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A Comparison of The Pecking and Resting Behaviour of Native And Exotic (Layer Type) Chickens in a Humid Tropical Environment

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Target Audience: Poultry breeders, farmers and researchers

Abstract

The pecking and resting behaviour of the native chicken were compared with those of the exotic strains (H and N Brown Nick and Black Olympia) using 50 day old chicks per strain. The birds from each strain were housed on deep litter floor in two replicate pens of 20 chicks per pen. Feed and water were provided ad libitum throughout the experimental period of 20 weeks. The exotic strains exhibited higher resting behaviour than the native chicken throughout the period. The resting pattern was such that a greater proportion of birds from each strain preferred lying with head up and standing to lying with stretch neck or perching on something while resting. The incidence of pecking was higher in the native chicken than the exotic strains-throughout the period. The results indicated that pecking behaviour decreased with age in both the native and exotic chickens. Based on the results, it is suggested that the native chicken be subjected to selective breeding and good management practices in order to minimize pecking behaviour and improve on productivity.

Keywords: Pecking, resting, behaviour, native, exotic chicken.

Description of Problem

Inspite of the enormous contribution of chicken to the nutritional and economic well being of Nigerians, little attention is paid to understand their behaviour and welfare given the changing modes in their management, feeding and other systems of farming. Moreover, the pecking, resting, feeding and other behavioural responses of the domestic chicken in the Nigerian environment is not known. In order to boast productivity of poultry, it is necessary to have a clearer understanding of the factors militating against increased performance of native and exotic chickens in Nigeria. The observation of the external behaviour of animals often leads to deduction about the internal state (1). Such observations will help the farmer to know the normal behaviour and to distinguish the normal from the abnormal state resulting from ill health or stress factors(1). This will help the farmer to identify the specific need of his/her stock and address it. The objective of this study is to compare the pecking and resting behaviour of the native and exotic chickens in a humid tropical environment.

Materials and Methods

A total number of 150 day old chicks comprising 50 each of H and N brown Nick, Black Olympia and Native chicks were housed at day old at the poultry unit of Enugu State University teaching and research farm Enugu. At three weeks of age, 40 birds from each strain were divided into two groups of 20 birds each and placed in replicate pens. 10 birds per strain were reserved for balancing any mortality recorded during the

experiment. A floor space allowance of 1.45 m^2 per bird was allowed as recommended by (2). The feed provided were a commercial chick mash diet which on analysis yielded 20% CP and 2685 Kcal/Kg ME and a grower diet containing 16% CP and 2642 Kcal/Kg ME. Both feed and water were provided *ad libitum* throughout the experimental period. All the necessary vaccinations were administered at the appropriate ages. In order to minimize errors in the experiment, stress factors such as diseases, harsh weather, poor ventilation, poor lighting among others were adequately monitored and controlled in lines with the guides established by (3). Pecking behaviour was monitored for 30 minutes daily at the period of 9.00 am, 12.00 pm and 9.00 pm by counting the number of times birds pecked or intimidated others at the introduction of feed and during feeding (4). Similarly, the resting behaviour was observed for 30 minutes daily during the period of 11.00 am, 2.00 pm and 11.00 pm by counting the number of birds resting per strain. Resting here means the number of birds observed lying down, standing but immobile, squatting or sleeping provided such bird did not display any motion (4). The number of birds exhibiting different type of rest such as lying with head up, lying with stretched neck, standing or perching while resting were observed and recorded per strain. The number of pecking in every 30 minutes for each strain were subjected to square root transformation while the proportion of birds resting per strain were transformed to arcsine values before statistical analysis.

All the data were subjected to analysis of variance in a randomized complete block design (5) with strain and age as the main sources of variation. Duncan's multiple range test was used to compare multiple means where ANOVA showed significant main effects.

Results and Discussion

Tables 1 and 2 show the pecking and resting behaviour of the native and two exotic chicken strains. The native chicken had the highest number of birds pecking through out the period compared with the exotic strains. The native chicken was described by (6) as being flighty, highly temperamental and predominantly scavenging compared with the exotic strains. Therefore the higher pecking behaviour of the native chicken vis-à-vis the exotic strains may be attributed to differences in the underlying fearfulness since fear and feather pecking behaviour were positively correlated (7). It may also be related to a higher requirement of crude protein or essential vitamins by the native chicken than the quantity provided in the diet. However, this requires further investigation. The proportion of birds resting were similar among the exotic strains but higher than the native chicken. This would imply that the heavier strains of birds have higher resting tendency than the lighter strains. A similar trend was observed by Omeje *et al* (4) in the resting behaviour of broiler strains. Similarly, Hocking *et al* (8) and Keer-Keer *et al* (9) reported that broiler breeders spend more time resting and less time standing than layers when fed *ad libitum*. The results in Table 1 show that the number of pecks per strain were more during the period of 4-12 weeks than the period of 16-20 weeks of age implying that the frequency of pecking decreases with age. The possible explanation is that young chicks peck the feathers of pen mates along with food and other substrates in order to learn about their surroundings. This pecking tendency gradually decreases as birds get use to their environment. A similar observation was reported by Hocking et al (1997) in the pecking behaviour of medium size broiler strain. The results further show that pecking activities were more pronounced during the day than the night when the birds were less active. Similarly, the proportion of birds resting in each strain was more in the night than in the day. The resting pattern of birds in each strain is presented in Table 3. Generally, a greater proportion of birds preferred lying with head up and standing to lying with stretched neck or perching on something while resting.

