# PERFORMANCE OF DESI (NATIVE) LAYING HENS FED ON VARYING DIETARY PROTEIN CONTENTS

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## ABSTRACT

This experiment was conducted to study effects of different dietary protein contents on the productive performance of Desi (native) chickens maintained under controlled housing conditions. For this purpose, 360 adult (30 weeks-old) Desi laying hens, divided into 3 equal groups, were fed *ad libitum* on 3 iso-caloric rations each containing 12, 14 or 16% crude protein for a period of 50 weeks. The results indicated that dietary protein content significantly ($P<0.01$) affected performance of Desi chickens in terms of feed intake, egg weight, feed conversion efficiency and egg production ($P<0.05$). The findings further showed that Desi chickens fed ration containing 14 or 16% crude protein exhibited better productive performance than those fed on ration containing 12% protein content, however, non-significant difference between productive performance of Desi chickens fed on rations containing 14 or 16% crude protein was observed. The findings of this study suggested that Desi laying chickens could give better productive performance when fed diet of 14% crude protein content.

**Key word:** Performance, Desi hens, dietary protein

## INTRODUCTION

According to an estimate, rural poultry contributes about 40% of the total eggs and poultry meat produced in the country (Bhatti, 2000). Poultry farming activity at village level helps in improvement of family nutrition as well as in providing the villagers with a valuable source of income. In the rural areas mostly Desi chickens are maintained possessing poor productive potential (Yaqoob *et al*., 1965). Besides poor growth rate and low egg production (Yaqoob, 1965; Chaudhry, 1965), Desi chickens produce small sized eggs with poor feed conversion efficiency (Bhatti and Sahota, 1996). The village chickens are kept under scavenging conditions and, therefore, their productive performance under rigorous local environmental conditions does not fully reflect their inherent potential.

A balanced ration is essential to meet physiological needs of birds for optimum production. Earlier work to improve productivity of rural chickens through selective inbreeding or cross-breeding has been conducted under different climatic conditions. However, very little research work has been done to study nutritive requirements of Desi chickens under our local environmental conditions. Therefore, the present trial was undertaken to study performance of Desi (Native) chickens fed three dietary protein concentrations under our local environment.

## MATERIALS AND METHODS

This study was conducted at the Breeding and Incubation Section of the Poultry Research Institute, Rawalpindi. A total of 360 adult (30 weeks old) Desi (native) laying hens were used in the experiment. These birds were randomly divided into three equal groups viz., A, B and C. The birds in each group were assigned to 3 replicates. The birds were maintained in nine separate pens on deep litter system under optimal managemental conditions. Three isocaloric experimental rations containing 12, 14 or 16% crude protein prepared at Feed Plant of the Institute were fed *ad libitum* to birds in groups A, B and C, respectively. The composition of experimental rations is presented in Table-1. Fresh and clean water was provided at all the times. Sixteen hours light was provided to the birds. The experiment was run for a period of 50 weeks. The data on feed intake, egg production and egg weight were weekly collected. Feed conversion efficiency (feed/dozen eggs) was also worked out. The data were subjected to statistical analysis using analysis of variance technique (Steel and Torrie, 1982) to draw inferences.

## RESULTS AND DISCUSSION

The average feed consumption, egg production and feed conversion ratio of Desi chickens fed on different experimental rations are presented in Table-2. The results revealed that Desi layers fed rations containing 12, 14 and 16% crude protein consumed 40.67, 36.67 and 36.00 kg feed, respectively during the experimental period. The birds fed low protein (12%) diets consumed more feed ($P<0.01$) than those maintained on rations containing 14 and 16% crude protein. There was significant ($p<0.01$) effect of protein content on feed intake of Desi chickens. A comparison of means showed significant difference between feed consumption of birds fed rations A and B and A and C, while non-significant difference was noticed between rations B and C. The higher intake of feed in birds of group A is attributed to low protein content of feed which necessitated higher intake of feed to meet protein requirements for normal physiological functions. This is in line with those of North (1984), who reported that birds fed protein deficient rations consumed more quantity of feed.

The data further showed that Desi layers fed on experimental rations containing 12, 14 and 16% crude protein laid on an average 53.33 (15.23%), 67.00 (19.14%) and 66.33 (18.95%) eggs, respectively, during the experimental period of 50 weeks with FCR values of 9.20, 6.49 and 6.52. The highest egg production was recorded in group B, followed by those in groups C and A. The birds fed ration B produced heavier eggs as compared to those given rations A and C. The statistical analysis of the data showed significant effect of protein content on egg production and feed efficiency of Desi hens. Chickens fed rations containing 12% crude protein laid significantly ($P<0.05$) less number of eggs than those given rations with 14 or 16% protein. The dietary protein content had non-significant effect on mortality rate of chickens which averaged 3.50, 3.33 and 3.33% in birds of groups A, B and C, respectively.

The findings of this study regarding effect of dietary protein content on egg yield are in agreement with those of North (1984), who stated that protein content of a ration had a significant effect on egg laying, while, Sykes (1977) and Scott *et al.* 1982)

**Table-1: Composition of experimental rations**

| Ingredients | Experimental rations (% Composition) A CP=12% | B CP=14% | C CP=16% |
|---|---|---|---|
| Maize. | 30 | 30 | 25 |
| Rice. | 30 | 30 | 25 |
| Cotton seed meal. | 06 | 04 | 04 |
| Corn gluten meal (60%). | 02 | 04 | 05 |
| Kara masoor. | 09 | 09 | 12 |
| Rice polishings. | 11 | 10 | 12 |
| Fish meal. | 03 | 03 | 04 |
| Corn gluten (30%). | 3.50 | 4.50 | 6.50 |
| Molasses. | 03 | 03 | 03 |
| Bone meal. | 02 | 02 | 03 |
| Vitamin premix. | 0.50 | 0.50 | 0.50 |

**Table 2: Performance of Desi birds fed on different dietary protein contents**

| Particulars | Experimental groups: A (12% protein) | B (14% protein) | C (16% protein) |
|---|---|---|---|
| Average feed consumption (kg). | 40.67[a] | 36.67[b] | 36.00[b] |
| Average egg production (No.). | 53.33[a] | 67.00[b] | 66.33[b] |
| Average feed conversion ratio (Feed/dozen eggs). | 09.20[a] | 06.49[b] | 06.52[b] |
| Average egg weight (gm). | 44.00[a] | 47.17[b] | 47.00[b] |
| Average mortality (%). | 3.50[a] | 3.33[a] | 3.33[a] |

Means with different superscripts in a row indicate significant difference ($P<0.05$).

reported that despite better environment, the effect would remain un-expected when fed a deficient diet or a diet deficient in essential amino acids. A non-significant difference was found between egg production of birds fed rations B and C, indicating that feeding rations with crude protein content higher than 14% could not bring additional benefits in egg production of Desi laying chickens. The results of the present study were at variance with those of Qureshi (1988), who reported that feeding high protein diets increased egg production in Desi chickens. The results of the present study clearly indicated that Desi birds when fed on diets containing 14% crude protein could give better performance during laying cycle.

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