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## Effect of Conventional Feed Resources on Production Performance of Balochi Lambs in Baluchistan

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**Abstract:** In an experiment 24 castrated male Balochi lambs were selected and randomly divided into two groups based on average live body weight ( $21.08 \pm 1.4$  kg/lam) and age (6-9 months) to see the effect of conventional feed resources on their production performance. Feed intake, weight gain and feed conversion efficiency (FCR) were recorded for 1-14 weeks to compare their performance under farmer feed (group-A) and compound feed (group-B). Results of feed intake, weight gain and FCR were significantly ( $p < 0.01$ ) different between the groups. Lambs in group A consumed average feed  $544.6 \pm 16.8$  g/d, gained lower ( $p < 0.01$ ) weight  $74.89 \pm 2.4$  g/d and higher FCR  $12.47 \pm 0.47$  as compared to Lambs of the group B, which consumed  $452.6 \pm 13.6$  g feed and gained  $177.2 \pm 6.40$  g/d weight with  $4.38 \pm 0.16$  FCR. The lamb fed on compound feed (group B) earned net profit of Rs.510.00 per lamb; while the lamb fed on farmers feed (group A) earned net profit of only Rs.108.00 per lamb. It was concluded that compound feed is cheaper and remarkably effective for fattening the lambs, while poor performance of lamb was observed when fed on farmers feed.

**Key words:** Compound feed, Balochi lamb, productive performance, economics

### INTRODUCTION

Livestock segment keeps a unique position in economic development of Pakistan and play a vital role in poverty alleviation and uplifting the socio-economic condition of rural masses. Livestock contributed 55.4 percent to the agricultural value added and 11.9 percent to national Gross Domestic Products of Pakistan (GOP, 2013). Small ruminants, particularly sheep's are important to the survival, economic and social livelihoods of large human population of Baluchistan province of Pakistan. The total sheep population of Pakistan is 28.8 million of which 48% reside in Baluchistan (GOP, 2013). Sheep breeds found in Baluchistan are relatively different from each other by phenotypic, genotypic characters and adaptation to their distinct ecological zones. These factors significantly affect average daily weight gain during the fattening period for optimizing live weight gain and wool production (Mahajan *et al.*, 1976). The Balochi sheep is a fat-tail breed, well adapted to a wide range of harsh environmental conditions in the Eastern Iran and Baluchistan. Population of this breed is higher than other breeds of the provinces of Pakistan. Balochi sheep is found mostly in Kalat and part of Quetta division and

most of the area of Baluchistan province (Khan and Isani 1994). Research showed that Balochi sheep is very famous in Iran for good productive performance rate (Yazdi *et al.*, 1997). Where as negligible work has been done on productive performance of Balochi sheep in Pakistan.

Poor nutrition and poor flock management in harsh climatic condition of Baluchistan province affect productivity and ultimately the economics of the producer. A basic question that must be overcome in Baluchistan to increase sheep productivity is how to manage it in the harsh climate environment with low and erratic intra and inter year rainfall, cold winter and hot summer temperature. Sheep rising and lamb fattening requires relatively less land and labor intensive with low level of investment in terms of building and equipments. The essential to the profitability of this type of farming requires quality of basic feed constituents to achieve maximum profitability. The alternative which is most suitable is still the wise use of available traditional feed concentrates along with roughages of good quality (Kochapakdee *et al.*, 1994). However, there is great potential to enhance the productivity of small ruminant by

promoting the sustainable wise use of locally available feeds resources. The effect of conventional feed resource on Balochi lamb production performance has not been well known, therefore, present study was conducted to assess the growth performance of Balochi Lambs by feeding conventional feed stuffs in Baluchistan province of Pakistan.

## MATERIALS AND METHODS

**Experimental design and procedure:** Experiment was conducted at Bhagnari cattle cum Balochi sheep farm, Usta Mohammad (District Jaffarabad) of Baluchistan province of Pakistan during 2002- 2003. Twenty four male Balochi lambs of 6-9 months of age and weighing between 15-34 kg with average live body weight of  $21.10 \pm 1.6$  SE and Lambs were randomly divided into two main groups Farmers feed (group A) and Compound feed (Group B) 12 animals in each based on age and live body weight. Each group was further divided into three sub-groups (I, II and III) of four animals in each as replicate on randomized complete block design with average body weight of 17.25, 25.75, 20.25 and 17.25, 24.25, 21.75 of group A and B, respectively.

