

Comparative Performance of Various Commercial Broiler Strains

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Abstract

A project was carried out at Poultry Research Center, Department of Poultry Husbandry, University of Agriculture, Faialabad. Pakistan to study the comparative performance of various commercial broiler strains viz., Hubbard, Arbor acres, Star bro. Ninety days old broiler chicks comprising of 30 chicks each, of different strains viz., Hubbard (Group A), Arbor acre (Group B), star bro (Group C) were purchased from local market and kept in a disinfected shed. Under uniform managemental conditions they were further randomly divided into three experimental units, each comprising of 10 chicks. All chicks were weighed and shank banded individually for identification. Commercial broiler starter mash was offered up to the age of 4th weeks and afterward broiler finisher mash was used up to the age of the 6th weeks for all groups. Initial body weight, weekly body weight and feed consumption were recorded. Mortality was also recorded during the experiment. Feed conversion ratio and economics were calculated. There was significant ($P<0.01$) effect of strains on weight gain at 6th week. Maximum weight gain (gms) was in Hubbard group A (1666) followed by Arbor Acre group B (1385) and Star bro group C (1295) respectively. There was non-significant difference in weight gain among Arbor Acre and Star bro however group A (Hubbard) has significantly more weight gain. Feed consumption in different strains was affected significantly ($P<0.01$) at 6th week of age. Maximum feed consumption (gms) was in Hubbard (3220) followed by Star bro (2785) and Arbor Acre (2760). The feed conversion ratio was significantly ($P<0.01$) affected by different strains. Best feed conversion ratio was in Hubbard (1.93) followed by Arbor Acre (1.99) and Star bro (2.15). Group A i.e. Hubbard and Group B i.e. Arbor Acre do not differ significantly while group C (Star Bro) showed poor feed conversion ratio.

Key words: Poultry, Broiler Strains, Performance

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Mortality percentage in broiler chick of Hubbard (10.0) was significantly ($P<0.01$) higher as compared with Arbor Acre (6.66) and Star bro (6.66). The net profit (Rs.) per broiler of 1.5kg was maximum in Hubbard (23.77) followed by Arbor Acre (17.81) and Star bro (15.32).

Introduction

Broiler production has increased rapidly during the last two decades in Pakistan. There were 162 million broilers in the country during 1997-98, which increased to 264.42 million during 2001-02 (Anonymous, 2003). Higher demand for broiler meat in Pakistan, earlier market age and rapid returns over the invested capital, have increased the popularity of broiler farming. Numerous factors like hygiene, flock size, immunization, mortality, age and weight at the time broilers are marketed and better utilization of available facilities could affect performance of the broilers (Farooq et al 2001).

The general standard of nutrition in Pakistan is very low and is further threatened with rapidly growing population in the static food resources. Pakistan is a developing country and is facing acute animal protein shortage (Anonymous, 2001).

Commercial poultry farming in Pakistan was started in 1963 on modern and scientific lines with the introduction of hybrid strains of broiler and layer stocks. It is because of commercial poultry to a large extent, that the gap between the demand and availability of animal protein in human diet has reduced. In respect to the investment, Poultry industry is the second largest industry (Rs.140 billion) as compared to the textile industry (Rs.158 billion), which is the largest industry of Pakistan (Anonymous, 2002). Various strains of poultry have been developed in the world for better meat production potentials. Quite a number of efficient, high yielding strains have been imported in Pakistan for the production of meat. Therefore, forecasting the efficiency of commercial broiler strains available in the local market, it is imperative to obtain correct information on the different parameters of performance under local climatic conditions. This is also important because of the fact that different broiler breeders continued improving the genetic potential of broiler parent stock in many aspects. During the last decade broiler strain performance have improved much in regard to nutrition

as well as genetics. But there is a lack of the recent data about the performance of different strains of broiler under local environment conditions. Thus a project was planned to compare the performance of different available broiler strains in term of weight gain, feed consumption and feed conversion ratio.

