ISSN (Online): 2091-2609
DOI Prefix: 10.3126/ijasbt

International Journal of Applied Sciences and Biotechnology (IJASBT)

Research Article

Effectiveness of Induced Molting in Laying Hens- A Feed Removal Approach

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Article Information

Received: 24 September 2019
Revised version received: 19 December 2019
Accepted: 21 December 2019
Published: 28 December 2019

Cite this article as:
A.K. Tiwary et al. (2019) Int. J. Appl. Sci. Biotechnol. Vol 7(4): 429-433. DOI: 10.3126/ijasbt.v7i4.25771

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Peer reviewed under authority of IJASBT

Abstract

Induced molting of laying hens is a common husbandry practiced in many commercial farms. This study was aimed to evaluate the effectiveness of induced molting on production parameters along with production economics of layers. For this study, Lohmann Brown-Classic hens were reared in a modern cage system from 10 weeks of age. There was no significant difference (P>0.05) in egg production in Hen Day Basis (HDP) before 65 weeks in comparison to standard performance table provided by Lohmann Brown- Classic Layers Management Guide (Cage Housing). A total of 8087 laying hens were divided into two treatment groups after 65 weeks of age; one group (n=4055) without any feed restriction (control=T0) and another (n=4032) had induced molting with 15 days of feed restriction, provided with only water and mineral supplements (T1) followed by five days of exclusive Ground Maize feeding. The average HDP before division of treatment was recorded 83.37%. The T0 and T1 group were reared up to 85 and 109 weeks respectively, in accordance to the economical sustainability. The feed intake per bird, egg production including marketable and non-marketable eggs and mortality along with production economics of both groups were recorded. The T1 group reached its peak egg production (88.48%) on HDP after 62 days following treatment which was higher (P<0.05) than the T0 group. The ratio of marketable to non-marketable eggs was found higher in T1 (69.32:1) than that of T0 (38.53:1). The production cost per egg was recorded NRs.6.86 and 6.99 respectively for T1 and T0 group with 4.33% more profit on T1 than T0 group. This study suggests that induced molting with feed restriction approach is beneficial to bypass the scarcity period with falling market value of eggs and also increase the ratio of marketable eggs to non-marketable eggs.

Keywords: Induced molting; Egg production; Feed restriction; Layers

Introduction

Induced molting of laying hens is a widely utilized husbandry in many commercial farms. Molting is an effective management decision which encourages producers to molt the flocks instead of buying the replacement pullets in order to recycle laying hens (Yousaf and Ahmad, 2006). The molting is generally performed to cease the egg production during fluctuations in market through the rejuvenation of laying performance in post molt production along with prolongation of productive life of laying hens (Biggs *et al.*, 2003; Webster, 2003).

Among the several methods of induced molting, feed removal or fasting is the most popular due to its simple application, economic advantages and appreciable post molt production performance (Bell, 2003). The complete removal for feed for about 10 to 14 days along with reduction in photoperiod to about 8 hours are the common methods practiced during the period of molting (Baker *et al.*, 1983; Bell, 2003). The present study was conducted to investigate the effectiveness of induced molting on production parameters and economics of commercial layers.

Materials and Methodology

Experiment Site and Study Duration

The present study was carried out in a private commercial poultry farm located in Anandapur, Chitwan, Nepal from 4th Feb-14th Dec 2017.

Experimental Design

For this study, Lohmann Brown-Classic hens were reared in a modern cage system from 10 weeks of age. A total of 8087 laying hens were allocated into two treatment groups after 65 weeks of age: one group (n=4055) without any feed restriction (control=T0) and another(n=4032) had induced molting with 15 days of feed restriction, provided with only water and mineral supplements (T1) followed by 5 days of exclusive "Ground Maize" feeding. The artificial light was not provided during the entire molting period.