All the animals were drenched with systamax (welcome Pakistan) and dipped with Tagavan for endo and ectoparasitic control. The animals were inoculated against enterotoxaemia, anthrax, sheep pox and contagious caprine pleuro-pneumonia and foot and mouth diseases. All the animals were sheared one week before start of experiments and were ear tagged with different Tag No for identification.

**Animal ration:** Experimental rations of control group-A consist on farmers (uncompounded feed) and group-B treated (Compound feed) are presented in Table 1. Animal were fed on ration supplemented with green

chaffed barseem fodder to three replicates subgroups in group 1 while the lambs fed on ration B were supplemented with green chaffed barseem daily, to three replicates/block in group 2, twice a day at 8.30 AM and 5 PM. Water was offered thrice a day till the end of experiment. Each morning before feeding, the refusal of feed were collected and weighed. Common salt in feeding trough was made available for control group 1 animals during the trial. Ration A ingredients were available at the farm and were mixed manually, while ration B was purchased from Shukrana Feed Mill Quetta Baluchistan Pakistan and was formulated as per experiment requirement. All the lambs were fed the experimental ration for an adaptation period of 15 days to remove the previous effect.

**Data collection:** The data were collected on daily feed intake, weekly weight gain, feed efficiency and finally economics of feeding trial was calculated. Initial body weights of all animals were recorded and weekly body weight of each animal at the same time before morning feeding were taken till the end of experiment and weekly FCR was calculated as feed intake divided by weigh gain.

**Chemical analysis:** Chemical analysis was performed with using these samples. Chemical composition of feed sources offered to the lambs throughout the experiment is presented on DM basis in Table 1. The feed source samples were dried in forced-air oven at  $55^{\circ}\text{C}$  for 48 h for measurement of DM content and then ground through a 1-mm diameter screen using a laboratory 3303 Mill (Hundenge, Sweden). Crude protein was determined by the KJELDAHL method AOAC 1990 (6). Ash was determined by combustion at  $550^{\circ}\text{C}$  for 6 h. Crude fiber was determined through method applied by Van Soest *et al.* (1991).

**Data analysis:** The data pertaining to feed intake, weight gain and FCR were analyzed by analysis of variance using completely randomized design through MSTAT-C computer package as applied by Steel and Torrie (1984). The value  $p < 0.05$  was considered as statistically significant.

## RESULTS

**Feed intake, weight gain and FCR:** The results of average daily and total feed intake, weight gain and feed conversion efficiency are presented in Table 2. Results showed significant ( $p < 0.01$ ) difference, when Balochi Lamb were fed on different conventional resources. Total feed intake for overall 14 weeks experimental period in Group A was  $7.60 \pm 0.01$  kg/lamb which resulted lower weight gain of  $7.33 \pm 0.12$  kg/lamb and with higher 12.47 FCR, compared to group B (compound feed) which consumed feed  $6.30 \pm 0.021$  kg and gained

Table 1: Formulation of experimental rations

Ingredients	Group A ration (%)	Group B ration (%)
<b>Concentrate</b>		
Wheat crushed	0	10
Wheat bran	0	27
Rice polish	0	8
Rape seed cake	0	3
Rape seed meal	0	1
Cotton seed cake	0	12
Sunflower meal	0	1
Maize	0	1
Molasses	0	15
Common salt	0	10
Di-calcium phosphate	0	1
Sorghum whole	20	0
Barley whole	20	0
Green roughage		
Barseem	60	10
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Chemical composition (%) DM</b>		
<b>Nutrients</b>		
Crude protein	6.12	14.0
Total digestible nutrients	35.3	62.08
Crude fiber	3.01	5.91
Crude fat	3.4	3.18
Crude ash	3.63	4.38

Table 2: Fattening performance of lambs fed under compound feed as compared to farmer feed

