THE PECKING, RESTING AND FEEDING BEHAVIOUR OF FOUR BROILER STRAINS IN A HUMID TROPICAL ENVIRONMENT

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ABSTRACT

An experiment to determine the pecking, resting and feeding behaviour of four strains of broilers (Anak, Hubbard, Lohman, and Hybro) was conducted with 120 day old chicks. The birds were housed 15 per replicate pen and there were two replicates pens for each of the four strains. The birds were fed with commercial broiler starter from 0-6 weeks and finisher from 7-8 weeks. The criteria of measurements used were the number of birds pecking or resting, feed and water intakes and the weight gain of the birds from week one to 8 of age. Hubbard broilers pecked most following feed presentation at 8.00a.m. with mean values of 10.29 ± 0.14 birds followed by Anak with 7.14 ± 0.34 , Hybro with 5.14 ± 0.14 and Lohman with 1.57 ± 0.53 . Also the hubbard strains consumed the largest quantity of feed and water and therefore gained most weight at eight weeks. The resting pattern of the birds was such that after two hours of introduction of feeds Hubbard had the largest number of bird resting followed by Anak, hybro and Lohman in that order.

Keywords: Pecking, resting, feeding behaviour, broiler strains.

INTRODUCTION

The need for clearer understanding of the behaviour and welfare of meat type chicken given the changing mode in their management and feeding as well as other systems of farming is long over due. This is because ethological data of most exotic meat-type breeds into the tropical environment are hardly available. Also the external behaviour of

animals often lead to deduction about the internal state. Observation of such behaviour will help the stockman to know if the abnormal behaviour stem from ill-health, change in environment or other stress factors (Kilgour, 1983). All these will help to have a proper understanding of the factors militating against increased performance of the animal (Maning, 1972; Fraser, 1974). The purpose of this study was, therefore, to monitor, collect, analyse and document data on the feeding, pecking and resting behaviour as well as their growth responses of four imported broiler strains under the humid tropical environment.

MATERIALS AND METHODS

The study was conducted at the Poultry unit of the Department of Animal Science of the Enugu State University of Science and Technology (ESUT), Abakaliki. A total of 120 day-old broiler chicks from the heavy lines of the Hubbard, Hybro, Anak, and Lohman strains were used for the study. These comprised 30 birds from each strain which were randomly selected and placed in eight pens (measuring 2.00m x 1.50m each) to constitute two replicate pens per strain. Thus, each replicate pen contained 15 birds of each genotype. Feed and water were provided *ad libitum* throughout the experimental period. The feed comprised a commercial broiler starter ration containing 23% crude protein and an ME (metabolizable energy) value of 3300 Kcal/kg, and a commercial finisher diet of 20% CP, and 3,000 Kcal/kg ME. The floor, feeder, and drinker spaces were 0.200m², 15.00cm and 6.00cm per bird respectively all of which were within standard recommendations (Austic and Nesheim, 1990). The daily feed consumption rates were estimated by subtracting the quantity of left over feed from

the measured amount earlier served to the chicks at the beginning of each day. Stress factors such as disease occurrence, harsh weather, poor ventilation and poor lighting, among others, were adequately monitored and taken care of in line with the guides established by Duncan (1981). This was to reduce or minimize errors in the experiment which lasted for eight weeks.

Pecking behaviour was monitored for 45min. at 8.00a.m. and 8.00p.m. by counting the number of times birds pecked and/or intimidated others at the introduction of feed and while feeding. The resting behaviour of the birds was similarly observed for 45min at three periods, namely, 12.00 noon, 2.00p.m and 12.00 midnight each day; during each period the number of birds resting were observed and recorded each time. Resting here is understood to mean the number of birds observed lying down, standing but immobile, squatting, sleeping, etc., provided such birds did not display any motion or movable activity.

All data collected were subjected to analyses of variance (ANOVA) in a randomized complete block design using the statistical method of Steel and Torrie (1980).

The following linear model was used to assess the effects of strain and age of birds on the traits monitored:

$$X_{ijk} = \mu + T_i + B_j + e_{ijk}, \text{ where}$$

X_{ijk} = an observation made on the k th bird belonging to the i^{th} strain during the j^{th} age period;

μ = The overall population mean common to all observations and treatments;

T_i = effect of the i^{th} strain ($i = 1, 2, 3, 4$);

B_j = effect of the j th week of age ($j = 1, 2, \dots, 8$);

e_{ijk} = random error associated with the experimental determinations.

