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EFFECT OF VARIOUS FEEDING REGIMES ON THE PERFORMANCE OF BROILERS

M. Zubair Siddiqi, Shahid Javaid, T.H. Shah & Ahsan-ul-Haq
Department of Poultry Husbandry,
University of Agriculture, Faisalabad

The study was conducted upto seven weeks age to determine the effect of feeding regimes on the performance of broilers. Ninety, day-old broiler chicks were randomly divided into 9 experimental units with 3 units or replicates under each of the 3 different feeding regimes i.e. A, B and C. Statistical analysis of the overall data from 0-7 weeks revealed significant influence of feeding regime on the average weight gain and feed efficiency, while non-significant influence on the feed consumption of chicks reared under various feeding regimes was observed. Mortality observed under various regimes was not significantly different. Maximum profit per bird was observed for birds reared under feeding regime A followed by B and C regimes.

INTRODUCTION

Broiler production, a segment of poultry industry in Pakistan has developed tremendously during the last two decades and is expected to flourish more in the times to come. It has significantly contributed towards the quickest and economical production of human food of high biological value. It seems evident that feeding of broilers accounts for approximately two-thirds of the total running expenditure. Therefore, any improvement in feeding principles or practices could cut down the total production cost of broilers. Many research workers have attempted to reduce the feeding cost effectively by developing the least cost feed formulations and by adopting better feeding systems. In the recent past, efforts made in this direction have significantly contributed to alter the conventional feeding principles and practices for further economical production.

It is a common practice in Pakistan that in most of the commercial broiler operations, farmers use two-stage programme of feeding by using starter upto 4 weeks and thereafter finisher rations for 2-3 weeks. They use starter ration with higher protein and energy levels. Thus feeding such a ration for a longer period will increase the cost of broiler production. This project was planned to test three stage feeding regimes by feeding starter, grower and finisher rations which might reduce the production cost of broilers for better return to the commercial producers.

MATERIALS AND METHODS

In all, 90 day-old Hubbard commercial chicks were purchased for this study conducted at the Poultry Experiment Station, University of Agriculture, Faisalabad. Each day-old chick was weighed and wing-banded for identification. The chicks were randomly divided into 9 experimental units of 10 chicks each. Three such experimental units were further allotted randomly to each of the three feeding regimes i.e. A, B and C as detailed below:

A. Chicks were given starter ration from 0-5 weeks and finisher ration from 5-7 weeks of age.

B. Chicks were given starter ration from 0-3 weeks, grower ration from 4-5 weeks and finisher ration from 6-7 weeks of age.

C. Chicks were given starter ration from 0-2 weeks, grower ration from 3-5 weeks and finisher ration from 6-7 weeks of age.

The experimental rations i.e. starter, grower and finisher were formulated and prepared so as to provide various nutrients according to NRC requirements (1984). Chicks under each experimental unit were kept on saw dust litter in individual pens of 120 cm x 90 cm size. they were brooded at 35 ° C during the first week of age, thereafter, the brooding temperature was reduced at the rate of 3 ° C per week until 5 weeks of age. After which the chicks were maintained at room temperature. The feed and water were provided *ad libitum*. The chicks were protected against Newcastle disease through intraocular vaccination at one week of age and through drinking water at the age of four weeks.

The following observations were recorded during the course of this study.

1. Day-old weight per chick and thereafter weekly body weight upto seven weeks of age.
2. Weekly feed consumption per experimental unit.
3. Mortality.

The efficiency and economics of various feeding regimes were worked out and compared. The data thus collected were subjected to standard statistical techniques for significance (Steel and Torrie, 1981).

RESULTS AND DISCUSSION

Weight gain: The mean body weight and weight gain from 0-5, 5-7 and 0-7 weeks of age under 3 different feeding regimes i.e. A, B and C are given in Table 1. The overall mean values for the whole experimental period i.e. upto 7 weeks of age, showed the maximum weight gain (1690.5 g) under feeding regime A followed by feeding regime C (1560.7 g) and minimum under feeding regime B (1555.9 g). The results of statistical analysis on weight gain upto 5 weeks of age revealed a significant difference ($P<0.01$) among various feeding regimes. When Duncan's Multiple Range Test was applied for paired comparison, it was found that chicks reared under feeding regime A gained significantly more weight than chicks under feeding regime B and C, but the difference observed between feeding regimes B and C was non-significant.