Conclusion and Application

Whereas, the native chicken had higher incidence of pecking than the exotic strains, the later exhibited higher resting behaviour than the former. It is suggested that selection for improved body weight and good management practices in the native chicken will minimize peck order behaviour.

Table 1: Pecking characteristics of two exotic strains (Hand N Brown Nick and Blck Olympia) and the native chicken at different age periods.

Period (wks)	H and N Brown Nick			Black Olympia			Native chicken		
	9.00 am	12.00 noon	9.00 pm	9.00 am	12 noon	9.00 pm	9.00 am	12.00 noon	9.00pm
4	5.64±1.69	4.25±1.07	1.72±0.17	7.75±0.74	5.78±1.03	2.26±0.68	17.01±1.24	20.65±1.09	15.26±2.16
8	9.25±0.36	1.75±0.52	1.40±0.16	6.09±0.49	4.94±1.07	1.36±0.40	10.11±0.54	11.82±0.59	10.73±0.92
12	6.35±1.15	4.15±0.88	0.22±0.11	7.26±0.61	6.96±0.57	1.02±0.39	12.00±0.70	10.31±0.72	10.09±0.57
16	2.24±0.28	1.65±0.31	0.25±0.10	1.19±0.21	0.79±0.29	0.14±0.06	7.90±0.74	6.24±1.62	5.14±1.58
20	3.04±0.71	3.63±0.72	0.33±0.09	0.39±0.17	0.31±0.03	0.33±0.16	9.95±1.05	7.22±0.58	7.94±0.56
Mean*	**5.30±1.25**	**3.09±0.58**	**0.78±032**	**4.54±1.56**	**3.76±1.35**	**1.02±0.38**	**11.39±1.55**	**11.25±2.56**	**9.83±1.67**

*Mean for 40 birds/strain/week.

Table 2: Proportion of birds resting at different age periods for the two exotic strains (Hand N Brown Nick and Black Olympia) and the native chicken

Period (wks)	H and N Brown Nick			Black Olympia			Native Chicken		
	11.00 am	2.00 pm	11.00 pm	11.00 am	2.00pm	11.00 pm	11.00 am	2.00 pm	11.00 pm
4	0.63±0.07	0.72±0.01	0.75±0.03	0.68±0.05	0.78±0.07	0.83±0.02	0.31±0.03	0.66±0.13	0.87±0.05
8	0.68±0.06	0.88±0.03	0.86±0.07	0.58±0.03	0.71±0.04	0.76±0.04	0.20±0.06	0.48±0.05	0.87±0.05
12	0.75±0.05	0.78±0.03	0.84±0.06	0.74±0.05	0.73±0.10	0.74±0.04	0.43±0.10	0.72±0.11	0.68±0.03
16	0.67±0.08	0.63±0.07	0.78±0.03	0.73±0.04	0.76±0.03	0.81±0.01	0.47±0.11	0.39±0.05	0.80±0.40
20	0.77±0.03	0.75±0.40	0.82±0.04	0.79±0.04	0.80±0.03	0.87±0.01	0.64±0.07	0.63±0.03	0.75±0.01
Mean*	**0.70±0.02**	**0.75±0.04**	**0.81±0.2**	**0.70±0.03**	**0.76±0.02**	**0.80±0.02**	**0.41±0.07**	**0.58±0.06**	**0.78±0.03**

*Mean for 40 birds/ strain/ week.

Table 3: Proportion of birds exhibiting different resting behaviour in each strain

Type of rest	H & N Brown Nick	Black Olympia	Native Chicken
A	0.33±0.02b	0.30± 0.03b	0.25± 0.03a
B	0.11±0.01b	0.08±0.01ab	0.06±0.02a
C	0.28±0.03a	0.34±0.05b	0.25±0.02a
D	0.05±0.01a	0.04±0.01a	0.04±0.004a
E	0.77±0.02b	0.76±0.02b	0.60±0.03a

*Means with different letters across a row are significantly different ($p < 0.01$).

Note: A: Lying with head up
B: Lying with stretch neck
C: Standing while resting
D: Perching on something while resting
E: Total resting.

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