

Effects of Early Removal of Chicks from the Mother Hen on Clutch Sizes and Inter-Clutch Intervals

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Abstract

The study on the effects of early removal (weaning) of chicks from the mother hen on clutch sizes and inter-clutch intervals was conducted in Garkawa town in the Southern Zone, Plateau State, Nigeria from November 2, 2011 to August 29, 2012. 5 matured hens of varied ages and a cock were bought in Garkawa market. They were left to roam in the day and roosted at night freely. The parameters studied includes number of clutches, duration for a clutch, number of eggs, number of chicks per clutch per hen and time interval between the clutches. The results indicated 5 clutches in 301 days (about 10 months). From the 301 days, the actual periods of production was 250 days (8.3 months) with a clutch period of about 50 days (1.7 month) (about 10-12 days to lay eggs, 21 days of incubation, 2-3 days for hatching, and 14 days of forceful weaning). Again, from the 301 days, a total of 51 days were periods which the hens were out of production or resting phases (i.e. about 10 days between clutches). 244 eggs (49 per clutch and 10 per hens) were recorded. On the other hand, 208 chicks were hatched (about 42 per clutch and 8 per hen). The duration of days between clutches decreasing from clutch 1 to 4 and risen at clutch 5. While the number of eggs and chicks per clutch increases from clutch 1 to 5. In conclusion, the hens were induced for successful production. Feed supplementation, proper hygiene practices and provision of nesting boxes were suggested to achieve sustainable production.

Keywords: indigenous chicken, chicks, clutches and inter-clutch intervals

Introduction

The world's major problem today is how to eliminate hunger and poverty, as lack of adequate food and poverty are a kind of twin sisters (Haggai, 2012). The world population has reached the 7 billion mark in the 21st century, with 1 million suffering from food insecurity and 800 million malnourished (Nwalise, 2010). Most of the chronically malnourished are from Africa, Asia and Latin America (Haggai, 2012). The food insecure in Africa mostly lives in the rural areas (Uza, 2008). Finding ways to alleviate the rural populace out of food insecurity particularly, in increasing protein sources become necessary. One foreseen way is to increase the poultry production base. This present study, therefore sought to improve the production of local chickens known to be successful free rangers (Ssewanyana *et al.*, 2001), good at protecting themselves from predators and more adaptive to local environment (Farugue *et al.*, (2010; Hossen, 2010), more capable of utilizing low quality feeds (Forell, 2000), appropriate for rural stallholder (Hossen, 2010), and meat has good taste and flavour (Sonaiya, 2001). More so this species has been incorporated into the traditional farming system since time immemorial, and improvement of them would meets the zeal of the farmers.

Materials and Methods

5 matured hens of varied ages and a cock were bought in Garkawa Tuesday market and named H-1, H-2, H-3, H-4 and H-5 (H stand for hen). They were left to roam in the day and roost at night freely.

Management: Besides the free scavenging household refuse, grains and clean drinking water were supplied to the birds on daily bases. Powdered antibiotics and coccidiostat were occasionally added to the drinking water. A simple structure and egg nests were constructed. The chickens were not forced to spent night in the structure but were allowed to roost freely. Mating was a free range method. Where 2 or 3 hen laid eggs together, during incubation the eggs were shared among them for proper incubation. Chicks were removed from their mothers (the subject matter) at 2 weeks old. The hens were monitored all day round to record the exact time of laying, incubating, hatching and brooding.

Data analysis: The data collected were summarized in frequency Tables and subjected to simple descriptive analysis.

Results

The results indicated that 5 clutches were recorded in 301 days (November 2, 2011 to August 29, 2012). In the context of this study a clutch was seen as the time encompasses the periods of laying, incubating, hatching and brooding. From the 301 days, 250 days were the actual periods of production (8.3 months) and about 50 days of a clutch period (1.7 month). Again, from the 301 days, a total of 51 days were periods which the hens were out

of production or resting phases (i.e. about 10 days between clutches). It was discovered that the older the hen the faster they returned to egg production.