Data/Record Keeping

The T0 and T1 group were reared up to 85 and 109 weeks respectively, in accordance to the economical sustainability. The indoor temperature was 29±2^{o}C during mid-day and 20±2^{o}C during the night. The feed intake per bird, egg production on HDP of each hen daily and each group weekly including marketable and non-marketable eggs of both groups were recorded during the study period. The weekly mortality along with production economics of both groups was also recorded.

Statistical Analysis

Data obtained from this study were tabulated in Microsoft Excel and Independent t-test was performed for significance test at 5% level of significance using IBM SPSS v25. A P value of less than 0.05 was considered as significant difference.

Results

Mortality Rate

The birds of both group died but there was no difference in mortality rate was found between the groups (Fig.1).

Feed Consumption

The feed intake of the treatment group did not differ significantly after molting as compared with the control group (Fig.2).

Egg Production on Hen Day Basis

As shown in Fig. 3, there was no significant difference (P>0.05) in egg production in Hen Day Basis (HDP) before 65 weeks in comparison to standard performance table provided by Lohmann Brown- Classic Layers Management Guide (Cage Housing).

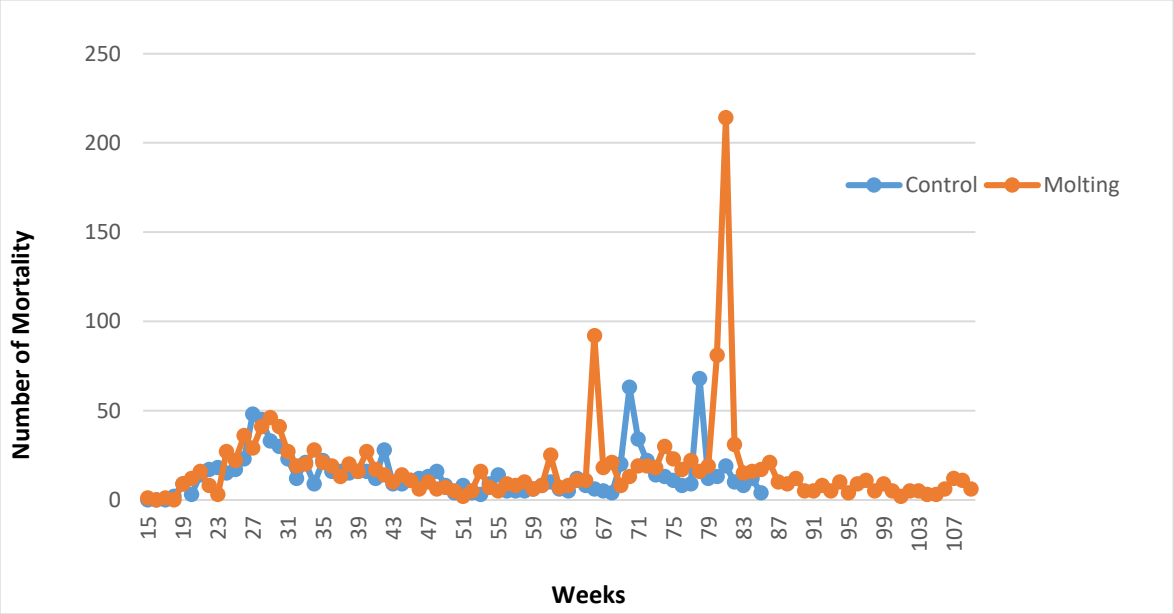

Fig. 1: Mortality Pattern in birds

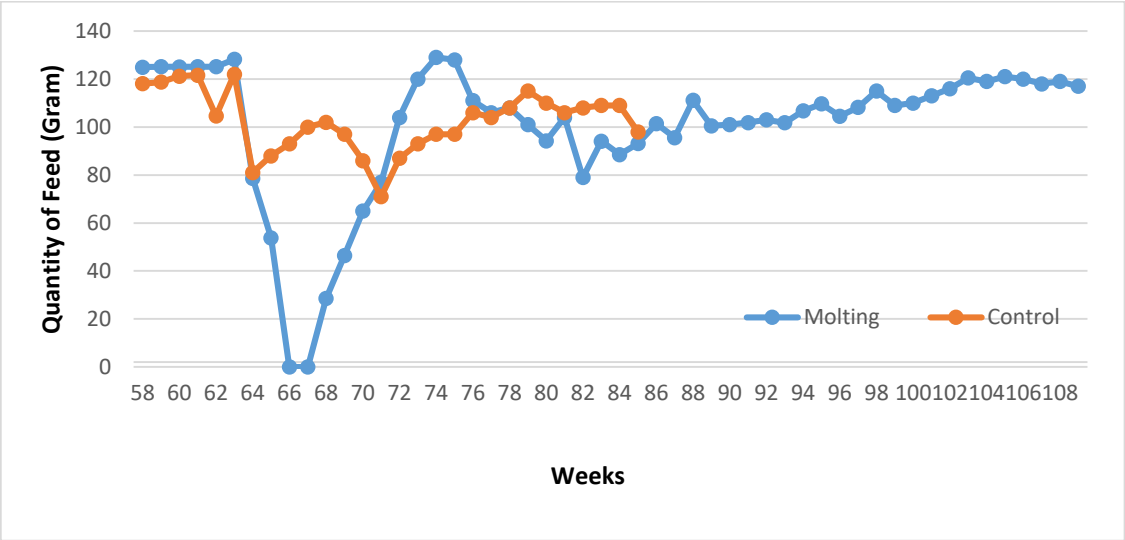

Fig. 2: Feed Consumption of the birds

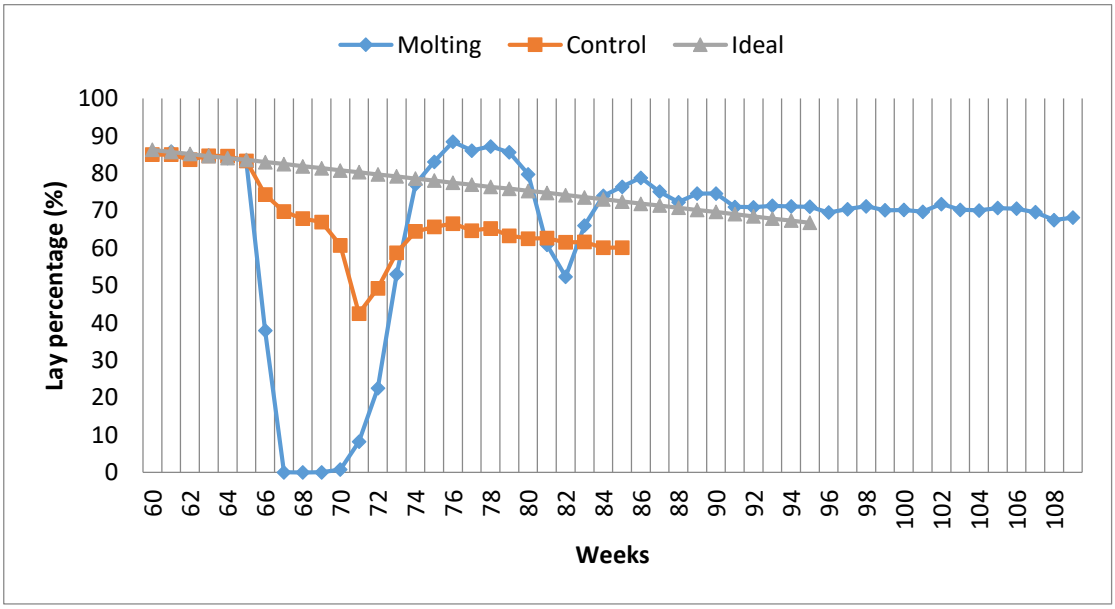

Fig. 3: Egg laying rate in Hen Day Basis (HDP)

