

# Comparative Study on Growth and Conformation of Male Teddy Kids under Two Management Systems

Huma Rizwana<sup>1</sup>, Najeeb Ullah Lail<sup>1</sup>, Muhammad Haroon Baloch<sup>1</sup>, Rani Abro<sup>4</sup>, Syed Shehzad Ali Bukhari<sup>2,\*</sup>, Muhammad Naeem<sup>1</sup>, Nasir Rajput<sup>3</sup>, Faizan Shahani<sup>1</sup>, Shahid Abro<sup>5</sup>, Gulfam Ali Mughal<sup>1</sup>, Ahmed Nawaz Tunio<sup>6</sup>, Pershotum Khatri<sup>7</sup> and Riaz Ahmed Lagari<sup>5</sup>

<sup>1</sup>Department of Livestock Management; <sup>2</sup>Department of Entomology; <sup>3</sup>Department of Poultry Husbandry; <sup>4</sup>Department of Animal Nutrition; <sup>5</sup>Department of Veterinary Microbiology; <sup>6</sup>Department of Surgery & Obstetrics; <sup>7</sup>Department of Animal Reproduction, Sindh Agriculture University, Tando Jam, Pakistan

**Abstract:** An experiment was conducted to compare the growth and conformation of male Teddy kids (3 months age), under two management systems during the year 2014. The kids were kept at the livestock experimental station, Department of Livestock Management, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University Tandojam. A total of twelve (12) Teddy kids were randomly divided into two groups i.e. A and B having six kids each. The kids of group A were reared under semi intensive management system (concentrates and open grazing) whereas kids of group B were kept under intensive management system (concentrates and green fodder). The duration of the experiment was eight (8) weeks and the observations for growth and conformation traits (girth, height and length) were recorded on weekly basis. The result revealed that the average body weight of kids in group A (8.29 kg) had significantly higher ( $P < 0.05$ ) than B (7.75 kg). Moreover, the average body conformation in respect of girth, height and length of group A kids (48.17cm, 40.5 cm and 39 cm respectively), were significantly higher ( $P < 0.05$ ) than the kids in group B (47.5 cm, 39.33 cm and 37.67 cm respectively). While comparing the economic aspects of kids reared under two management systems, it was noted that more net profit (Rs. 337 /kid) was earned from the kids of group A as compared to the kids of group B (Rs. 245 /kid). In conclusion, the kids reared under semi intensive management system demonstrated better performance in terms of body weight and conformation traits which were more profitable.

**Keywords:** Management, intensive system, semi-intensive system, male Teddy kids.

## INTRODUCTION

Livestock contribution to agriculture value added stood at 55.9 percent while it contribute 11.8 percent to the national GDP during 2013-14 as compare to 55.5 percent and 11.9 percent during the corresponding period last year, respectively. Gross value addition of livestock has increased from Rs. 756.3 billion (2012-13) to Rs. 776.5 billion (2013-14), showing an increase of 2.7 percent as compared to last year [1].

Teddy goats are creamy, white, brown, and black or patched with these colors. They have a compact body small and semi droopy ears and slightly prominent nose. Both horned and polled specimens are found. Horns may have spirals and bucks often have the beard. Hind quarters are muscular. Udder is moderately developed with short conical teats. Milk yield is 65 liters per 130 day lactation. Hair is generally not clipped and adult males and females weigh 30 and 23 Kg, respectively. Twins and triplets occur at about 50 and 15 percent respectively. Teddy goats are raised for meat. Early maturity and high prolificacy are important features of this breed. Teddy goat is one of

the famous goat breeds of Pakistan. This breed is said to have been imported from Bangladesh. Its present home tract comprises upon the districts Sargodha, Gujarat, Jhelum and Rawalpindi in Punjab but due to its small size, easy handling, docile nature, low input and better efficiency it has spread to different parts of the country and the adjoining areas of Azad Kashmir. Teddy goats are generally believed to have superiority over the other local breeds. They thrive in harsh weather conditions in different environments, but they are still unable to cope with ever-rising demand of chevon made from them at commercial scale. This inadequacy could be due to little attention in the past for the improvement of these animals through selection [2].

