



Feeding Strategy for Laying Hens to Counter Low Egg Prices in the Market

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ABSTRACT

The present study was conducted to reduce the cost of feeding in laying hens by mixing easily available feed ingredients with a farmer so that cost of egg production can be reduced and in turn margin of profit increased. A complete layer mash (crumbles) purchased from the local market costing Rs. 29/kg. was used as control diet (T1). This diet (T1) was replaced with 10 and 20 per cent each of ground maize and broken rice at the time of feeding daily. Thus, a total of 5 experimental diets were prepared as T1 (control), T2 (T1+ 10 % ground maize), T3 (T1+ 20 % ground maize), T4 (T1+10% broken rice) and T5 (T1+ 20% broken rice). All 5 experimental diets were fed to 5 groups of layers with 20 hens in each group. Thus, a total of 100 laying hens were used for this experiment. All the birds were housed in individual cage and fed individually for a period of 90 d during the months of February to April, 2021. The results revealed that feeding cost per hen during 3 m period came out to be Rs. 261, Rs. 256, Rs. 248, Rs.247 and Rs.233 in groups T1, T2, T3, T4 and T5, respectively and there was a saving of Rs.5, Rs. 13, Rs. 14, and Rs. 22 per hen in groups T2, T3 T4 and T5 as compared to T1 when diet was mixed with maize (10%), Maize (20%), broken rice (10% and broken rice (20 %). Therefore, this strategy can be helpful during the period when there is very high feed cost and low egg price in order to save expenditure on feeding of hens. On the other hand, when net profit calculated, it was found that maximum profit was in control group (T1) followed by T2, T3, T4 and T5. The reduction in net profit was due to a smaller number of eggs laid by birds of T2, T3, T4 and T5 group.

Key Words: Cost, Egg, Feed, Hen, Net income, Price.

INTRODUCTION

Poultry feed industry is growing due to growth of poultry in the India. Poultry birds need rations which should be enriched with amino acids, vitamins, minerals and other nutrients. Poultry farming is becoming modernized day by day and more scientific from extensive ((Halima *et al*, 2007) to cage system so all the nutrients must be balanced within the feed to fulfil all the requirements of the birds. In overall poultry operations, feed alone comprises 70-80 per cent of total production cost, so the feed should be selected on the basis of performance. Singh *et al* (2019) revealed the formulation with high density nutrients like amino acids, vitamins and minerals, which provided all the required nutrients for optimal egg production during hot summer conditions were found to be

the best. The egg production was observed to be increased by 16.67 per cent as compared to the control diet. Although cost per 50 kg bag was higher but it proved to be value for money in terms of cost of production/egg. Therefore, farmers were advised to use nutrient rich feeds especially during summer months for profitable poultry farming during hot weather. Contrary to the earlier findings of the authors, the rising poultry feed prices have their direct impact on the composition of layer feed and thus compels a poultry farmer to make use of alternative feed stuffs in laying hen ration (Kellems and Church, 2010).

The most expensive nutrients in poultry diets are energy and protein. The energy intake by a laying hen mainly used body maintenance, activity

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and to maintain the required body temperature whereas the average daily protein intake depends on the requirements to produce eggs and the body maintenance (FAO,2011). In the egg production business, the total daily cost of feeding depends on the feed price /kg and the total quantity of feed consumed by the flock. Depending on the market situation, it can be cheaper to steer to a higher feed intake with a lower feed price or vice versa. As laying hens mainly eat according to the energy level present in the feed provided to them, it is essential to track the flocks feed intake as accurate as you can and to formulate the protein levels according to the recorded feed intake (Swain *et al*, 2014) . It is worth to mention that in scientific publications, much emphasis is given on energy, protein and other nutrients level present in a diet (Faruk *et al*, 2010). All these values are estimated but what happens inside the body of an organism and how much interactions take place can not be estimated in a laboratory. Thus, in vivo feeding experiments tells the actual performance. In the present study, efforts were made to reduce the cost of feeding in laying hens by mixing easily available feed ingredients with a farmer so that cost of egg production can be reduced and in turn margin of profit increased.

MATERIALS AND METHODS

The feeding experiment was conducted at the Krishi Vigyan Kendra, Langroya SBS Nagar instructional farm where all the laying birds were kept in individual poultry cage in order to note down the various observations. Each cage measured 15” in length, 12” width having a total floor area of 180 square inches. Bottom of each cage was having a slope of 2 inches for rolling of eggs. Feeders and waterers were provided in form of long channels throughout the cage. Before offering experimental diets, in order to assess the daily feed requirement of 22 wk. old hens, *ad lib* feeding was done for 10 days. A measured quantity of feed was put in the feeder each day and on next day, left over feed was weighed. A complete layer mash (crumbles) purchased from the local market costing Rs. 29/kg. was used as control diet (T1). This diet (T1) was replaced with 10 and 20 per cent each of ground maize and broken rice at the time of feeding daily (MC Den *et al* 2009). Thus, a total of 5 experimental diets were prepared as T1 (control), T2 (T1+ 10 % ground maize), T3 (T1+ 20 % ground maize), T4 (T1+10% broken rice) and T5 (T1+ 20% broken rice). All 5 experimental diets were fed to 5 groups of layers with 20 hens in each group. Thus, a total of 100 laying hens were used for this experiment.

