly different between the seasons, revealing a virtually equal trend in the rate of increase in the number of eggs laid. This trend was also noticed in the differences in weekly egg weights between the two groups.

The results of this study shows the Black Haco's performance to be better in the wet than the dry season in terms of egg production and weight. The indication therefore is that there is the need for a combination of improved short and long term management practices for this breed of layer in the dry season to enhance its performance in Delta State of Nigeria. Oluyemi and Adebajo (1979) suggest, in the short term, the feeding at night to improve egg production and weight at this period. Long term measures suggested by Dafwang (1987) include proper housing designs and adequate planning of egg cycle. More elaborate investigation involving the suggested management measures above, using more than one exotic breed will be required to actually ascertain the economic advantage of establishing these exotic breeds in the Delta State of Nigeria.

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**Table 1: Effect of season on performance of Black Haco layers in a tropical environment.**

Parameter	Average Values		
	Dry season	Wet season	S.E.M.
Hen-housed production (%)	7.24	7.53	±0.02*
Mean daily egg production	2.53	2.64	±0.006*
Mean weekly egg production	30.42	31.58	±0.17*
Mean egg weight (g)	53.03	54.87	±0.24*
Hen-housed egg mass (kg)	3.84	4.14	±0.01*
Egg cracks	0.83	0.58	±0.30NS
Weekly difference in egg number	3.64	4.00	±0.061NS
Weekly difference in egg weight (g)	0.40	0.23	±0.20NS

- \*: Mean between groups are significantly ( $P < 0.05$ ) different.  
 NS: Not significant.  
 S.E.M.: Standard error of the mean.