RESULTS AND DISCUSSION

Table 1 shows the mean weekly liveweight while Table 2 represents the feed consumption patterns of the four strains of broilers. Tables 3 and 4 show the pecking and resting behaviours respectively of the broilers. The results show that from week 1-3, the Lohman (HB) strain consumed most feed and gained the highest body weight due to its initial large body weight. However, the strain has the smallest number of chicks with pecking and resting behaviour. From week 4 to 8, the Hubbard strain consumed the largest amount of feed,

TABLE 1: MEAN ($\pm$ S.E.) WEEKLY LIVE WEIGHT (g) OF FOUR BROILER STRAINS

AGE (WKS)	BREEDS			
	HUBBARD	HYBRO	ANAK	LOHMAN
1	86.84 $\pm$ 0.87 ^a	49.07 $\pm$ 1.98 ^c	62.47 $\pm$ 1.64 ^b	88.80 $\pm$ 08 ^a
2	173.90 $\pm$ 1.56 ^a	84.57 $\pm$ 2.58 ^b	165.57 $\pm$ 4.12 ^a	179.00 $\pm$ 4.28 ^a
3	284.10 $\pm$ 11.72 ^a	2416.67 $\pm$ 8.28 ^b	300.67 $\pm$ 19.95 ^a	332.00 $\pm$ 20.28 ^a
4	629.34 $\pm$ 22.10 ^b	821.67 $\pm$ 42.77 ^a	543.67.30.88 ^b	577.33 $\pm$ 22.94 ^b
5	902.00 $\pm$ 18.07 ^a	840.67 $\pm$ 27.89 ^b	761.34 $\pm$ 34.42 ^c	694.34 $\pm$ 27.56 ^c
6	1224.57 $\pm$ 43.43 ^c	1195.30 $\pm$ 36.90 ^b	1167.00 $\pm$ 39.87 ^b	1165.00 $\pm$ 38.94 ^b
7	1473.23 $\pm$ 43.52 ^a	1428.33 $\pm$ 47.31 ^b	1377.41 $\pm$ 59.14 ^c	1420.00 $\pm$ 35.5 ^b
8	1742.36 $\pm$ 56.49 ^a	1644.41 $\pm$ 58.23 ^c	1662.62 $\pm$ 84.17 ^b	1643.33 $\pm$ 56.82 ^a

Means within the same column with different superscripts are significantly different ($P < 0.05$)

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but at the same time made the largest body weight gain. It also has the largest number of birds that exhibited pecking and resting behaviour throughout the period. This was followed by the Anak, Hybro and Lohman strains in that order to 8 weeks of age. These results would imply that, strains with heavy body weight exhibit high incident of pecking and resting behaviour. This could be explained that heavier strains of broiler have more intimidating tendency which warrant them to have more access to feed, and after eating to satisfaction would proceed to rest, thereby, giving way and feed space to other strains who are less active. The results further reveal that the pecking behaviour is more pronounced during the day than in the night when the birds are less active (Table 3). In the night all the birds in the four strains exhibited more resting behaviour than during the day. This was in

spite of the fact that the pens were lit by 60W electric lamps during the night daily.

CONCLUSION

The four strains of broiler birds exhibited similar trends in most criteria of measurement including growth rate, feed consumption, pecking and resting characteristics. The Hubbard strain maintained superior body weight and consumed the largest amount of feed, and at the same time recorded the highest incidence of pecking mostly at the introduction of feeds. Since pecking and rank order display was observed to be common among heavy broilers especially when they were hungry, it becomes necessary that heavy ones should be fed promptly and adequately, and that they should be fed separately and not mixed with lighter birds if the incidence of pecking is to be avoided.

TABLE 2: WEEKLY FEED CONSUMPTION (g) OF THE EXPERIMENTAL BROILER STRAINS

AGE (WKS)	BREEDS			
	HUBBARD	HYBRO	ANAK	LOHMAN
1	8.10±1.77 ^a	7.84±1.18 ^c	7.44±1.61 ^b	10.84±1.74 ^a
2	25.09±2.87 ^a	25.92±2.34 ^{bc}	21.28±1.12 ^c	24.09±1.73 ^{ab}
3	38.99±2.09 ^a	37.75±2.42 ^b	37.96±2.43 ^b	39.21±2.02 ^c
4	54.89±1.75 ^{bc}	55.24±2.42 ^c	62.72±4.15 ^a	54.28±1.93 ^b
5	83.8±4.30 ^a	89.48±3.32 ^a	85.00±2.72 ^b	85.77±3.17 ^b
6	130.25±2.50 ^a	125.7a±1.80 ^b	121.52±3.21 ^c	125.29±3.21 ^b
7	172.36±1.32 ^a	160.48±1.57 ^a	169.08±2.16 ^{ab}	159.67±1.17 ^c
8	201.88±6.78 ^a	203.87±1.41 ^a	202.24±0.56 ^{ab}	194.24±0.06 ^c

Means within the same column with different superscripts are significantly different ($P < 0.05$)

