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Body Weight Changes of Single Comb White Leghorn Layers at Different Ages During Induced Moult

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Abstract: A study was carried out to find out the effect of induced moulting of commercial SCWL laying hens at 60, 65 and 70 weeks of age group. A control group was kept without moulting at their respective ages. The layers were reared in cages for the entire experimental period adopting standard managemental practices. The layers fed commercially available layer diet. After 28 days period of egg production (pre-moult), the layers were subjected to induced moulting by feed and water restriction followed by *ad-libitum* feeding and had free access to wholesome water. Seventeen hours photoperiod was provided daily through out the post-moult laying period. The birds in 70 weeks age group had higher livability among the moult induced groups and no change in body weight.

Key words: Induced moult, white leghorn, egg production

Introduction

Induced moulting generally improves the production performance of spent hens and reduces the age related decline in shell quality and egg production. Induced moulting is generally used to extend the productive life of laying hens. The body weight and percentage body weight loss had impact on egg production performance of moulted hens (Hussein, 1996). The objectives of the present study were to determine the rate of body weight changes with respect to age of the bird during induced moulting.

Materials and Methods

One hundred and forty four commercial Single Comb White Leghorn (SCWL) layers at 60, 65 and 70 weeks of age were selected. Then, birds were randomly allotted into six treatment groups with three replicates of eight birds each. Experimental treatments were T_1-60 weeks control, T_2-60 weeks induced moult, T_3-65 weeks control, T_4-65 weeks induced moult, T_5-70 weeks control and T_6-70 weeks induced moult. The layers were reared in cages for the entire experimental period adopting standard managemental practices. Treatments T_2, T_4 and T_6 were subjected to induced moulting (Ravindran and Narahari, 1993) by feed and water restriction followed by *ad-libitum* feeding and had free access to wholesome water. Seventeen hours photoperiod was provided daily through out the post-moult laying period. During the laying period, the individual layer body weight was recorded at pre-moult, immediately after end of feed withdrawal and at the start of laying. Mortality was recorded at occurrence. With the data collected, body weight and percentage of body weight loss were calculated.

Results and Discussion

Body weight: The effect of induced moulting at different ages on mean body weight changes of SCWL layers before and during different periods after moulting are presented in Table 1.

Differences in mean body weight of SCWL layers before and during induced moulting were significant ($p<0.01$) among treatment groups. There is no significant difference in body weights of birds of all moult induced groups were observed immediately after 10 th day feed withdrawal.

The mean body weight of SCWL layers at pre-moult period did not exhibit any significant difference at their respective ages viz. 60, 65 and 70 weeks. Highly significant ($p<0.01$) lesser body weight observed in 65 weeks moulted group over their corresponding control might possibly be due to the numerically lower body weight in that group of birds during the pre-moult period and also due to relative decrease in weight of internal organ (Brake and Thaxton, 1979).

The non significant difference observed in 60 and 70 weeks moult induced group with their respective control group observed in this experiment is in agreement with the earlier observations of Koelkebeck *et al.* (1993), Buhr and Cunningham (1994).

Body weight loss: The body weight loss in 60, 65 and 70 weeks age group birds were 28.91, 31.08 and 29.19%, respectively (Table 2). There is no significant difference in mean percentage of body weight loss of moult induced groups. On observation the mean body weight at first egg after moult was lower in all the moulted groups compared to their respective control.

Table 1: Mean body weight (g) (±S.E.) of Single Comb White Leghorn layers at different ages before and after induced moulting

		Post-moult periods	
Treatment	Pre-moult period	I-Period	II-Period
T_1.60 weeks Control	1518.17^{A}±26.73(24)	1487.48^{A}±36.36(24)	1476.33^{A}±50.09(24)
T_2.60 weeks Induced moult	1528.83^{A}±22.19(24)	1455.63^{AB}±27.47(24)	1442.13^{AB}±25.73(24)
T_3.65 weeks Control	1449.21^{AB}±27.98(24)	1384.67^{BC}±25.85(24)	1355.67^{BC}±16.29(24)
T_4.65 weeks Induced moult	1407.96^{B}±23.38(24)	1303.36^{C}±23.32(22)	1301.94^{C}±1.26(22)
T_5.70 weeks Control	1490.08^{AB}±28.72(24)	1442.17^{AB}±22.84(24)	1442.58^{AB}±28.07(24)
T_6.70 weeks Induced moult	1518.75^{A}±18.06(24)	1448.21^{AB}±20.40(24)	1437.17^{AB}±26.03(24)
Mean	1485.50±17.80(6)	1420.25±24.70(6)	1409.30±24.64(6)

	Post-moult periods		
Treatment	III-Period	IV-Period	Overall mean
T_1.60 weeks Control	1459.54^{A}±57.84(24)	1482.68^{A}±52.47(23)	1476.51^{A}±6.10(4)
T_2.60 weeks Induced moult	1442.17^{AB}±24.80(24)	1456.60^{A}±38.37(23)	1449.13^{AB}±4.04(4)
T_3.65 weeks Control	1348.17^{BC}±19.92(24)	1391.13^{AB}±14.90(24)	1369.91^{C}±10.58(4)
T_4.65 weeks Induced moult	1287.18^{C}±7.26(21)	1337.33^{B}±11.79(20)	1307.46^{D}±10.61(4)
T_5.70 weeks Control	1427.56^{AB}±41.23(24)	1451.15^{A}±25.31(23)	1440.87^{B}±4.89(4)
T_6.70 weeks Induced moult	1447.00^{AB}±35.15(24)	1480.83^{A}±35.67(24)	1453.30^{AB}±9.50(4)
Mean	1401.94±25.65(6)	1433.29±21.44(6)	1416.20±7.62(6)

$^{A-D}$Means within a column with no common superscript differ significantly (p<0.01), Value given in parenthesis in each cell indicates the number of observations

Table 2: Mean body weight changes (g) (±S.E.) of Single Comb White Leghorn layers at different ages before and after induced moulting

Treatment	Pre-moult	Immediately after 10th day feed withdrawal	Percentage of body weight loss	Weight at first egg
T1-60 weeks Control	1518.17A±42.09(24)	1523.85A±41.83(24)	0.35±0.17(24)	1471.71A±39.99(24)
T2-60 weeks Induced moult	1528.83A±44.67(24)	1017.75C±96.11(24)	-28.91±0.99(24)	1420.25A±31.21(24)
T3-65 weeks Control	1449.21AB±19.27(24)	1463.33A±17.07(24)	1.03±0.16(24)	1387.96A±12.70(24)
T4-65 weeks Induced moult	1407.96B±36.35(24)	970.10C±27.74(24)	-31.08±0.14(24)	1260.85B±8.90(22)
T5-70 weeks Control	1490.08AB±34.48(24)	1485.27A±33.09(24)	-0.41±0.12(24)	1463.08A±41.65(24)
T6-70 weeks Induced moult	1518.75A±9.15(24)	1076.58BC±11.94(24)	-29.19±0.67(24)	1397.13A±5.06(24)
Mean	1485.50±31.00(6)	1256.15±37.96(6)	14.70±0.37(6)	1400.16±23.25(6)

$^{A-C}$Means within a column with no common superscript differ significantly (p<0.01), Value given in parenthesis in each cell indicates the number of observations

According to Hussein (1996) and Ocak *et al.* (2004), the body weight loss of SCWL layers ranged from 27-31% and produced best post-moult performance which was in agreement with the results of this study.

Sixty five weeks age moult induced birds regained body weight much slower compared to other treatment groups because of high body weight loss (31.08%) during moult period.

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