



UNCONVENTIONAL FEED RESOURCES IN CROSSBRED DAIRY ANIMALS RATIONS FOR ECONOMICAL MILK PRODUCTION

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ABSTRACT

A feeding trial was conducted to assess the cost of milk production, when brewery waste incorporated concentrate based diet was fed in lactating cows for a period of 60 days. Eighteen early lactating crossbred cows were selected from ILFC, TANUVAS, Madhavaram Milk Colony as the experimental animals. The cows were divided into three groups as uniform as possible with regard to their age, body weight, parity, previous milk yield and stage of lactation. They were randomly allotted to the three dietary treatments T1, T2 and T3. The three dietary treatments were: T1, concentrate mixture, paddy straw and green fodder; T2 and T3, concentrate mixture containing brewery waste at 40% and 80% level (on DM basis). The total milk produced in 60 days by the animals fed the three dietary treatments T1, T2 and T3 were 2872 ± 10.75 , 3200 ± 12.13 , and 2950 ± 13.82 kg, respectively. The milk production was comparatively higher in brewery waste fed groups (T2 and T3) than those fed control diet (T1). The cost of feed per kg milk produced was Rs. 18.11, 14.01 and 12.66 respectively, for the three dietary treatments T1, T2 and T3. The brewery waste fed groups (T2 and T3) had lower cost of feed per kg milk produced compared to those fed control diet (T1), due to higher milk production and comparatively low cost of feed. Based on the results obtained during the present investigation revealed that inclusion of fresh (25% DM) brewery waste reduced the cost of feed per kg milk production by 22% and 30% by feeding brewery waste incorporated concentrate feed at 40% and 80% in lactating crossbred cows producing about 10 kg milk per day.

KEY WORDS: Brewery Waste, Dairy Animals, Economics.

INTRODUCTION

A wide range of agro-industrial byproducts are available in large quantities which have considerable nutritional potential. Brewery waste is a byproduct of ethanol industry which uses cereal grains as feed stock. When grain is fermented to produce ethanol, primarily the starch is utilized, leaving behind a protein rich residue that can be used in livestock diets. As the ethanol industry grows, greater quantities of distiller's grain will become available which can be utilized as an unconventional feed resource in ruminants especially milch animals in tropics. Hence the present study was planned to estimate the cost of production of brewery waste incorporated concentrate based diet in lactating cows.

MATERIALS & METHODS

Eighteen early lactating crossbred cows were selected from ILFC, TANUVAS, Madhavaram Milk Colony as the experimental animals. The cows were divided into three groups as uniform as possible with regard to their age, body weight, parity, previous milk yield and stage of lactation. They were randomly allotted to the three dietary treatments T1, T2 and T3. The three dietary treatments were: T1, concentrate mixture, paddy straw and green fodder; T2 and T3, concentrate mixture containing brewery waste at 40% and 80% level (on DM basis). An adaptation period of seven days was given to each animal. The cows were fed as per NRC (1989) standards. The experiment was carried out for a period of 60 days and the

animals were maintained under similar managerial conditions. Feeding was done twice daily and brewery waste was fed along with concentrate feed for T2 and T3. Individual records of daily intake of concentrate mixture, paddy straw and brewery waste, green fodder and daily milk production of the experimental animals were maintained throughout the experiment. The cost of brewery waste, concentrate mixture and paddy straw for producing one kilogram of milk was calculated using the data on total feed consumption and total milk yield during the experimental period. The data were analysed statistically as per the standard methods given by Snedecor and Cochran (1994).

RESULTS

Data on the feed intake, total milk production and economical assessment such as cost of feed per kg milk produced by experimental cows maintained on three dietary treatments are given in Table 1. The total milk produced in 60 days by the animals fed the three dietary treatments T1, T2 and T3 were 2872 ± 10.75 , 3200 ± 12.13 , and 2950 ± 13.82 kg, respectively. The milk production was comparatively higher in brewery waste fed groups (T2 and T3) than those fed control diet (T1). The cost of feed per kg milk produced was Rs. 18.11, 14.01 and 12.66 respectively, for the three dietary treatments T1, T2 and T3. The cost of milk production was highest in animals maintained on control (T1) ration because of low milk production and higher cost of feed. The brewery

waste fed groups (T2 and T3) had lower cost of feed per kg milk produced compared to those fed control diet (T1), due to higher milk production and comparatively low cost of feed.

