

GROWTH PERFORMANCE AND CARCASS CHARACTERISTICS AS INFLUENCED BY DIFFERENT VARIETIES OF DESI CHICKENS

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ABSTRACT

This study was conducted to examine performance and carcass characteristics of different varieties of first generation Desi chickens. The parent Desi chickens were procured from different villages of Mianwali and Bhakkar districts of Punjab, Pakistan and were maintained at Poultry Research Institute, Rawalpindi. Nine hundred day-old chicks (of the first progeny), 300 each of black, dark brown and light brown colour, were obtained from this parent flock. The birds in each variety were divided into 3 equal replicates. They were maintained in 9 separate pens on deep litter under optimal managemental conditions. The birds were fed *ad-libitum* a chick starter ration from day-old to 8 weeks and then subsequently a grower mash upto 12 weeks of age. The birds had free access to clean and fresh drinking water. The results showed significant ($p < 0.01$) variation in dressing percentage, shank and neck length and breast width between different varieties of Desi chickens, whereas, they differed non-significantly in growth rate and keel length. The light brown variety had significantly better dressing percentage, shank length and breast width than other two varieties, whereas neck length in both the brown varieties was significantly better than black Desi chickens. Both the brown varieties differed non-significantly from each other in neck length.

Key words: Desi chicken, varieties, growth rate, carcass yield

INTRODUCTION

Poultry production is considered to be one of the most efficient and economical system of production of animal protein foods of high biological value. Since its establishment on commercial scale in early sixties, poultry production in the country has shown tremendous progress. This sector has been developing in two distinct sub-sectors viz., commercial and rural poultry. Besides commercial poultry production, rural poultry has also shown a remarkable progress and has been able to maintain an annual growth rate of about 8 percent per annum for the last one decade. The significance of rural poultry can be appreciated from the fact that 101.33 million rural chickens maintained in the country during the year 2001 produced about 5341 million eggs and 0.14 million metric tonne of poultry meat contributing about 40 to 50% share of the total eggs and poultry meat produced in the country (Bhatti, 2002).

Among the problems, reducing pace of development in rural poultry production sector, poor productive potentials of Desi chickens has been the most significant. Efforts are needed to increase productive potentials of Desi rural chickens which is known to possess centuries-old adaptation to local rigorous environmental conditions and also better resistance to infections (Bhatti *et al.*, 1990). Bhatti and Sahota (1994) observed that productive potentials of

Desi and local chickens could be improved through selection, cross breeding and improved nutrition. However, in Pakistan very little research work has been conducted to examine possibility of improving productive performance of Desi chickens through selective breeding. Keeping this in view, a development project of 4 years duration has been undertaken at Poultry Research Institute, Rawalpindi with the objectives of identifying different varieties of Desi local chickens and examining possibility of bringing improvement in their productive performance through selective breeding. Different studies under this development programme on breeding of Desi chickens have been undertaken. The findings of research work presented in this paper are part of these studies undertaken to examine growth performance and other carcass traits in different varieties of Desi Generation-I chickens evolved consequent to selective breeding.

MATERIALS AND METHODS

The study was conducted at Breeding and Incubation Division, Poultry Research Institute, Rawalpindi, to examine growth performance and carcass characteristics of three different varieties of first generation Desi chickens. The parent Desi Chickens were procured from rural areas of Mianwali and Bhakkar districts of Punjab (Pakistan). Nine hundred day-old chicks, 300 each of black, dark brown and light

brown varieties were obtained from this parent stock and were divided into 3 equal replicates. They were maintained in 9 separate pens (each measuring 12 x 8 feet) on deep litter system under optimal management conditions for a period of 12 weeks. The chicks were weighed and wing-banded individually for identification. The experimental birds were fed a balanced chick starter ration (from day-old to 8 weeks of age) and subsequently a grower ration (from 9 weeks to 12 weeks of age) *ad-libitum*. The rations were prepared at Feed Mill Plant of Poultry Research Institute, Rawalpindi. The birds had a free access to clean and fresh drinking water. The experimental chicks were vaccinated against Newcastle disease, Infectious Bronchitis and Infectious Bursal Disease following recommended vaccination schedules. The weekly data on body weight gain were recorded. At the end of the experiment, 5 chicks from each replicate were picked up at random and slaughtered to record data on dressing percentage, keel, shank and neck length and breast width. The experiment was conducted according to completely randomized design. The data thus obtained were statistically analysed using analysis of variance technique (Steel and Torrie, 1984) and least significant difference test.

RESULTS AND DISCUSSION

The results in respect of growth performance and carcass quality of different varieties of Desi generation-1 chickens have been shown in Table-1. The average body weight gain in black, dark brown and light brown varieties of Desi chicks was noted to be 769.67 ± 15.31 , 54.89 ± 37.58 and 766.66 ± 31.96 gm, respectively (weekly body weight gain have been shown in Figure-1), the difference was non-significant. The results showing low body weight gain in Desi birds

are in line with earlier findings of Jain and Chaudhry (1984), who reported poor growth rate in Desi chickens. Sahota and Bhatti (2001) observed lower body weight gain in Desi in comparison to Rhode Island Red and White Leghorn chicks at 8 weeks of age. The poor growth rate in Desi chickens, as observed in the present study, could be attributed to genetic built-up of the birds. The difference in growth rate of chickens is due to interplay of multiple genes and this trait could be improved through genetic selection (Chambers, 1990).

