



Research Article

Effect of Silage Feeding on the Growth Performance and Body Confirmation of Tapri Goats under Intensive Management System

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Abstract | Present study was carried out to observe the effect of silage feeding on body growth and confirmation of Tapri male goat raised under the intensive housing management system. This study was performed at the Livestock Experimental Station, Sindh Agriculture University, Tandojam. For this purpose, twelve Tapri male goat kids of six months age were purchased from local market and divided into two groups, each group contains six kids. (Group A was fed with fresh maize grass and Group B was fed with maize feeding silage). After completion of 2 months trail results was collected and analyzed. The result for weekly weight gain statistical analysis showed that non-significant ($P \geq 0.05$) difference between groups from 1st to 4th week. However, showed significant ($P \leq 0.05$) effect was recorded from fifth week to eight week of age, respectively. Final weight was also significantly higher in B group when compared with A group. Statistical analysis showed non-significant ($P \geq 0.05$) difference between the groups from 1st, to 5th week. However, significant ($P < 0.05$) effect was recorded from six week to eight week of age, respectively. Data indicated that minim girth was recorded in group A than group B during first week. Similar trend was observed till eight weeks of age. Statistical analysis showed non-significant ($P \geq 0.05$) difference between the groups from 1st, to 4th week. However, significant ($P < 0.05$) effect was recorded from fifth week to eight week of age, respectively. Maximum net profit was earned from B group than A group. It is concluded that goat kids of group B were fed maize silage showed better body growth and more economical values as compared group A were fed fresh maize.

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1. Introduction

Small ruminant especially goat played a vital role in the rural economy and nutrition. These days goats are known as most promising animal species for commercial meat production after the poultry in Pakistan. In rural areas most of the farmers have 1-5 goats for fulfilling's their basic milk requirement. However, goats are distributed throughout the country and considered as viable households but also economical beneficial for small scale farming (Kaleri *et al.*, 2016).

In most of the rural areas farmers raised their livestock on fodder crops in both rural and urban areas. It is major problem of livestock industry to maintain availability quality and quantity of animal fodder during the scarcity and fluctuation throughout the year. Small ruminant goat and sheep have ability to survive and convert low quality feed into valuable product (Abedol *et al.*, 2013; Kaleri *et al.*, 2016). The term silage can be define a preserved forage that is being made from a crop in a container called silo under the anaerobic environment. In future silage can be major source of nutrient and nutrition for all farms animals, especially cow, buffalo, goat and sheep. However, the silage possesses large quantity of starch that could be attributed after degradation of fibers (Oelker *et al.*, 2009). In world silage is not only utilized as importance source of feed for farm animals but also used with combination of difference green grasses such as pasture and grass (Chizzotti *et al.*, 2009; Souza *et al.*, 2006), suggested that different fee stuff can influence of the nutritional values of varous feedstuff containing in diet. In this adaptation of better feeding practices offers increased in the production and growth of animal to supply proper nutrient in proper quantity to farm animals. Keeping in the view importance of silage present study performed to evaluate of effect of silage feeding on body growth and confirmation of Tapri goat male.

2. Materials and Methods

Present experiment was performed Experimental Station, Department of Livestock Management, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University, Tandojam.

Twelve Tapri male goats kids of (4 to 6) month of age were purchased from the local market and brought.

Animals were randomly selected and divided in two groups, i.e., A and B. In group A fresh maize was given and in group B Maize silage was provided. Twelve animals were divided and six animals reared in each group.

Groups	A	B
Treatment plan	Fresh Maize	Maize silage

2.1 Silage

Silage is a preserved fodders used for feeding of animals. For this a maize silage and fresh maize was purchased from the local market of Hyderabad. This study was conducted for two months. All animals were kept under intensive management system. Throughout the research for this the following parameters were studied.

2.2 Materials and equipment

2.2.1 Weighing balance

The weekly weight of both groups was taken through an electric weighing balance and recorded on proforma.

2.2.2 Measuring tape

To collect the data regarding the body confirmation such as height, girth and length measuring tape was used.