TABLE 1: Cost of milk production of experimental cows maintained on three dietary treatments in crossbred cows (Mean \pm SE)

| Parameter studied | Treatments | | |
|---|-----------------------------------|---|---|
| | T1(Control without Brewery waste) | T2(40% Concentrate replaced by Brewery waste) | T3(80% concentrate replaced by Brewery waste) |
| Concentrate mixture consumed (kg) | 1936 \pm 7.14 | 1165 \pm 6.89 | 390 \pm 2.26 |
| Brewery waste consumed (kg) | - | 1500.3 \pm 2.93 | 3022.58 \pm 12.57 |
| Paddy straw consumed (kg) | 1175.20 \pm 5.36 | 1803.52 \pm 7.43 | 2125.50 \pm 9.81 |
| Green fodder(kg) | 3012.00 \pm 15.74 | 3025.31 \pm 17.59 | 3040.00 \pm 13.65 |
| Total feed consumed (kg) | 6123.20 \pm 19.60 | 7494.13 \pm 22.43 | 8578.08 \pm 30.16 |
| Total milk produced in 60 days (kg) | 2872 \pm 10.75 | 3200 \pm 12.13 | 2950 \pm 13.82 |
| Cost of one kg concentrate mixture (Rs.) | 23.00 | 23.00 | 23.00 |
| Cost of one kg Paddy straw(Rs.) | 1.25 | 1.25 | 1.25 |
| Cost of one kg Brewery waste (Rs. on Fresh basis) | 6.50 | 6.50 | 6.50 |
| Cost of one kg green fodder (Rs.) | 2.00 | 2.00 | 2.00 |
| Total cost of feed (Rs.) | 52021 \pm 45.29 | 44851.97 \pm 38.33 | 37353.64 \pm 51.22 |
| Cost of feed per kg milk produced (Rs/kg) | 18.11 \pm 0.63 | 14.01 \pm 0.49 | 12.66 \pm 0.53 |

DISCUSSION

The cost of brewery waste incorporated concentrate feed was comparatively lower due to low cost of brewery waste (Rs.6.50 per kg on fresh basis). The cost of feed per kg milk produced was reduced by 22 % and 30 % by the incorporation of brewery waste at 40 % and 80 % level in concentrate mixture (DM basis) in early lactating crossbred cows producing about 10 kg milk per day. Dhiman *et al.* (2003) reported that wet brewer's grain feeding was advantageous than dried brewer's grain feeding to lactating dairy cows. However, wet brewer's grains have a very short shelf life of 3 to 7 days (Rendell, 2004). In two week times, the brewery waste becomes spoiled and develops an offensive odour which will attract flies resulting in maggot infestation. Also, transportation, shipment and drying process of brewery waste is expensive because of the added water weight. If these factors are optimized, brewery waste feeding can lower the cost of production for livestock producers. Myer and Hall (2003) also reported that the transportation, storage and handling cost limit the use of wet brewer's grains to relatively large cattle operations located near the breweries.

CONCLUSION

The present investigation revealed that inclusion of fresh (25 % DM) brewery waste reduced the cost of feed per kg milk production by 22 % and 30% by feeding brewery waste incorporated concentrate feed at 40% and 80% in lactating crossbred cows producing about 10 kg milk per day. Therefore, in areas that are close to a brewery it seems profitable to include brewery waste in dairy rations

at the level of 80% (DM basis) in concentrate mixture. With new breweries coming up across many parts of our country, brewery waste has the potential to become a common component in economic dairy rations.

ACKNOWLEDGEMENT

The authors are thankful to the Director, Centre for Animal Production Studies, TANUVAS for necessary support.

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