Rearing of small ruminants plays a very important role in the lives of households in developing countries. Small ruminants are biologically more advantageous than larger animals. For example, sheep and goats appear to withstand drought better than cattle Their small size has distinct economic, managerial, and biological advantages. This is because small ruminants provide the easiest and most readily accessible source of credit available to meet immediate social and financial obligations. Rural women are involved in the raising or rearing of small ruminants (sheep and goats)

\*Address correspondence to this author at the Department of Livestock Management, Sindh Agriculture University, Tando Jam, Pakistan; Tel: 03360880750; E-mail: alisyedshahzad75@gmail.com

especially around homes by feeding them kitchen wastes or at most leaving them to graze on surrounding herbs and shrubs. Economically, low individual values mean a small initial investment and correspondingly small risk of loss by individual deaths. Managerially, they are conveniently cared for by women and children, occupy little housing space, have lower feed requirements and supply both meat and milk in quantities suitable for immediate family consumption [3].

Livestock sector has been envisaged with an integral part of a sound system of agricultural production which is contributing towards national economy in many ways. For instance their role in income generation, milk and meat production, security employment, fertilizer, weed control and fiber production etc. Among these, food production can be kept at the top of the list due to its growing need for ever growing human population. Of the total 25 goat breeds of Pakistan, Teddy goat breed is famous for early maturity, prolificacy and meat quality. This goat has estimated to produce on an average 15 Kg meat per kidding in the shape of young kids. During the last two decades goats have emerged as an efficient meat supplier especially "the Teddy goat". One teddy goat can produce 30 kg mutton annually in the form of her kids [4].

The higher biological value of the food items produced and its greater rate of reproduction and smaller generation interval, goat can play an important role in bridging the ever-widening protein gap. Therefore, it is dire need to increase productivity, reducing poverty, improving livelihoods of the poor and promotion of rural growth. Keeping in view, the present study was designed on growth and conformation of male Teddy kids under two (intensive and semi-intensive) management systems.

## MATERIALS AND METHODS

Twelve male kids of Teddy breed (3 months age) were kept under two management systems during the year 2014 at Livestock Experimental Station, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University Tandojam. All the kids were physically examined for their normal health and activeness. The animals were reared in two separate pens having six kids in each pen and were grouped as;

- Group-A:** Comprising of six male Teddy kids were ear tagged as TK1, TK2, TK3, TK4, TK5 and

TK6 were allotted semi-intensive management system i.e. grazing for 8 hours from 9 am to 5 pm at field and concentrate ration was provided at animal shed. Water was provided at stall and also offered during grazing.

- Group-B:** Comprising of six male Teddy kids were ear tagged like TK7, TK8, TK9, TK10, TK11 and TK12, and kept under intensive management system at Livestock experimental station i.e. no grazing. They were fed on green fodder and concentrate ration. The concentrate ration in both systems was same. The ingredients included in concentrate were cotton seed cakes, crushed maize and wheat, oat. The green fodder and water were provided *ad libitum*. The experiment was lasted for for 8 weeks.

## Statistical Analysis

The data so obtained was tabulated and analyzed statically by applying completely randomized design (CRD) by using MSTAT-C Computer Package.

## RESULTS

### Initial Weight (Kg)

The initial body weight of male Teddy kids was recorded before the start of experiment (Table 1). The average initial body weight for group A and B was 6 kg and 5.96 kg, respectively.

**Table 1: Initial Body Weight (kg) of Male Kids of Teddy Breed Reared under Two Management Systems**

Group A		Group B	
Tag no	Weight	Tag no	Weight
TK 1	6.00	TK7	6.25
TK2	6.00	TK8	5.75
TK 3	5.75	TK9	6.00
TK4	5.75	TK10	6.00
TK5	6.25	TK11	5.75
TK6	6.25	TK12	6.00
Total	36.00	Total	35.75
Mean	6.00	Mean	5.96

### Body Weight (kg)

The body weight of male Teddy kids was recorded for a period of 8 weeks and results (Table 2) indicated that the kids of group-A reared under semi-intensive

management system got better growth performance and body weight after completion of 8 weeks as compare to the kids of group B reared under intensive management system.

Variables	Group A	Group B
Initial body weight (kg)	6.00	5.96
Final body weight (kg)	8.29	7.75
Net weight gain (Kg) (Final weight- initial weight)	2.29	1.79

The results showed that the differences between body weight under both management systems were significant ( $P < 0.05$ ). At the end of experiment, the average body weight of kids under semi-intensive management system found higher (8.29 kg) than those under intensive management system (7.75 kg).