2.3 Measurement method

2.3.1 Body weight and body confirmation

All the animals were weighed using the weighing balance, whereas for the measurement of height, girth and length were measured using the measuring tap within both groups after the one-week interval. The measurement of height was measured from wither to end of hood and girth was measured from elbow to with, whereas the length from shoulder pin to end of pin bone in all selected animals.

2.4 Management of animals

All the animals of Tapri goat were kept till 10 days of adaptation period before starting 60 days of experiment. Intensive housing management system were applied with silage feeding to observe to growth and body confirmation of Tapri goat animals with following parameters.

2.5 Parameters

1. Initial body weight g
2. Weekly body weight

3. Final body weight
4. Body confirmation (girth, height and length) cm
5. Economics

2.6 Economics

To evaluate the economic animal purchased cost, feed cost, medicine cost, labor charges and miscellaneous cost were included. The net profit was observed with the help of following formula.

$$\text{Net Profit} = \text{Sold out amount} - \text{total cost}$$

3. Results and Discussion

3.1 Weekly weight gain (g/animal)

The results for weekly body weight gain showed higher values in group B as compared with group A. The statistical analysis showed non-significant difference ($P \geq 0.05$) from 1st week to 4th week of experiment. While statistical analysis showed significant difference ($P \geq 0.05$) from 5th week to final body weight which was observed higher in group B as compared with A. Details are presented in Table 1.

Table 1: Effect of silage feeding on the weekly weight gain (g) of Tapri male kids under intensive system.

Weekly weight gain (g)	Groups		SE±	P value
	A	B		
Week1	612.45	625.72	49.98	0.732
Week2	623.67	657.15	54.67	0.083
Week3	652.21	701.36	59.78	0.078
Week4	687.53	747.16	67.46	0.056
Week5	715.84 b	776.52 a	62.28	0.048
Week6	703.72 b	789.92 a	56.64	0.036
Week7	722.04 b	793.52 a	63.61	0.029
Week8	731.65 b	820.83 a	66.48	0.021
Final weight	5449.11b	5912.18a	84.28	0.027

a, b showed the significant difference within row ($P \geq 0.05$).

3.2 Weekly body height (cm)

The results for weekly body height (cm) showed higher values in group B as compared with group A. The statistical analysis showed non-significant difference ($P \geq 0.05$) from 1st week to 4th week of experiment. While statistical analysis showed significant difference ($P \geq 0.05$) from 5th week to final body height which was observed higher in group B as compared with A. Details are presented in Table 2.

Table 2: Effect of silage feeding on the weekly height (cm) of Tapri male kids under intensive system.

Height (cm)	Groups		SE±	P value
	A	B		
Week1	16.68	16.76	0.622	0.643
Week2	16.94	17.03	0.848	0.087
Week3	16.98	17.12	0.849	0.654
Week4	17.24	17.36	0.862	0.402
Week5	17.41	17.52	0.901	0.927
Week6	17.52 b	17.89 a	0.974	0.046
Week7	17.70 b	18.27 a	0.976	0.039
Week8	17.83 b	18.68 a	0.942	0.023

a, b showed the significant difference within row ($P \geq 0.05$).

3.3 Weekly body girth (cm)

The results for weekly body girth (cm) showed higher values in group B as compared with group A. The statistical analysis showed non-significant difference ($P \geq 0.05$) from 1st week to 4th week of experiment. While statistical analysis showed significant difference ($P \geq 0.05$) from 5th week to final body girth which was observed higher in group B as compared with A. Details are presented in Table 3.

Table 3: Effect of silage feeding on the weekly girth (cm) of Tapri male kids under intensive system.

Girth (cm)	Groups		SE±	P value
	A	B		
Week1	15.91	15.94	1.016	0.963
Week2	16.03	16.08	1.023	0.986
Week3	16.21	16.26	1.091	0.087
Week4	16.36	16.42	0.969	0.093
Week5	16.41	16.62	1.084	0.068
Week6	16.48	16.85	1.065	0.059
Week7	16.71 b	17.35 a	1.004	0.042
Week8	16.89 b	17.74 a	0.978	0.025

a b showed the significant difference within row ($P \geq 0.05$).

3.4 Weekly body length (cm)

The results for weekly body length (cm) showed higher values in group B as compared with group A. The statistical analysis showed non-significant difference ($P \geq 0.05$) from 1st week to 4th week of experiment. While statistical analysis showed significant difference ($P \geq 0.05$) from 5th week to final body length which was observed higher in group B as compared with A. Details are presented in Table 4.