Materials and Methods

In the present study an attempt was made to investigate the comparative performance of various commercial broiler strains viz., Hubbard, Arbor acres, Star bro in local environmental conditions. The brooding house was white washed and cleaned with formaldehyde one week before the start of brooding. A dry and clean litter was placed on the floor of the brooding house. The temperature of the brooder house was maintained at 92°F-95°F for the first week and then reduced by 5°F each week till it reached at 75°F, which was maintained during the rest of the experiment period. Ninety day old broiler chicks comprising of 30 chicks each, of different strains viz., Hubbard (Group A), Arbor acre (Group B), star bro (Group C) were purchased from local market and kept in a disinfected shed. They were further randomly divided into three experimental units, each comprising of 10 chicks. All chicks were weighed and shank banded individually for identification. Commercial broiler starter mash was offered up to the 4th weeks and afterward broiler finisher mash was used up to the age of the 6th weeks. The feed was offered ad libitum to all of the experiment units. The chicks were vaccinated against New Castle disease and Gumboro according to the vaccination scheduled. Coccidak was administrated through water at the age of 22 days as preventive measure against coccidiosis. Initial body weight, weekly body weight of the chicks, and weekly feed consumption of the chicks were recorded. The data on feed consumption and weight gain was utilized to calculate feed conversion ratio. Mortality percentage was also calculated. In the last net profit was calculated by deducting the cost of producing one broiler of one and a half Kg. from the sale price of one broiler. The data thus collected was analyzed by analysis of variance technique using Completely Randomized Design (Steel and Torrie, 1984). The difference of mean was calculated by Duncan's multiple range tests.

Results and Discussion

The data regarding the Average weight gain, Feed consumption, Feed conversion ratio Mortality percentage and economics has been given in table 1. Strains have significant ($P<0.01$) effect on weight gain at at 6th week of age. The weight gain in the group A (Hubbard), B (Arbor Acre) and C (Star bro) was 1666, 1385, 1295gms respectively. The maximum weight gain per chicks was in Hubbard (1666) followed by

Arbor Acre (1385) and Star bro (1295) grams respectively. There was a significant difference in the weight gain of the broiler chicks. Group B and Group C don't differ significantly but Group A has significantly more weight gain. Similar results are reported by Elisabeth *et al.*, (1999) and Price *et al.*, (1999) who reported significant differences in weight gain in different strains of broiler due to their genetic potential and environment. There results were comparable to the present study.

Table 1: Average weight gain, Feed consumption, Feed conversion ratio and Mortality percentage

Description	Hubbard (Group A)	Arbor acre (Group B)	Star bro (Group C)
Initial wt/chick (gm)	49.93	49.53	49.36
Average final wt gain/chick (gm)	1666 a	1385 b	1295 b
Total feed consumed/chick (gm) up to 6th week.	3220a	2760b	2785b
Feed conversion ratio (feed/gain) at 6th week (gm)	1.93b	1.99b	2.15a
Mortality (%)	10.0 a	6.66 b	6.66 b
Net profit/broiler of 1 ½ kg. (Rs.)	23.77	17.81	15.32

Total feed consumed at the end of 6th week was maximum in group A (3220) followed by group C (2785) and groups B (2760) grams. There was a significant ($P<0.01$) effect of strains on feed consumption. The group B and group C does not differ significantly but group A have significantly more feed consumption. The results are inline with the findings of Christmas (1993) who found significant differences among 12 broiler strains in term of feed consumption. Ravindran *et al.*, (1999) reported different feed consumption in different strains of broilers, which may be due to different genetic potential of different strains in different environments.

The average feed conversion ratio calculated at the end of the 6th week was 1.93, 1.99, and 2.15 in group A, B and C. There was a significant ($P<0.01$) effect of strains on feed conversion ratio. The best feed conversion ratio was in group A (Hubbard) followed by group B (Arbor Acre) and group C (Star bro) respectively. Peak (2000) reported a significant difference between strains with respect to feed conversion efficiency, which may be due to different genetic potential of different strains in different environments.

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The numbers of chicks died during the study of six weeks were three (10%) in group A (Hubbard) followed by two (6.66) in group B (Arbor Acre) and two (6.66) in group C (Star bro) respectively. The results of this study showed that mortality percentage in broiler chicks of Hubbard strains were higher as compared with other strains. Post mortem examination was conducted to observe the possible cause of their death. It showed no specific cause of mortality during the first two weeks. Misael *et al.*, (1997) reported that mortality percentage was significantly higher in Hubbard than in Arbor Acre birds.

The comparative economic picture of rearing different strains of broiler is presented in table1. The net profit per bird of one and half Kg in Group A, B and C was Rs. 23.77, 17.81 and 15.32 respectively. The result indicated that net profit per broiler was more in Hubbard than other strains.

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