**Table 2: Average Body Weight (kg) of Male Kids of Teddy Breed Reared under Two Management Systems**

Weeks	Group-A	Group-B
1	6.13	6.17
2	6.46	6.38
3	6.71	6.54
4	7.08	6.75
5	7.54	7.08
6	7.92	7.42
7	8.08	7.54
8	8.29	7.75

S.E 0.0414  
LSD 0.05 0.0823  
P-Value 0.0001

Groups Weeks  
0.0828 0.1646  
0.0001 0.0001

**Body Girth (cm)**

The body girth of male Teddy kids was measured for a period of 8 weeks and the results are presented in Table 3. The results indicated that the kids reared under semi-intensive management system (group-A) attained greater body girth than kids of group B reared under intensive management system.

It was further noted from the comparative results that statistically the differences between body girth as affected by management system as well as weeks of observation were significant ( $P < 0.05$ ). At the end of experiment, the average body girth of kids under semi management system reached to 48.17 cm as compared to those kept under intensive management system 47.5 cm.

**Body Height (cm)**

The body height of male Teddy kids in each group was measured for a period of 8 weeks and the results are presented in Table 4. The result indicated that the male Teddy kids reared under group-A (semi-intensive management system) obtained greater body height than group B reared under intensive management system and fed concentrate ration and green fodder entirely at the animal shed.

**Table 3: Average Body Girth (cm) of Male Kids of Teddy Breed Reared under Two Management Systems**

Weeks	Group-A	Group-B
1	44.67	44.17
2	45.17	44.5
3	45.5	45
4	46.17	45.5
5	47.17	46.17
6	47.5	46.83
7	47.67	47.17
8	48.17	47.5

S.E 0.1507  
LSD 0.05 0.2995  
P-Value 0.0001

Groups Weeks  
0.3014 0.5990  
0.0001 0.0001

**Table 4: Average Body Height (cm) of Male Kids of Teddy Breed Reared under Two Management Systems**

Weeks	Group-A	Group-B
1	36	36
2	36.67	36.67
3	37.67	37.5
4	38.50	38
5	38.67	38.33
6	39.33	38.67
7	39.83	38.83
8	40.5	39.33

S.E 0.1486  
LSD 0.05 0.2755  
P-Value 0.0001

Groups Weeks  
0.2773 0.5511  
0.0001 0.0001

It was further noted from the comparative results that statistically the differences between body height as affected by management systems was significant

( $P < 0.05$ ). At the end of experiment, the average body height of kids under semi management system reached to 40.5 cm as compared to those kept under intensive management system 39.33 cm.

### Body Length (cm)

The weekly data were recorded on the body length of three Teddy male kids in each group and the average results are indicated in Table 5. The results showed that the male Teddy kids kept under semi-intensive management system (group-A) resulted greater body length, and average than (group-B) reared under intensive management system.

**Table 5: Average Body Length (cm) of Male Kids of Teddy Breed Reared under Two Management Systems**

Weeks	Group-A	Group-B
1	35	35
2	35.5	35.67
3	36.17	36
4	36.67	36.17
5	37.33	36.5
6	37.83	36.83
7	38.17	37
8	39	37.67

	Groups	Weeks
S.E	0.1369	0.2739
LSD 0.05	0.2722	0.5444
P-Value	0.0001	0.0001

The results further showed that statistically the differences between body length as affected by management system was significant ( $P < 0.05$ ). At the end of experiment, the average body length of kids under semi management system reached to 39 cm as compared to those kept under intensive management system (37.67 cm).

### Economics of Male Teddy Kids

After completion of the experimental trial of eight weeks kids were sold and on the basis of their sale value the economics of the project was worked out and the results are presented in Table 6. Each kid of group A and B was given 250 g each of concentrate ration and allowed grazing 8 hours in a day Each kid of group B was offered 2 kg green fodder daily. The production costs including initial purchase price of kids, the total costs were found Rs. 3688 and 3705 on kids of group A

and B, respectively. The kids in group A and B were sold at the average price of Rs. Rs. 4025, and Rs. 3950, respectively. The average net profit for group A and B was Rs.337 and Rs. 245, respectively. It was concluded that among management systems, semi-intensive management, produced remarkably higher net profit than the kids of intensive management system, fed similar concentrate ration and green fodder under the shed with the exception of grazing.