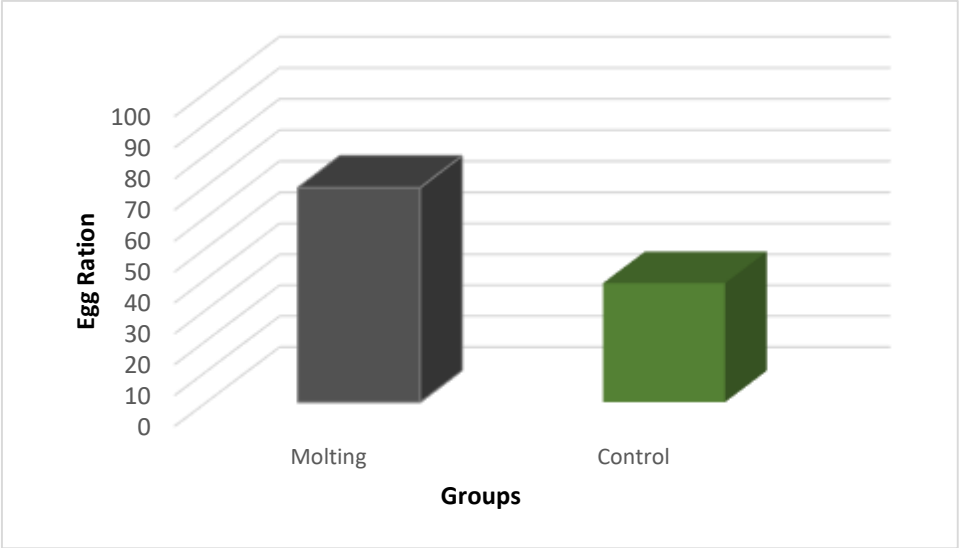

Fig. 4: Marketable to non-marketable eggs ratio of the birds

Effects Molting on Egg Production

The average HDP before division of treatment was recorded 83.37%. The T1 group reached its peak egg production (88.48%) on HDP after 62 days following treatment which was higher ($P<0.05$) than the T0 group (Fig. 4).

Egg Production Economics

The ratio of marketable to non-marketable eggs was found higher in T1 (69.32:1) than that of T0 (38.53:1). The production cost per egg was recorded NRs.6.86 and 6.99 respectively for T1 and T0 group with 4.33% more profit on T1 than T0 group.

Discussion

The average initial weight was almost similar in both groups i.e. 2038 gm and 2042 gm in T0 and T1 respectively. After 15 days of feed restriction it was reduced to 1552 gm in T1 i.e. 23.84% body weight loss, which is similar to weight loss ranging from 24-30% as observed in previous studies (Baker *et al.*, 1983; Bell, 2003). The pattern of mortality was found higher in T1, reason being feed restriction and disease susceptibility. Upto day 35, egg per bird was very low in T1 due to feed restriction but it was gradually raised thereafter. The T1 group reached its peak egg production (88.48%) on HDP after 62 days. The lower cost of production per egg in T1 can be explained by increase in production rate of birds. This economic benefit was also mentioned by past researchers (Zeelen, 1975).

Conclusions

From the result of this study, it can be concluded that induced molting can be an effective practice for bypass the scarcity period with falling market value of eggs and also increase the ratio of marketable eggs to non-marketable eggs. Moreover, molting also helps the better income generation, which is profitable for farmers along with improvement of production potential of laying hens. Feed removal is most economical and easier approach for induced molting instead of buying the replacement pullets. Pattern of irregular mortality could be minimized by maintaining strict routine and sound scientific management. Nutrition is the primary component and it should be taken into account in molted groups. Further research is imperative on "Non-Feed Removal Approaches" of molting.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Acknowledgements

The authors would like to acknowledge Mr. Suryaman Shrestha of Surya Dev Poultry Farm and associated farm workers for their technical and moral assistance during the period of study.

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