The number of clutches and eggs are shown in Table 1. A total of 244 eggs were laid by the hens in 301 days (November 2, 2011 to August 29, 2012), with an average of 49 eggs per clutch and 10 eggs per hen. H-4 and H-5 laid 20 eggs together in the 2nd clutch; H-1, H-4 and H-5 laid 28 eggs in the 3rd clutch; H-2 and H-5 laid 22 eggs in the 4th clutch and H-3 and H-4 laid 20 eggs 5th clutch. The average number of eggs increases slightly down the table. The values in parenthesis were duration of days of production in a clutch. The total number of eggs per hen could not be computed down the Table because some hens combined in a clutch. None of the hen had 5 batches of eggs alone; they combined in one clutch or the other. H-4 and H-5 had only 3 and 2 batches of eggs alone, respectively; while H-1, H-2 and H-3 had 4 batches each.

Table 1: Number of eggs per clutch per hen.

| Clutch No | Duration | H-1 | H-2 | H-3 | H-4 | H-5 | Total | Ave./ Hen |
|----------------|----------------------------|-------|-------|---------|---------|-------|--------|-----------|
| I | Nov10,2011-Jan 26,2012(78) | 6.00 | 10.00 | 8.00 | 9.00 | 10.00 | 43.00 | 8.60 |
| II | Jan26-March9,2012(54) | 8.00 | 11.00 | 9.00 | 20.00 → | | 48.00 | 9.60 |
| III | April6-May13,2012(38) | 28.00 | 11.00 | 10.00 → | | | 49.00 | 9.80 |
| IV | June2-July5,2012(35) | 7.00 | 22.00 | 11.00 | 11.00 → | | 51.00 | 10.20 |
| V | August16-August29,2012(45) | 10.00 | 12.00 | 20.00 → | | 11.00 | 53.00 | 10.30 |
| Total | - | - | - | - | - | - | 244.00 | 48.50 |
| Average | - | - | - | - | - | - | 48.50 | 9.70 |

→ = shows eggs laid by 2 or 3 hens

Table 2: Number of chicks hatched per clutch per hen.

| Clutch No | Duration | H-1 | H-2 | H-3 | H-4 | H-5 | Total | Ave./ Hen |
|----------------|------------------------|-------|-------|---------|---------|-------|--------|-----------|
| I | Nov10,2011-Jan 26,2012 | 6.00 | 8.00 | 8.00 | 7.00 | 7.00 | 36.00 | 7.20 |
| II | Jan26-March9,2012 | 7.00 | 8.00 | 8.00 | 16.00 → | | 39.00 | 7.80 |
| III | April6-May13,2012 | 22.00 | 10.00 | 9.00 → | | | 41.00 | 8.20 |
| IV | June 2-July5,2012 | 7.00 | 20.00 | 9.00 | 10.00 → | | 46.00 | 9.20 |
| V | August16-August29,2012 | 8.00 | 10.00 | 18.00 → | | 10.00 | 46.00 | 9.20 |
| Total | - | - | - | - | - | - | 208.00 | 41.60 |
| Average | - | - | - | - | - | - | 41.60 | 8.32 |

→ = shows chicks hatched by 2 or 3 hens

The number of chicks hatched is shown in Table 2. 208 chicks were hatched in the 301 days with an average of about 42 chicks per clutch and 8 chicks per hen. From Table 1 above it shows that 36 eggs (14%) were not hatched. The average number of chicks increases slightly down the table. The total number of chicks per hen could not be computed vertically down the Table because some hens combined in a clutch. None of the hen had 5 batches of chicks alone; they combined in one clutch or the other. H-5 had only 2 batches of chicks alone. H-4 and H-5 had only 3 and 2 batches of chicks alone, respectively; while H-1, H-2 and H-3 had 4 batches each.

