EFFECT OF FEATHERING PATTERN ON THE PERFORMANCE OF COMMERCIAL BROILERS

L . Umesh, Rajakumar Nagarahalli, K.G . Satisha And S.P. Ganpule

Department of Poultry Science,
Veterinary College, Hebbal, Bangalore-560024.

Received 23-6-2011 Accepted 21-9-2011

ABSTRACT

A 42 days biological trial was conducted to study the effect of rate of feathering on the performance of two strains of commercial broilers. A total of 600 day old chicks (300 hundred birds from each strain) were used. The result of the study showed that fast feathering birds had superior body weight than slow feathering birds, similarly males had superior body weight than females. Fast feathering birds had lengthier wing and tail feathers as compared to slow feathering at all stages. There was no significant difference in mortality and dressing per cent of slow and fast feathering birds. Slow feathering birds had lesser abdominal fat than fast feathering birds. In cooler months and at places with cooler climates, fast feathering birds have clear cut advantage over slow feathering birds as fast feathering chicks need less brooding expenses and more profitable in cold weather.

KEY WORDS: Feathering pattern, broilers, growth traits

INTRODUCTION

Poultry farming in India, during the past three decades has developed from backyard enterprise into an industry with tremendous scope for expansion. Poultry meat production is a profitable short term enterprise having flexibility of operation depending on market trends. In this context, the present study was undertaken to focus on the development of broiler strain of good genetic potential. The traits considered for the improvement were weight of day old chicks, weight at sixth week, keel bone length, shank length, breast angle etc. Similarly rate of feathering was included as a parameter for selecting broiler line to improve their genetic potential as gene responsible for rate of feathering affects the performance of commercial broiler.

MATERIAL AND METHODS

A total 600 sexed broiler chicks of two commercial strains (300 from each strain) were obtained from a hatchery, they were weighed and wing banded and allotted to two treatment groups in each strain named as T1(male of strain I), T2 (Female of strain I), T3(male of strain II) and T4 (Female of strain II) as per sex. The birds were reared on deep litter system and brooding was done upto four weeks of age. Feed and water was given *ad libitum* throughout the experimental period. Standard vaccination schedule was followed. The practical broiler starter and finisher diets were formulated according to BIS (1992) using conventional feed ingredients. The body weight at bi-weekly interval, feed consumption, feed conversion efficiency, mortality, dressing percentage, abdominal fat percentage were calculated at the end of 42 days.

The rate of feathering was assessed by measuring the length of longest primary flight feather and length of longest tail feather at weekly intervals using the same scale for 10 birds per replicate.

RESULTS AND DISCUSSION

Body weight taken biweekly as influenced by rate of feathering is presented in the Table 1.

Body weight at 2 weeks: There was significant difference ($P< 0.05$) between the strains of fast feathering male birds of strain I and II. Strain I males were significantly heavier compared to slow feathering strain II of males, whereas no significant ($P< 0.05$) difference was observed in the fast

feathering females of both the strains. Similar results were noticed at 4th and 6th week body weights as observed by Shrivastava et al (1976) and Kalinowski et al. (2003).

Table 1: **Effect of rate of feathering on bi-weekly body weight (gm)**

Treatment	II week	IV week	VI week
T1	280.36±3.80^{c}	959.88±12.28 ^{d}	1905.69±21.53^{d}
T2	268.39±3.58^{ab}	877.49±9.91^{ab}	1662.41±18.91^{a}
T3	262.00±3.69^{a}	903.42±11.17^{bc}	1799.63±20.39^{c}
T4	260.02±3.78^{a}	863.97±10.18^{a}	1658.10±18.92^{a}

Means with different superscripts within a column are significantly different (P=0.05)

Table 2: **Effect of rate of feathering on bi-weekly Feed consumption (gm)**

Treatment	II week	IV week	VI week
T1	415±8.63^{ab}	1692±28.86^{a}	3810±83.72^{cd}
T2	403±7.70^{a}	1671±46.03^{a}	3540±76.49^{a}
T3	423±6.86^{b}	1718±24.79^{a}	3948±115.71^{d}
T4	404±6.66^{a}	1645±24.26^{a}	3489±60.74^{a}

Means with different superscripts within a column are significantly different (P=0.05)

Table 3: **Effect of rate of feathering on bi-weekly Feed efficiency**

Treatment	II week	IV week	VI week
T1	1.48±0.017^{a}	1.75±0.019^{a}	1.920±0.037^{a}
T2	1.62±0.018^{b}	1.90±0.036^{b}	2.099±0.054^{b}
T3	1.63±0.021^{b}	1.87±0.039^{b}	2.104±0.058^{b}
T4	1.58±0.031^{b}	1.81±0.038^{ab}	2.064±0.052^{ab}

Means with different superscripts within a column are significantly different (P=0.05)

Cumulative feed consumption: No significant difference was observed between fast feathering males of strain I and slow feathering males of strain II (table 2) up to two weeks of age. During 3rd and 4th week significant difference (P< 0.05) was observed between strains due to rate of feathering. Males consumed more feed than females. Similar results were observed up to 6th week of age (Table 2).

