

# SOME PRODUCTION PARAMETERS OF LOHMANN BROWN BROILER PARENT LINES IN THE HUMID TROPICS

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## ABSTRACT

Two hundred day-old chicks of Lohmann Brown Broiler male (MPL) and female (FPL) parent lines were evaluated for production efficiency under the humid tropical environment. Chicks were reared on deep litter and fed chick breeder mash (0-8 weeks), grower mash (9-16 weeks), and broiler breeder mash (17-49 weeks). Water was supplied *ad libitum*. At point of lay, birds were floor-mated according to line in a ratio of 1 cock: 6 hens. Average body weights at 20 weeks were 2623.99 and 2189.35g for MPL and FPL, respectively. Female parent line chicken came into lay 4 days earlier than their MPL counterparts (142 vs 146 days). No statistical difference was observed in the total feed consumption per bird, with the values 8.89kg (MPL) and 8.62kg (FPL). There were no significant ( $P > 0.05$ ) differences between the two lines in percent hen-day egg production (PHD), fertility and hatchability of fertile eggs, values of which were respectively, 49, 12, 79.32 and 81.01 for the male line and 62.11, 80.89 and 82.28 for the female line during the last 26-49 weeks of age

**Key Words:** Fertility, Feed consumption, Body weight, age, Lohmann Brown

## INTRODUCTION

Franchise hatcheries in the country generate parent lines from exotic grand-parent stock and, with line-crossing, produce commercial day-old chicks. Investigations indicate that exotic stock often perform sub-optimally as a result of differences in climatic and environmental conditions (North, 1984; Iau, 1985; Kekeocha, 1985). One major factor found to affect the reproductive performance of breeders, is body weight at onset and during laying (Singh and Nordskog, 1982) which invariably, depends on

feeding and strain of birds among other factors. Costa (1981) associated poor egg production, fertility, hatchability and low feed efficiency with obesity in breeders. Heavy birds have been found to consume more feed per egg than light ones (Harms *et al.*, 1982). According to McDaniel *et al.*, restricted feeding would improve egg production, fertility and hatchability. Wilson and Harms (1986) observed that post-hatch weight and subsequent performance of chicks depend on the quality of the parent stock.

This study was designed to determine the production potential of Lohmann Brown Broiler parent lines in a humid tropical environment.

## MATERIALS AND METHODS

One hundred day-old chicks each of male and female parent lines of Lohmann Brown Broiler Stock obtained from Agrofeeds Nig. Limited, Calabar, were used for the study. Chicks of mixed sexes were reared on deep litter pens that provided an average floor space of 0.28m<sup>2</sup> per bird. There were two replicates of 50 birds each per parent line. Commercial rations with the following calculated nutrient composition were used: chick breeder mash (20% C.P., 2600kcal/kg M.E.) grower mash (16% C.P. 2500kca/kg M.E.) and broiler breeder mash (16.5% C.P. 2800kcal/kg M.E.). The mashes were given for 0-8 weeks, 9-16 weeks and 17-49 weeks respectively. Water was provided *ad libitum*.

Chicks were vaccinated against Marek's disease at day old; Newcastle disease and Bronchitis at 2, 4 and 6 weeks, and against fowl pox at 12 weeks of age. Coccidiostats were administered through drinking water as prophylactic treatment against coccidiosis. Body weights were taken at day-old, 4,8,12, 16 and 20 weeks of age. The feed consumption (0-20

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weeks) and egg production (26-49 weeks) data were taken on daily basis and summarised on monthly periods. At sexual maturity (point of lay) birds were floor mated according to line in the ratio 1:6, cock: hen. Fertility and hatchability of fertile eggs were determined using settable eggs and laid during the second and fourth weeks of every month.

Statistical comparison of means between lines were made using student "t" test at the 5% level (Steel and Torrie, 1960).

### RESULTS AND DISCUSSION

No significant difference between the two lines was observed in body weight at 20 weeks (Table I). Mean body weight gains of 20.93 (MPL) and 17.34g/day (FPL) were observed in the lines during the starter phase (0-8 weeks) dropping to about 16.78 and 14.02g/day respectively during weeks 9-20. This observation agrees with reported trends in body weights of broilers (Nwosu, 1979) and is advantageous in meat-type chicken production as chicks reach market weight early. Reported body weight for heavy breeders at 20 weeks range between 2250 and 3000g (Oluyemi and Roberts, 1979).

