

Feeding Strategy to Reduce the Cost of Feeding in Backyard Poultry

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Received: July 2024

166/24

Accepted: December 2024

ABSTRACT

The present study was conducted to reduce the cost of feeding in laying hens by mixing easily available feed ingredients with a commercial layer mash so that the cost of egg production can be reduced and, in turn margin of profit increased. A complete layer mash purchased from the local market, costing Rs. 20/kg, was used as the control diet (T1). This diet (T1) was replaced with 10, 20, 30, and 40 per cent each of broken rice at the time of feeding daily. Thus, a total of 5 experimental diets were prepared as T1 (control), T2 (T1+10 % broken rice), T3 (T1+ 20 % broken rice), T4 (T1+ 30% broken rice) and T5 (T1+ 40% 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 cages and fed individually for a period of 90 days during the months of July to September 2007. The results revealed that feeding cost per hen during 3 m period came out to be Rs.180, Rs.171, Rs.162, Rs.153 and Rs.144 in groups T1, T2, T3, T4 and T5, respectively and there was a saving of Rs.9, Rs. 18, Rs. 27, and Rs. 36 per hen in groups T2, T3, T4 and T5 as compared to T1 when diet was mixed 10, 20, 30, and 40 per cent each of broken rice. Therefore, this strategy can be helpful during the period when there is a very high feed cost and low egg price in order to save expenditure on the feeding of hens. On the other hand, when the net profit was calculated, it was found that the maximum profit was in the 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 groups. From this study, it was concluded that the inclusion of 10% of broken rice in the diet may be followed, since there was not much difference in the profit compared to the control

Keywords: Feeding Cost, Backyard poultry, Egg size, Feeding strategy, Net income, Profit.

INTRODUCTION

In the poultry industry, feed alone comprises 70-80 per cent of total production cost, so the feed should be selected on the basis of performance. The rising poultry feed prices have a direct impact on the composition of layer feed and thus compel a poultry farmer to make use of alternative feedstuffs in the laying hen ration. Thus, *in vivo* feeding experiments tell 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 commercial layer mash so that the 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, Kattupakkam instructional farm, where all the laying birds were kept in individual poultry cages to note down the various observations. Each cage measured 15" in length, 12" in width, having a total floor area of 180 square inches. The bottom of each cage also has a gap of 2 inches for rolling eggs. Feeders and waterers were provided in the form of long channels

throughout the cage. Before offering experimental diets, 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 the next day, leftover feed was weighed. A complete layer mash (crumbles) purchased from the local market, costing Rs. 20/kg, was used as the control diet (T1). This diet (T1) was replaced with 10, 20, 30, and 40 per cent each of broken rice at the time of feeding daily. Thus, a total of 5 experimental diets were prepared as T1 (control), T2 (T1+10 % broken rice), T3 (T1+ 20% broken rice), T4 (T1+ 30% broken rice) and T5 (T1+ 40% 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 cages and fed individually for a period of 90 days during the months of July to September 2007. To exclude the effect of feed intake on egg production, a measured quantity of 100g of feed was given to each laying hen. The data of 100 birds were recorded daily for 90 days for feed intake, number of eggs laid by each bird, and the weight of eggs 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 the change in body weight and egg production. To calculate economic parameters, feed cost @Rs. 20/kg purchased from the local market, ground broken rice @ Rs. 10/kg was used. The selling price of one egg was Rs. 10/ egg. Gross cost was calculated by taking into account the total feed consumed during 90 days multiplied by the cost offered/kg. Likewise, total income was calculated as the total number of eggs laid multiplied by the selling price of an egg @ Rs. 10/egg. Net profit was estimated as total income minus total cost.

RESULTS AND DISCUSSION

The data (Table 1) show that the initial body

weight of all the hens in all the groups was almost the same because a standard layer mash was fed to all the laying hens and ranged between 1.30 kg and 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 and 90g/bird. This was due to the reason that restricted feeding was done instead of *ad libitum* feeding as recommended by research institutes to get the maximum number of eggs from laying hens by following an *ad lib* feeding system.