The results on weight gain from 5-7 weeks of age showed that the feeding regime had no effect on growth rate. The analysis of the pooled data from 0-7 weeks showed a significant ($P<0.01$) difference in weight gain under different feeding regimes. The multiple comparison under Duncan's Multiple Range test showed that chicks reared under feeding regime A gained significantly better weight than chicks under feeding regimes B and C, while the differences between B and C regimes were non-significant.

It was concluded from the results that two stage feeding, using starter and finisher rations is significantly better than three stage feeding i.e. starter, grower and finisher. It is also evident that increased protein level improves the growth rate and decreased level adversely affected the above traits. The results are in line with Mario and Park (1988) and Summers *et al.* (1988). They reported that growth rate/gain was significantly

Table 1. Mean body weight, weight gain, feed consumption, feed efficiency and mortality of broiler chicks during the experimental period

Parameters	Age duration	Feeding regimes		
		A	B	C
Body weight (g)	Day-old	41.5	41.7	41.6
	5 weeks	1141.6	991.2	1012.5
	7 weeks	1732.0	1597.6	1602.2
Weight gain (g)	0-5 weeks	1100.1[b]	949.5[a]	970.9[a]
	5-7 weeks	590.4	606.3	589.8
	0-7 weeks	1690.5[b]	1555.9[a]	1560.7[a]
Feed consumption (g)	0-5 weeks	2102.0[bc]	1998.4[a]	2048.7[ab]
	5-7 weeks	1911.9	2032.8	1954.2
	0-7 weeks	4013.9	4031.2	4002.9
Feed efficiency	0-5 weeks	1.91[a]	2.10[b]	2.11[b]
	5-7 weeks	3.24	3.35	3.31
	0-7 weeks	2.37[a]	2.59[b]	2.56[b]
Mortality	0-7 weeks	10	10	0

Means having the same superscripts are not significantly different.

higher due to increased protein level in the diet.

Feed consumption: Mean feed consumption values from 0-5, 5-7 and 0-7 weeks of age, during starter, grower and finisher stages shown in Table 1. The recorded data on feed consumption under different feeding regimes from 0-5, 5-7 and 0-7 weeks of age were subjected to analysis of variance for significance. The results revealed significant difference ($P<0.05$) among various feeding regimes upto 5 weeks of age. When Duncan's Multiple Range Test was applied for paired comparison, the results showed significant differences between feeding regimes A and B, whereas non-significant differences were observed between A and C as well as B and C. The analysis of data from 5-7 and 0-7 weeks of age showed non-significant differences (Table 1) in feed consumption under different feeding regimes.

The overall results of three different feeding regimes (A, B and C) with varying levels of protein i.e. 23, 20 and 18% respectively indicate that dietary protein level does not have any significant effect on the total feed consumption in broiler chicks. The results are in agreement with the findings of the Ahmed *et al.* (1985) and Akram (1987), who reported that protein concentration had no effect on feed consumption.

Feed efficiency: The average feed efficiency values from 0-5, 5-7 and 0-7 weeks of age during different feeding regimes are given in

Table 1. The results revealed significant difference ($P<0.01$) among various feeding regimes upto 5 weeks of age. When Duncan's Multiple Range Test was applied for comparison, it was revealed that chicks under feeding regime A showed significantly better feed efficiency than chicks reared under feeding regimes B and C but the difference observed between feeding regimes B and C was non-significant. The results of analysis of data concerning 5-7 week period showed non-significant effect. The analysis of pooled data from 0-7 weeks again showed significant difference ($P<0.01$) in feed efficiency under different feeding regimes. Further it was found that chicks under feeding regime A had significantly better feed efficiency than with regimes B and C which were non-significant.

The results of feed efficiency among various feeding regimes revealed that high protein level of diet improved feed efficiency during 0-5 weeks of age as well as during overall experimental period. The results are in line with the findings of Jackson *et al.* (1982) and Reece *et al.* (1984).

Mortality: No mortality was observed in chicks reared under feeding regime C, but there was 10% mortality upto 7 weeks of age under each of the A and B feeding regimes (Table 1). However, statistical analysis of the data on mortality of chicks upto 7 weeks of age showed non-significant difference due to different feeding regimes.

The cost of production per broiler was determined as rupees 21.51, 21.30 and 21.11 for the feeding regimes A, B and C, respectively. Net profit per bird in the same order was rupees 9.63, 7.50 and 7.69. Apparently, net profit was higher in feeding regime A than with the feeding regimes B and C.

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