

TWO HENS MUTUALLY BROODING: A RARE BEHAVIOUR IN *Gallus domesticus*

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ABSTRACT

Two black broody hens of breed *Gallus domesticus* both laid their eggs and brooded in the same nest, with no conflicts. The nest was in a high place away from water, both brooded and shared the same brooding cycle, (brooding, dust-bathing, eating, drinking and brooding). In spite of their cooperation, they both still manifested clinical signs of anorexia, weight loss, wasting of pectorialis muscle, and loss of feather luster.

Keywords: hens, mutually, brooding, *Gallus domesticus*

INTRODUCTION

Local chicken production is important to the Nigerian economy. Their production system still remains traditional and their marketing system is quite informal and poorly developed (Nwosu *et al.*, 1985). In the past, local chickens constituted about 92% of the total poultry population in Nigeria (Akinwunmi *et al.*, 1979). The production of local chickens in Nigeria has been long neglected although an estimate of 12.4% of the 192,640 metric tons of eggs was produced at the end of the last decade (Sonaiya, 1997). It is advocated by Momoh *et al.*, (2008) that improving the production of local Nigerian chicken could supplement protein production. To the best of our knowledge there are animal producers that advocate for the improvement of these our indigenous breeds and thus, studying them is essential. Presently, information is scanty about the behaviour of the Nigerian local chickens. Such information would not only enable us to understand how they adapt to their environment, but would also aid our understanding of their reproduction.

This paper describes a rare behavioural adaptation in local chicken, especially in the wet season of tropical West Africa, where safe nest spots are difficult to come by and when hens are in search for a place to lay their eggs. It describes a rare behaviour amongst two hens incubating their eggs jointly or mutually in the same nest. It is amongst the few documented social cooperative behaviours amongst incubating hens especially when they are influenced by reproductive hormones for protection and aggression.

Case History

The subjects were two broody hens of breed *Gallus domesticus* (local Nigerian chicken) managed extensively in a house in Asero, South of Abeokuta, Nigeria (Fig. 1). The owner of the hens noticed that the hens manifested strange feeding behaviour, remarkable weight loss and aggression on coming close to them even at feeding. It was later discovered that both birds were incubating twenty-two eggs (Fig. 2).

On noticing this strange behaviour the client sorted the advice of a professional veterinarian. History further revealed that the hens were both hatched the same season and were one year old each. Physical examination revealed that both hens had lost normal luster of their feather. There was complete wasting of the pectorialis muscles or breast muscles. On palpation of their crop, there were few maize grains.



FIG. 1. SISTER HENS BROODING TOGETHER



FIG. 2. SISTER HENS BROODING TOGETHER AND PILO-ERECTION OF THE FEATHERS

Each time any one is close to them (Fig. 3), the hens manifested the same behavioral changes which included pilo-erection of the feathers of the dorso-caudal parts of the head. They both had a distinct sound peculiar to incubating or brooding hens. On critical examination of the site of their made nest, there were feathers, dry grasses, clothes, and papers. Further observation showed that their hidden nest was 1.5 m (150 cm) high on a wooden platform outside the house. The birds were alternating during the incubation. One was incubating from morning till noon estimated to be about six (6) hours while the other goes out to eat, dust bath, rest and drink water. The other interchanges its role at about mid-day till dusk estimated to be about 6 – 7 hours, while the two hens jointly brood together at night.



FIG. 3. THE EGGS AND PILO-ERECTION OF THE FEATHERS

Discussion and Conclusion

Natural hatching under a broody hen is the ideal way to raise fewer chicks, but prior to hatching, there are many factors involved in the successful brooding. This includes the hen incubating with appropriate brooding cycles i. e. (brooding, dust-bathing and then brooding, thus maintaining constant temperature of the warmth and humidity of the eggs). The brooding cycle is regulated by the interplay of hormonal surges and declines and these regulate the reproductive behaviour of the broody hen. This is in line with the study of Hogan *et al.*, (1998).

In the present study, in spite of the hormonal effect in both hens, they both manifested social behaviour, unlike other hens that would manifest nervousness, due to influence of adrenaline. The two hens still recognized one another and cooperated. The social behaviour could be due to endorphine surge. Endorphines are endogenous substances produced at the neural synapses in the brain that brings about sedation, thus creating a checkmating effect on the other aggression hormones. It is possible that endorphine is the cause of such rare behaviour. The abnormal feeding behaviour could be a suggestion of the effect of the interplay of hormones on the hypothalamus, especially the satiety nuclei. The wasting and loss of the pectorialis muscle and weight loss could be an outcome sequel to the anorexia induced by the effects of the hormones on the hypothalamo-pituitary axis and pathways (Cunnighams & Klein, 2007). The hormones mostly involved in the interplay are most likely prolactin, luteinizing, and oestradiol directly or indirectly involved, as adduced by Kuwayama *et al.*, (1992).

The broody hens are avians and possess relatively advanced brains that permits them to adapt to their environment and select a convenient place for safety of their eggs while laying for brooding. In this study, the selected place was relatively "high" above the ground, away from moisture that could interfere with brooding humidity. The influence of progesterone-induced picking of materials such as grass, paper, and feathers from their feather coat produced an amazing architectural design of their nest.

It is concluded that this rare phenomenon relieves the brooding hens because it shortens their brooding cycle. But a closer observation revealed that it is not completely advantageous because only one chick was hatched. This is not good for production in the extensive system of management. Further study is required to allow for a better conclusion.

Farmers might also find it difficult to identify such adaptations especially in a rural setting, when embarking on the customary extensive system. More studies should be encouraged especially in understanding our local breeds of animals.

Recommendation should be made for the administration of supplements, especially antioxidants to alleviate stress, supplements suggested are ascorbic acid, selenium, vitamin E, and this would help to prevent too much weight loss and improves the immunity to prevent secondary disease condition, especially during brooding.

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