Particular	Group A farmers feed	Group B compound feed
Average Initial live body weight/lamb in (kg)	21.10±1.40 <sup>a</sup>	21.08±1.45 <sup>a</sup>
Average Final live body weight/lamb (kg)	28.41±1.70 <sup>b</sup>	38.44±1.80 <sup>b</sup>
Total weight gain/ lamb (kg)	7.33±0.12 <sup>b</sup>	17.36±0.21 <sup>a</sup>
Average daily weight gain g/day/lamb	74.89±2.4 <sup>b</sup>	177.2±3.6 <sup>b</sup>
Total feed intake kg/lamb	91.48±1.01 <sup>a</sup>	76.05±0.021 <sup>b</sup>
Average daily feed intake g/d/lamb	544.6±16.8 <sup>a</sup>	452.6±13.6 <sup>b</sup>
Average feed conversion efficiency (FCR)	12.47±0.47 <sup>a</sup>	4.38±0.16 <sup>b</sup>

Means with different superscript in same row significantly differ (p<0.01) from each other. ±Showed Standard Error

Table 3: Economics of experimental lambs and cost benefit ratio

Expenditure	(Group A) Rs.	(Group B) Rs.
Average initial cost per lamb	1837.00	1837.00
Average cost of feed per lamb	748.00	719.00
Average cost of medicine	100.00	100.00
Average labor cost	187.00	187.00
Total recurring cost	2872.50	2839.00
Average sale price per lamb	2980.00	3349.00
Average profit/loss per lamb	108.00	510.00
Cost benefit ratio	1:1.103	1: 1.18

17.36±0.21 kg weight with 4.38±0.16 FCR (Table 2). The average feed intake 544.6±16.8 g/d/lam was higher (p<0.01) in group A (farmer feed) compared to compound feed 452.6±22.6 g/d/lam. Almost similar situation continued from first to last experimental week, when lambs in group B consumed lesser feed (452.6±22.6 g/lamb) to produce 103.30±3.60 g weight gain with mean feed conversion ratio of 4.38±0.160 as compared to group A with 544.6±16.8 g feed intake, 43.68±2.4 g weight gain and with mean feed conversion ratio of 12.47±0.47 as shown in Fig. 1, 2 and 3.

**Economics:** The results of economics revealed that the average initial cost of lambs was Rs.1837.00, while the feed cost per lamb was Rs. 748.00 and 719.00 in group A and B respectively. After adjustment of Rs.187 cost of labor and lamb cost as medicine and miscellaneous expenses, the total cost remained Rs. 2872.00 and 2839.00 per lamb in group A and B, respectively (Table 3). The price received from experimental lambs on live weight basis was Rs. 2880.00 and 3349.00 in group A and B, respectively, which indicated that the lamb fed on compound feed, earned a net profit of Rs. 510.00 per lamb, while the lamb fed on farmer feed earned net profit of Rs. 108.00 per lamb. The cost benefit ratio worked out was 1:1.03 in group A as compared to 1:1.18 in group B (Table 3).

**DISCUSSION**

The present study was conducted to investigate the effect of conventional feed resources on production performance of Balochi Lambs in Baluchistan during the year 2002-2003. The results of feed intake, weight gain and FCR thus achieved are presented in Table 2. The economic parameters results are presented in Table 3. The performance of lambs fed on farmer's conventional feed was poor and animal consumed significantly greater amount of feed and gained weight quite low even

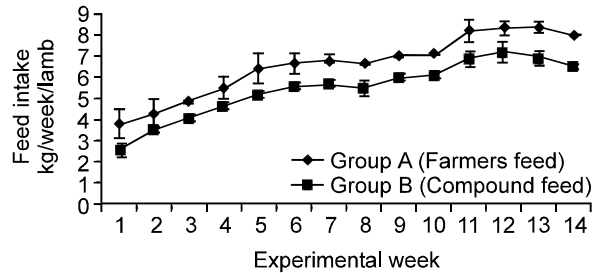


Fig. 1: Average weekly Feed Intake of fattening lambs fed under compound feed as compared to farmer feed throughout the experimental period Bars show standard error

half of the quantity recorded in the lambs fed on compound feed (Table 2). Feed intake and FCR was three times better in case of the lambs fed on compound feed as compared to those fed on farmers' conventional feed during 14 weeks of experiments. Thus it was quite obvious that compound feed (group B) can provide better lamb fattening as compared to farmers feed. Moreover, lambs fed on farmers feed was quite laborious and time taking, while in case of compound feed labor and time cost could also be minimized (Table 3). Additionally, compound feed contained all recommended ingredients is suitable for fattening lambs and was economically more efficient and productive as compared to farmers feed. Thus situation is quite in favor of compound feed that for obtaining higher weight gain with remarkably less amount of feed, the lamb may be fed on compound feed for an economic and profitable fattening process. The result reported by studies of Mahgoub *et al.* (2000); Murugan (1997) have further confirmed the findings of present investigation, who found better weight gain and feed conversion efficiencies of lamb fed on compound feed as compared to lamb fed on forages and grasses. Some research report showed that weight gain and feed conversion ratio of scientifically formulated feed were significantly superior against those recorded from conventional feed as reported by Shehata (1997) and Burriro (1999).