Egg Production

It was found that the maximum number of eggs (35) was obtained in group T1 (Control) and the minimum in T5 (28), where feed was mixed with 40 per cent of broken rice (Table I). Similar was the trend for average egg weight obtained and found to be 55.0g, 54.5g, 54.4 g, 53.0 g, and 51.5g from the hens fed diets T1, T2, T3, T4 and T5, respectively (Table 1). Birds generally meet their energy requirement by consuming a greater quantity of feed if it is deficient in energy content, but in the present study, restricted feeding was done, so there was no scope for consuming more quantity of feed than offered a weighed quantity of 100 g to each laying hen. The drop in egg production as well as egg weight might be due to the low energy content of diet T5 in addition to other nutrients compared to the standard layer feed used in the control group (T1). This observation was also seen in birds of groups T2 and T3, where egg production was 34 and 33, respectively, as compared to the control (35 eggs). Hence, it can be said that when a diet is made cheaper by including energy sources like broken rice in the standard layer mash, there might be an imbalance in the nutrient contents, as a result of which, the egg production and egg weight were affected adversely. The Reduction in egg

size and the decrease in number were due to low levels/imbalance of energy and protein/nutrients. According to FAO (2011), the most expensive nutrients in poultry diets are energy and protein. The energy intake by a laying hen is mainly used for body maintenance, activity, and to maintain the required body temperature, whereas the average daily protein intake depends on the requirements to produce eggs and body maintenance. 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 accurately as you can and to formulate the protein levels according to the recorded feed intake (Swain *et al*, 2014). 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. The rising poultry feed prices have a direct impact on the composition of layer feed and thus compel a poultry farmer to make use of alternative feed stuffs in laying hen ration (Kellems and Church, 2010). 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.

Economics

During the period of higher feed cost or lower egg price under such a 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 the feeding cost per hen during 3 months period came out to be Rs.180, Rs.171, Rs.162, Rs.153 and Rs.144 in groups T1, T2, T3, T4 and T5, respectively, and there was a saving of Rs.9, Rs.18, Rs.27, and Rs.36 per hen in groups T2, T3, T4 and T5 as compared to T1 when diet was mixed with 10, 20, 30, and 40 per cent each of broken rice. Therefore, this strategy can be helpful during the period when there is a very high feed cost and low egg price in order to save expenditure on the feeding of hens. On the other hand, when the net profit was calculated, it was found that the maximum profit was in the 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 the T2, T3, T4 and T5 groups.

Table I: Economics of egg production by diluting layer ration with broken rice in Backyard poultry

Parameters	Experimental diet				
	I	II	III	IV	V
Initial body weight (kg)	1.30	1.32	1.31	1.33	1.30
Final body weight (kg)	1.35	1.34	1.40	1.42	1.35
Total number of eggs laid	35	34	33	30	28
Average egg weight(g)	55.0	54.5	54.4	53.0	51.6
Feed consumed/hen (kg)	9.0	9.0	9.0	9.0	9.0
Feed cost/hen (Rs)	180	171	162	153	144
Income /hen (Rs.5 per egg)	350	340	330	300	280
Net Income /hen (Rs)	170	169	158	147	136

CONCLUSION

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 were significantly decreased in T5 as compared to all the rations. Contrary to this normal situation, under an adverse situation, the feeding cost can be reduced by mixing the standard diets with low-cost feeding materials as shown in T2 and T3. Although the cost per bag was higher for T1, it proved to be value for money in terms of the cost of production/egg. Therefore, farmers were advised to use nutrient-rich feeds, especially during peak level for profitable poultry farming, and it was concluded that the inclusion of 10% of broken rice in the diet may be followed since there was not much difference in the profit compared to the control

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