Feed conversion efficiency(FCR): Fast feathering males of strain I had better FCR compared to all other groups and there was significant (P< 0.05) difference up to 2 weeks of age (Table 3). Similar results were observed up to six weeks of age as observed by Giordani et al (1993).

Rate of feathering: The data showing weekly mean of primary wing feather length and mean length of tail feather are presented in Table 4 and 5 respectively. Significant difference was observed in feather lengths between strains. Fast feathering males and females group had significantly lengthier wing feathers.

Table 4 Effect of rate of feathering on weekly mean wing feather length(cm)

Treatment	I week	II week	III week	IV week	V week	VI week
T1	6.09^{b}	8.84^{b}	10.48^{b}	12.55^{b}	14.09^{b}	15.28^{b}
T2	6.18^{b}	8.85^{b}	10.77^{c}	12.73^{b}	14.40^{c}	15.80^{c}
T3	4.16^{a}	7.15^{a}	9.73^{a}	11.73^{a}	13.62^{a}	14.94^{a}
T4	6.22^{b}	8.89^{b}	10.52^{b}	12.58^{b}	14.53^{c}	15.86^{c}

Means with different superscripts within a column are significantly different (P=0.05)

Table 5 Effect of rate of feathering on weekly mean tail feather length (cm)

Treatment	I week	II week	III week	IV week	V week	VI week
T1	1.90^{b}	3.73^{b}	5.00^{b}	6.45^{b}	8.13^{b}	8.41^{b}
T2	2.15^{c}	3.92^{b}	5.45^{c}	6.78^{b}	8.29^{b}	9.16^{c}
T3	0.22^{a}	1.11^{a}	2.66^{a}	3.62^{a}	5.24^{a}	6.35^{a}
T4	2.23^{c}	3.96^{b}	5.02^{b}	6.44^{b}	8.31^{b}	9.18^{c}

Means with different superscripts within a column are significantly different (P=0.05)

The response of body weight to the effect of rate of feathering was observed to be in favour of fast feathering birds as reported by Shashikiran (1999). Since the present study was conducted in winter, the higher body weight attained by fast feathering and lower body weight attained by slow feathering may be attributed to the net energy deficit encountered by slow feathering birds due to lesser insulation and more energy diverted towards maintenance of body temperature, which resulted in superior performance of fast feathering birds over slow feathering birds.

There was no significant difference in cumulative feed consumption. Similar reports were observed by Ajang et al (1993) and Heshmatollah (2008).

Significant difference in FCR was found between fast and slow feathering males at all ages as reported by Katanbaf et al (1989), whereas Ajang et al (1993) observed that slow feathering birds had superior FCR. The lengthier tail and wing feathers in fast feathering birds may be attributed to effect of K+ gene and effect persisted even after 42 days of age. Replacement of down feathers with juvenile feathers was earlier in fast feathering birds than slow feathering birds.

From this study it may be concluded that slow feathering birds had lesser abdominal fat than fast feathering birds and may be useful in producing chicken with lesser fat. Fast feathering birds have faster growth of feathers so birds are well insulated which increased the performance in winter season.

REFERENCES :

Ajang, O.A., Prijono, S. and Smith, W.K. (1993).. Br. Poult. Sci., **34** : 73-91

BIS, (1992). Nutrient requirement of poultry. Bureau of Indian Standards, Government of India, Manak Bhavan, New Delhi.

Giordani, G., Meluzzi, A., Cristoferi and Calini, F. (1993). Poult. Abstr., **19** : 1832).

Kalinowski A., Moran E.T. and Wyatt C. L (2003).. Poult. Sci., **82(9)**:1428-37

Katanbaf, M.N., Dunnington, E.A. and Siegel, P.B. (1989). Poult. Sci., **68**: 344-351

Khosravinia Heshmatollah, (2008). Res. J. Poult. Sci., **2(1)**:9-14

Shashikiran, T.B. (1999). Evaluation of a new synthetic cross for juvenile broiler performance. Thesis submitted to University of Agricultural Sciences, Bangalore.

Srivastava, P.N., Poulose,M.V. and Khan, A.G.(1976). The Ind.Poult.Gazette, **60**:5-7

❑