3.5 Economics

In this study economic analysis of intensive

management system results showed that collecting of production cost with including initial purchasing price of Tapri goat male were 4250 for group A and 4083.33 for group B. Whereas the total cost of animal sale was 6280 in group A and 6800 in group B. While the results for net return profit was Rs. 2030 in group A and Rs. 2716.67 were recorded in group B, it was comparatively higher in group B as compared with A. Details are presented in Table 5.

Table 4: Effect of silage feeding on the weekly length (cm) of Tapri male kids under intensive system.

Length (cm)	Groups		SE±	P value
	A	B		
Week1	14.96	14.86	0.42954	0.093
Week2	15.34	15.42	0.48734	0.287
Week3	15.44	15.4	0.47161	0.826
Week4	15.74	15.92	0.60520	0.054
Week5	15.89	16.17	0.58822	0.068
Week6	16.08 b	16.57 a	0.57378	0.043
Week7	16.21 b	16.95 a	0.52189	0.029
Week8	16.47 b	17.36 a	0.7530	0.037

a, b showed the significant difference within row ($P \geq 0.05$).

Table 5: Economics of Tapri male kids under intensive system.

S. No.	Particulars	Group A	Group B
1	Purchase of animal (Rs)	3100	3100
2	Total Fresh Maize (Rs)	750	—
3	Total Silage Maize (Rs)	—	583.33
5	Shed Management (Rs)	100	100
8	Cost of medication/ Vaccination (Rs)	150	150
9	Labour cost (Rs)	150	150
10	Total Cost (Rs)	4250	4083.33
11	Sale of animals (Rs/goats)	6280	6800
12	Net profit Q-M	2030	2716.67

The findings of our study are higher weight gain of animal was recorded in those which were fed maize silage as compared with fresh green fodder barseem. Another similar type of experiment was performed by [Wildeus et al. \(2007\)](#), who reported that horse was raised on maize silage get 6 to 7 kilo gram of higher body weight within 3 weeks as compared which were fed on fresh and dry maize grass. The findings of [Khanal and Upreti \(2008\)](#), are controversial with the findings of our study. Who reported more body weight

gain, height, length and girth in animals which were fed fresh grasses of various types on the farm, whereas those animals which were fed maize silage have 3 to 4 kilogram of body weight. There are various factors affecting on the study during the experiment such as age of animal, quality and stage of grass, time of feeding, company and method of preparation of silage as well as management of farm animals including breed. The results of [Abedlo et al. \(2013\)](#) and [Belewu and Olajide \(2010\)](#), were relatively low as compared with findings of our study. They reported higher body weight and lower values for body confirmation parameters such as body height, body length and body girth. The difference among the studies might be due to breed variation, sex and gender of animal with environmental conditions of that particular areas. Another study was performed by [Fftine and Zanetti \(2010\)](#) in Mozambique they observed the effect of maize silage and other dry fodder during the summer season. They reported that goat kids have higher body weight gain and body confirmation parameters as compared those kids which were fed dry roughages and fodder during the summer or dry season at Mozambique [Thornton et al. \(2009\)](#).

Conclusions and Recommendations

It is concluded that maximum body weight gain and body confirmation including height, girth and length in Tapri male goat was observed significantly higher in silage maize feeding as compared with fresh maize feeding. More net profit was also earned from silage feeding method under intensive management system.

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Novelty Statement

The addition of nutrients is necessary for promoting animal health, growth and body confirmation. We compared the effect of maize silage and fresh maize feeding on the body of Tapri male goat. It was observed that silage feeding can be very effective for animal growth and body confirmation during the time of green fodder scarcity.

Author's Contribution

Conceived and Designed the Experiment: GA Mughal, N Rajput and IH Soomro. Performed Experiment: IH Soomro, RR Kaleri and RA Mangi. Collected the Data: GM Solangi, DK Bhuptani and AW Solangi. Analyzed the data: S Dhari and ZP Soomro. Wrote the Paper: RR Kaleri.

Conflict of interest

The authors have declared no conflict of interest.

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