It was further discussed that performance of lambs fed with forages and roughages (farmers' feed) offered by the farmers were not equally efficient neither in gaining body weight nor in case of the feed conversion efficiency. Thus it was apparently visual that compound feed was

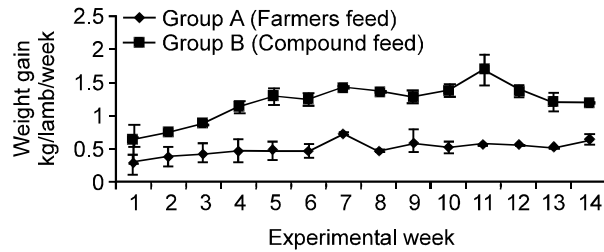


Fig. 2: Average weekly weight gain of fattening lambs fed under compound feed as compared to farmer feed during experimental period Bar show standard error

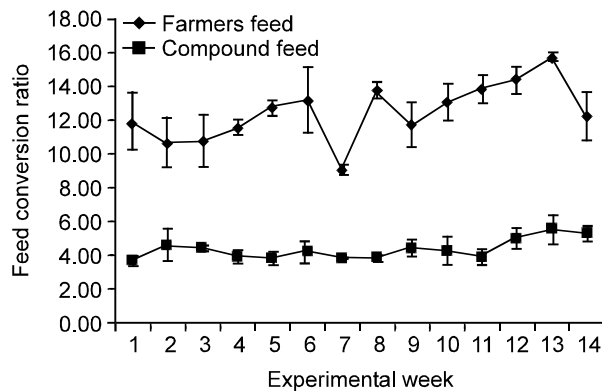


Fig. 3: Average weekly feed conversion ratio of fattening lambs fed under compound feed as compared to farmer feed during experimental period Bar show standard error

far better in all lamb production parameters as compared to farmers feed. Fattening lambs through roughages and forages may not be profitable but considerably high returns have been achieved when fattening lambs were fed on scientifically formulated feed (Ogan, 2000). Weight gain, feed conversion ratio and net profit were considerably efficient in the lambs fed on compound feeds as compared to those fed on forage and grasses (Karaoglu *et al.*, 2001; Zundt *et al.*, 2002; Macit *et al.*, 2002).

The results of this study are in consistent with the findings of Rafeeq (2010) who studied the performance of five different sheep breeds of Baluchistan in extensive and semi-intensive and found that Balochi and Mengali breeds of sheep gain the weight 71.23 and 72.12 g/d, respectively. Further explained that consistency in growth performance was found in Mengali and Balochi as compare to others breeds. It was quite obvious in present study that compound feed (group B) can provide better lamb fattening in terms of weight gain and FCR as compared to farmers feed throughout experimental weeks as mentioned in Fig. 2 and 3.

After completion of the study, cost and expenditures incurred on experimental lambs were calculated to work

out the economics of the experiments. The lamb fed on compound feed (group B) earned net profit of Rs. 510.00 per lamb; while the lamb fed on farmers feed (group A) earned net profit of only Rs.108.00 per lamb (Table 3). It confirm that compound feed is cheaper and remarkably effective for fattening the lambs, while poor performance of lamb was observed when fed on farmers feed.

**Conclusion:** It was concluded from the results of this experiments that production performance of Balochi Lambs fed on compound feed (group B) was significantly higher; the lambs in this group consumed considerably less amount feed and produced significantly more weight gain with remarkably efficient feed conversion throughout the experimental period. The lambs fed on forages and roughages resulted poor feed efficiency. Present study suggest that Balochi lamb responded well to compound feed and the farmers are required to feed their lambs in field condition with commercially manufactured feed to achieve high profit from the sheep business.

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