The dressing percentage in black, dark brown and light brown varieties of Desi chickens was observed to be significantly ($p < 0.01$) different in different varieties. The light brown variety had significantly higher dressing percentage than other two varieties, the latter differed non-significantly from each other in dressing percentage. Breed differences in dressing percentage of chickens have been reported earlier (Sah *et al.*, 1984). Chambers (1990) indicated genetic differences among strains and lines of chickens for yields of dressed carcasses. The findings of the present study showing dressing yield in different varieties of Desi chickens in the range of 55.78 to 57.40% are in line with earlier findings of Bhatti *et al.* (1990) and Bhatti and Sahota (1994), who reported almost similar dressing percentage in different cross-bred strains of Desi chickens.

The average breast width in Desi black, dark brown and the light brown varieties was found to vary significantly in different strains and light brown variety was better in breast width than other two varieties, the latter varied non-significantly from each other. Bhatti *et al.* (1990) and Bhatti and Sahota (1994) reported similar variation in breast width of different cross-bred progenies of Desi chickens. Chambers (1990) reported that breast width was a genetically controlled character. The results further showed that the varieties of Desi chickens

Table 1. Growth performance and phenotypic characteristics of different varieties of Desi chickens (mean \pm SE)

Particulars	Varieties		
	Black	Dark brown	Light brown
Average body weight gain per bird (gm)	$769.67^a \pm 15.31$	$754.89^a \pm 37.58$	$766.66^a \pm 31.96$
Average dressing percentage	$55.82^a \pm 0.02$	$55.78^a \pm 0.08$	$57.40^b \pm 0.45$
Average breast width (cm)	$8.67^a \pm 0.15$	$8.70^a \pm 0.10$	$10.07^b \pm 0.32$
Average shank length (cm)	$6.48^a \pm 0.10$	$6.51^a \pm 0.08$	$6.72^b \pm 0.03$
Average neck length (cm)	$5.69^a \pm 0.04$	$5.80^b \pm 0.05$	$5.82^b \pm 0.06$
Average keel length (cm)	$5.70^a \pm 0.05$	$5.70^a \pm 0.10$	$5.78^a \pm 0.07$

Means with different superscripts in a row indicate significant difference ($p < 0.01$).

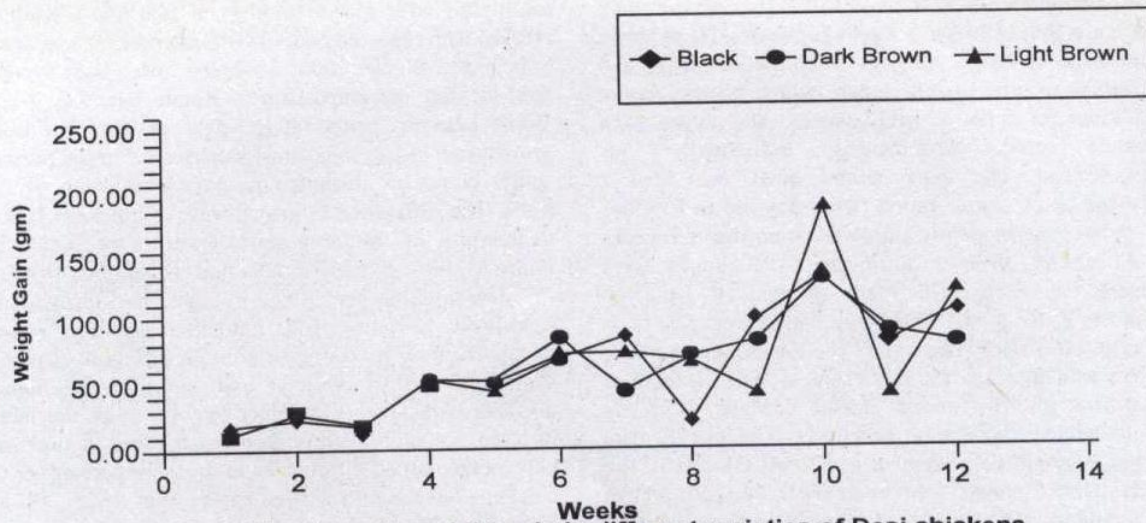


Fig.1. Weekly body weight gain in different varieties of Desi chickens

varied significantly ($p < 0.01$) in shank and neck length. The light brown variety had significantly higher shank length than other two varieties which differed non-significantly from each other. The neck in dark brown and light brown varieties was significantly longer ($p < 0.01$) than black Desi chickens, however, both light and dark brown varieties differed non-significantly from each other in this trait. The results of this study are in line with earlier findings of Bhatti *et al.* (1990) and Bhatti and Sahota (1994), who observed variation in shank length in different strains of Desi cross bred chickens. The results of the present study also indicated that the three varieties of Desi chicken did not differ in their keel length.

The findings of the present study indicate significant variation in dressing yield, shank and neck length, and breast width in different varieties of Desi chickens. These findings provide evidence in respect of carcass yield of different varieties of local Desi chickens which could be considered to further improve productive potentials of native rural chickens through selective breeding.

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