Feed intake in the two lines (Table I) increased with age similar to the observations by Renden and McDaniel (1984). There was no significant ( $P > 0.05$ ) difference in feed consumption between the lines. Total feed consumption per bird averaged 8.89 and 8.62kg for MPL and FPL respectively as against an average of 9.40kg reported by the breeders of the stock over the same period. Oluyemi and Roberts (1979) reported cumulative feed intake range of 8-12kg for heavy breeds at the same age. Differences in feed intake by birds have been attributed to the energy content of the feed and environmental conditions among other factors (Wilson and Harms, 1986).

Feed efficiency in both lines (Table I) was observed to decline with increasing age and body weight. This is attributable to increases in maintenance requirement (Ubosi *et al.*, 1985) that usually rise with increased body weight. No significant difference in feed efficiency was

observed between the two lines.

Mean percent hen-day (PHD) egg production is presented in Table 2. FPL chicks came into lay 4 days earlier than the MPL chicks (142 vs 146 days). The highest average hen-day production in both lines was obtained during the 34-37 weeks period. Wilson and Harms (1986) reported highest egg production for broiler breeders, fed *ad libitum*, at 37 to 42 weeks of age. Mean egg production in MPL was 12.99% lower than for FPL (Table 2). Differences in egg number and production pattern have been attributed to differences in body weight and genetic composition of the stock (Renden and McDaniel, 1984). The low egg production by both lines in this experiment could be due to obesity arising from *ad libitum* feeding (Costa, 1981). McDaniel *et al.*, (1981) advocated restricted feeding of broiler breeders to enhance increased egg production.

Average fertility ranged from 60.42 to 86.38% in MPL and 62.17 to 87.28% in FPL with no statistical differences between months except for 26-29 weeks. Lower fertility values during the period (26-29) could be due to low level of sexual activities by the cocks arising from age (Oluyemi and Roberts, 1979). No significant line effect was observed in mean percent fertility values (Table 2) which were lower than the reported value of 82.62 for parent breeders in Nigeria (North, 1984). Hatchability of fertile eggs also did not differ significantly between the two lines (Table 2). The lower percent hatchability during 26-29 weeks, could be as a result of increased number of small eggs in the hatches (Asuquo and Okon, 1992 - In Press). Breeders of the Lohmann Brown Broiler Stock reported a mean percent hatchability of fertile eggs of 83 as against 81.01 for the male and 82.28 for the female lines obtained in this study.

Results from this indicate that Lohmann Brown Broiler\*parent lines performed well for all parameters under the humid tropics expect egg productions. The similarity in performance by the two lines could be due to their common genetic background. Commercial chicks

obtained from these lines could be expected to show a high level of body weight heterosis to the advantage of the producer. Further work is needed on feed restriction as a means of increasing egg production.

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Table 1. BODY WEIGHT, RATE OF GAIN (DWG), FEED CONSUMPTION AND FEED EFFICIENCY OF PARENT LINES.  
AGE OF BIRD (WEEK).

Parameter	MPL	day-old 42.67 ±1.22	S.E.	Age of Bird (Week)				
				4	8	12	16	20
Body Weight (g)	FPL	40.35	S.E.	477.23 ±1.51	1214.47 ±2.05	1789.59 ±2.01	2255.51 ±1.89	2623.99 ±3.07
Daily Weight gain	MPL	40.35	S.E.	407.71 ±1.77	1011.39 ±1.87	1471.15 ±2.18	1844.95 ±2.06	2189.35 ±2.75
DWG (g)	FPL	40.35	S.E.	15.52	26.33	20.54	16.64	13.16
Feed Consumption (g)	MPL	-	-	13.12	21.56	16.42	13.35	12.05
Feed Efficiency (gain/feed)	FPL	-	-	33.74	59.05	62.69	74.39	87.73
	MPL	-	-	29.15	56.67	63.27	72.68	86.07
	FPL	-	-	0.46	0.45	0.33	0.22	0.15
	MPL	-	-	0.45	0.38	0.26	0.18	0.14

Table 2. MEAN EGG PRODUCTION (PHD), FERTILITY AND HATCHABILITY OF FERTILE EGGS

Age (Weeks)	Egg Production PHD(%)		Fertility (%)		Hatchability (%)	
	MPL	FPL	MPL	FPL	MPL	FPL
26-29	29.71	36.35	60.42	62.17	71.35	72.28
30-33	60.24	70.62	78.36	82.54	80.33	81.25
34-37	62.55	74.48	86.38	87.28	83.44	83.51
38-41	53.75	67.51	84.05	86.48	86.91	87.79
42-45	45.83	66.46	85.05	84.39	84.65	84.59
46-49	42.65	57.25	81.65	82.50	79.37	84.27
Means	49.12	62.11	79.32	80.89	81.00	82.28
S.E. ±	2.02	2.17	3.15	2.87	2.75	3.09