TABLE 3: MEAN PECKING CHARACTERISTICS OF FOUR BROILER CHICKEN STRAINS

AGE (WKS)	BREEDS							
	HUBBARD		ANAK		HYBRO		LOHMAN	
TIME	8.00A.M.	8.00P.M.	8.00A.M.	8.00P.M.	8.00A.M.	8.00P.M.	8.00A.M.	8.00P.M.
1	9.72±0.29	9.14±0.34	6.86±0.35	7.00±0.40	4.72±0.38	4.86±0.34	3.50±0.45	3.57±0.33
2	9.22±0.41	9.15±0.27	6.57±0.50	6.50±0.44	4.36±0.36	4.76±0.42	3.65±0.35	3.57±0.29
3	9.43±0.52	9.0±0.47	6.86±0.43	6.86±0.35	4.93±0.29	4.65±0.34	3.65±0.41	3.57±0.41
4	9.08±0.42	9.29±0.28	6.65±0.28	7.23±0.42	4.87±0.29	4.57±0.29	3.65±0.40	3.29±0.37
5	9.21±0.32	9.14±0.45	6.73±0.42	6.64±0.44	4.78±0.25	4.78±0.29	7.50±0.40	3.80±0.44
6	9.50±0.25	9.26±0.44	6.79±0.39	6.85±0.38	4.72±0.04	4.86±0.38	3.70±0.32	3.98±0.37
7	9.57±0.34	9.42±0.37	7.00±0.42	6.32±0.44	4.63±0.74	4.83±0.28	3.26±0.44	3.64±0.36
8	9.28±0.36	8.92±0.37	6.81±0.30	7.14±0.40	4.45±0.33	5.07±0.58	3.63±0.36	3.46±0.33

¹Mean for 30 birds/pen/week.

TABLE 4: RESTING BEHAVIOUR OF THE FOUR BROILER CHICKEN STRAINS

WKS	HUBBARD				ANAK				HYBRO				LOHMAN			
	TIME	12.00noon	2.00 P.M.	Midnight	TIME	12.00 noon	2.00 P.M.	Midnight	TIME	12.00 noon	2.00 P.M.	Midnight	TIME	12.00 noon	2.00 P.M.	Midnight
1	8.83±0.38	8.93±0.43	10.29±0.43	7.22±0.43	6.29±0.51	8.15±0.37	5.23±0.30	4.29±0.40	5.07±0.49	3.22±0.21	3.93±0.30	4.08±0.63	5.07±0.49	3.22±0.21	3.93±0.30	4.08±0.63
2	8.15±0.37	9.36±0.34	10.25±0.56	9.57±0.45	6.93±0.51	8.15±0.37	5.22±0.41	4.28±0.30	5.07±0.49	3.37±0.55	3.36±0.30	4.00±0.63	5.07±0.49	3.37±0.55	3.36±0.30	4.00±0.63
3	8.14±0.42	9.36±0.30	10.29±0.56	9.57±0.45	6.29±0.47	7.29±0.36	4.43±0.68	4.27±0.30	3.43±0.45	3.36±0.36	3.36±0.36	4.00±0.50	3.43±0.45	3.36±0.36	3.36±0.36	4.00±0.50
4	8.56±0.42	9.00±0.33	10.51±0.31	6.43±0.43	6.72±0.43	7.00±0.36	4.47±0.38	4.50±0.64	3.57±0.45	3.50±0.45	3.50±0.45	4.23±0.28	3.57±0.45	3.50±0.45	3.50±0.45	4.23±0.28
5	8.14±0.33	9.14±0.36	10.00±0.51	7.13±0.50	6.64±0.48	6.93±0.39	4.86±0.49	4.78±0.44	3.22±0.38	3.50±0.44	3.50±0.44	4.29±0.58	3.22±0.38	3.50±0.44	3.50±0.44	4.29±0.58
6	8.86±0.36	9.08±0.36	10.29±0.44	7.22±0.43	6.29±0.51	8.14±0.37	5.22±0.41	4.86±0.30	5.07±0.50	3.27±0.22	3.93±0.21	4.41±0.63	5.07±0.37	3.27±0.22	3.93±0.21	4.41±0.63
7	8.15±0.32	9.36±0.34	10.29±0.56	16.57±0.45	6.93±0.46	7.29±0.36	4.43±0.68	4.86±0.30	4.93±0.36	3.43±0.45	3.36±0.36	4.00±0.54	4.93±0.36	3.43±0.45	3.36±0.36	4.00±0.54
8	8.56±0.42	9.00±0.42	10.65±0.31	6.45±0.44	6.72±0.43	7.00±0.39	4.59±0.39	4.52±0.31	5.22±0.32	3.57±0.55	3.50±0.37	4.29±0.28	5.22±0.32	3.57±0.55	3.50±0.37	4.29±0.28
9	8.15±0.34	9.14±0.36	10.00±0.51	7.15±0.50	6.65±0.49	6.93±0.39	4.96±0.48	4.00±0.39	4.79±0.42	3.22±0.38	3.50±0.44	4.29±0.54	4.79±0.42	3.22±0.38	3.50±0.44	4.29±0.54

¹Means for 30 birds/pen/week.

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