Table 1. Evaluation of egg production in poultry by diluting layer ration with maize and broken rice.

Parameter	Experimental diet				
	T1	T2	T3	T4	T5
Initial body weight (kg)	1.30	1.31	1.30	1.32	1.33
Final body weight (kg)	1.35	1.40	1.35	1.34	1.42
Total number of eggs laid	70	68	65	67	63
Average egg weight (g)	55.0	54.5	53.0	54.4	51.6
Feed consumed/hen (kg)	9.0	9.0	9.0	9.0	9.0
Feed cost/hen (Rs)	261	256	248	247	233
Income / hen @ Rs. 5/- egg	350	340	325	335	315
Net Income /hen (Rs)	89	84	77	88	82

T1= Crum Feed 100 g/bird; T2 = Crum Feed 90 g+ 10 g maize; T3 = Crum Feed 80 g + 20 g maize; T4= Crum Feed 90 g + 10 gm broken rice; T5= Crum Feed 80 g + 20 g broken rice. The market rate of feed was @ Rs. 29/-kg, maize @ Rs. 21/-kg and broken rice @ Rs. 12/-kg.

All the birds were housed in individual cage and fed individually for a period of 90 days during the months of February to April, 2021. In order to exclude the effect of feed intake on egg production, a measured quantity of 100g feed was given to each laying hen.

Observations recorded

The data of 100 birds were recorded daily for 90 days for feed intake, number of eggs laid by each bird, weight of egg laid. The body weight of the hen was recorded in the beginning and at the end of the experiment to note down the effect of controlled feeding management on change in body weight and egg production.

Economic returns

To calculate economic parameters, feed cost @ Rs. 29/kg purchased from the local market, ground maize @ Rs 21/ kg and broken rice @ Rs. 12/kg was used. Selling price of one egg was Rs. 5/ egg. Gross cost was calculated by taking account total feed consumed during 90 days multiplied by the cost of feed/kg. Likewise, total income was calculated as total number of eggs laid multiplied by selling price of an egg @ Rs. 5/egg. Net profit was estimated as total income minus total cost.

RESULTS AND DISCUSSION

The data (Table 1) show that initial body weight of all the hens in all the groups was almost same because a standard layer mash was fed to all the laying hens and ranged between 1.30 kg to 1.33kg. After feeding 5 different experimental diets for a period of 90 days, there was an increase in the live body weight of hens varying between 20g to 90g/ bird. This was due to the reason that restricted feeding was done instead of *ad lib* feeding as recommended by research institutes to get maximum number of eggs from laying hens by following *ad lib* feeding system.

Egg production

It was found that maximum number of eggs (70) was obtained in group T1 (Control) and minimum

in T5(63) where feed was mixed with 20 per cent of broken rice (Table 1). Similar was the trend for average egg weight obtained and found to be 55.0g, 54.5g, 53.0g, 54.4g and 51.6g from the hens fed diets T1, T2, T3, T4 and T5, respectively (Table 1). Bird generally meet their energy requirement by consuming more quantity of feed if it is deficient in energy content but in the present study, restricted feeding was done so there was no scope of consuming more quantity of feed than offered a weighed quantity of 100 g to each laying hen. The drop in the egg production as well as egg weight might be due to low energy content of diet T5 in addition to other nutrients compared to standard layer feed used in control group (T1). This observation was also seen in birds of group T2 and T3 where egg production was 68 and 65, respectively as compared to control (70 eggs). Hence, it can be said that when a diet is made cheaper by including energy sources like broken rice or maize in the standard layer mash, there might be imbalance in the nutrient contents as a result of which, the egg production and egg weight were affected adversely.

Economics

This study was especially undertaken with the objective to see the effect of using easily and cheaper available feed ingredients in the rations of layers on the egg production. During the corona period and summer months, demand of eggs reached at the lowest level and consumer was not interested to buy an egg @ Rs. 5/- which he used to buy @ Rs 8/- during winter season. Under such situation, poultry farmers either closed down their layer farms or suffered a huge loss because feed manufacturers did not lower the prices of feed and other items required for poultry production.

The data (Table 1) revealed that feeding cost per hen during 3 months period came out to be Rs. 261, Rs.256, Rs.248, Rs.247 and Rs.233 in groups T1, T2, T3, T4 and T5, respectively and there was a saving of Rs.5, Rs.13, Rs.14, and Rs.22 per hen in groups T2, T3 T4 and T5 as compared to T1 when diet was mixed with maize (10%), Maize (

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On the other hand, when net profit calculated, it was found that maximum profit was in control group (T1) followed by T2, T3, T4 and T5. The reduction in net profit was due to a smaller number of eggs laid by birds of T2, T3, T4 and T5 group.

CONCLUSION

On the basis of this study it was concluded that if a producer wishes to get maximum profit from poultry birds, he should always feed high quality balanced diet to the birds. In this experiment egg number and egg weight was significantly decrease in T5 as compared to all the rations. Contrary to this normal situation, under adverse situation, the feeding cost can be reduced by mixing the standard diets with low cost feeding materials as shown in T2 and T4. Although cost per bag was higher for T1, but it proved to be value for money in terms of cost of production/egg. Therefore, farmers were advised to use nutrient rich feeds especially during peak level for profitable poultry farming.

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