Discussion

Scientific report or investigation on the reproductive performance of the indigenous chickens which are characterized by low production (slow growth and late maturity) is lacking or scanty in this part of the country. The indigenous chickens are birds most appropriate for rural poor farmers because of their low or non inputting system. Improving on the performance of indigenous chickens would greatly have positive impact on the poor farmers. The improvement aspect chosen in this study was to reduce weaning age of chicks to a minimum of 2 weeks. The high number of clutches (5) recorded in barely 8 months, a clutch period of 1.7 month and an inter-

clutch interval of 10 days suggested potentiality of the local strain. The wider range at the first clutch may be due to the effect of new environment, as the birds needed time to acclimatize, while the subsequent clutches decreases until the fifth clutch which increased above the forth clutch. Several authors (Yami and Dessie, 1997; Ssewanyana *et al.*, 2001; Hossen, 2010) characterized the indigenous hens with lower number of clutches ranges from 2.0-3.0 per year and inter-clutch interval ranges from 2.0 to 3.5 months. Ssewanyana *et al.* (2001) emphasized that when the hen is left uninterrupted she can cared for her chicks for about 2.8 months before weaning. This longer period of broodiness may be a silent reason why the local chicken is term a low productive type. This study shows that large number of eggs and chicks can be produced in just a year if the brooding time is reduced to 2 weeks, and repeated of such would therefore alleviate food insecurity and poverty among the low input populace.

It was observed that the hens spent about 10-12 days to lay eggs, 21 days of incubation, 2-3 days hatching, the 14 days of forceful weaning and 10 days of inter- clutch intervals. None of the hen had all the clutches alone, they combined in one clutch or the other. It was also discovered that the pullets hatched in the early part of the study had a clutch before the study terminated. Where a large number of hens would be stocked for massive production, feeding and hygiene practices should be improved. Mengesha *et al.* (2008) emphasized that the poor performance of indigenous chickens are not only due to genetics, but also lack of good management.

References:

- Farugue, S. Siddiquee. N. U. Afroz, M. A. and Islam, M. S. (2010). Phenotypic characterization of native chicken reared under intensive management system. *J. Bangladesh Agricuniv*,8: 78-82.
- Forell, D. J. (2000). Strategies for improving the production of scavenging chickens. *Asia-Au Journal of Animal Science*, 13:79-85.
- Haggai, P. T. (2012). Trends in food crops production and dimensions of food insecurity in Nigeria. NIPSS Monograph series No. 4 (2012).
- Hossen, M. J. (2010). Effect of management intervention on the productivity and profitability of indigenous chickens under rural condition in Bangladesh. *Livestock Research Rural development*. vol.20
- Mengesha, M. Tamir, B. and Dessie, T. (2008). Village chicken characteristics and their seasonal production situation in Jamma District. South Wollo, Ethiopia, Journal. *LivestockResearch Rural development*. vol.20 Organization of the United Nations, Rome, Italy, pp.81.
- Nwolise, O. B. C. (2002). Formula for taming domestic conflicts. *Nigerian Tribune* June, 24, p. 12.
- Sonaiya, E. B. (2001). Small poultry holding, the family production in different agro ecological zones in Kenya. Proceedings of the 6th biennial KARI Scientific Conference, pp.540-547, Nairobi, Kenya.
- Ssewanyana, E. Onyait, A. O. Ogwal, J; Mukasa, B. Nsamba, P. and Masaba, J. 2001. Characterization of rural chickens' production in Apac and Kumi districts of Uganda. Paper presented at the NARO Scientific Conference, 5-10 December 2001, Kampala, Uganda.
- Uzo, D. O. (2008). Food security policies and programmes in Nigeria. Invited paper presented at the International submit of Global Food security in Montreal Canada. September, 24-26. MC Gill University.
- Yami, A. and Dessie, T. (1997). The status of poultry research and development in Ethiopia. Proceedings of the 5th National Conference of Ethiopia Society of Animal Production (ESAT), May 15-17, 1997 Addis Ababa Ethiopia pp.40-60'

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