**Table 6: Economics of Male Teddy Kids**

Sr. No.	Particulars	Groups	
		A	B
1	Peranimal feed consumption in 8 weeks (kg)	126	126
2	Concentrate (kg/per animal)	14	14
3	Rate of concentrate (Rs/kg)	32	32
4	Amount of concentrate (Rs) 2x3	448	448
5	Quantity of green fodder (kg/animal) 1-2	112	112
6	Rate of green fodder (Rs/kg)	3.5	3.5
7	Amount of green fodder (Rs/animal) 5x6	392	392
8	Total feed cost/animal (Rs) 4+7	840	840
9	Cost medication/vaccination (Rs)	48	75
10	Labour cost (Rs)	210	170
11	Misc. cost (Rs)	110	140
12	Initial cost of kids (Rs/kid)	2480	2480
13	Total Costs (Rs/kid)	3688	3705
14	Weight gain/kid in 8 weeks (kg)	3.17	1.8
15	Initial weight/kid (kg)	6	5.96
16	Total weight (kg/kid)	8.92	7.75
17	Sale of animal (Rs/kid)	4025	3950
18	Net profit 17-13	337	245

### DISCUSSION

#### Body Weight

In the present study it was noted that male Teddy kids in group A gained significantly ( $P < 0.05$ ) higher final body weight (8.29 kg) as compared with kids in group B (7.75 kg). According to Johnson and McGowan [5] semi-intensive system did improve live weights and increase dressing percentages. Herrera *et al.* [6] reported that the. The semi-intensive system and extensive system kids grew faster than intensive system animals 127, 113 and 96 g/d, respectively. The

results of Paramasivam *et al.* [7], Karim *et al.* [8] and Barham *et al.* [9] are in resemblance with present findings. They reported that body weight increases significantly in semi-intensive management system than intensive management system. The reported findings of Vargas *et al.* [10] that the growth rate of kids could be improved by management practices. The results of Notter *et al.* [11] are opposite to the present study; according to them lambs kept under concentrate feeding system showed highest growth i.e.  $310 \pm 4$  g/day and gained 55 kg in  $156 \pm 3$  days. The lambs which were kept only on grazing alfalfa and grazed on clover pasture gained same weight in 193 and  $234 \pm 2$  days, respectively.

### Body Conformation

In current study, the body girth of male Teddy kids in group A was observed (48.17 cm) and kids in group B (47.5 cm). It is accordance with the finding of Ravimurugan *et al.* [12] who reported that chest girth is the best predictor for the estimation of body weight and this alone contributed 69.1 per cent variation in the body weight of adult Kilakarsal sheep. Shaba and Zaharaddeen [13] found that heart girth was the most appropriate and confident parameter in live weight estimations for sheep and goats. Musa *et al.* [14] and Iqbal *et al.* [15] found the considerable variation in body girth and other body conformation traits in different goat breeds under different feeding and management systems. The findings of Carasco *et al.* [16] indicated that feeding treatments/management systems had low effect on body compactness and conformation.

The body height and length of kids reared under semi-intensive management system was found higher (40.5 cm) and (39 cm) than the kids reared under intensive management system (39.33 cm) and (37.67 cm), respectively.

These results are in resemblance with the findings of Tailor and Yadav (2011) as they reported that the height, girth and length of Sonadi sheep were  $56.93 \pm 0.52$ ,  $58.72 \pm 0.57$  and  $55.50 \pm 0.54$  cm, respectively. Nogalski *et al.* [17] reported that the body conformation may contribute to improve the beef production efficiency. The results of present study are in line with Barham *et al.* [9] who reported that the male Kooka and Kachhi lambs gained more body weight and body conformation under semi-intensive management system than intensive management system. Similarly, Agastin *et al.* [18] reported that the growth

performances were higher in pasture feeding system than indoor feeding system in tropical-breed steers. According to Iqbal *et al.* [15] the body length, withers height and heart girth were found to be best fit accounting for 70 % of the live body weight. Atta and El-Khidir [19] found that the heart girth was highly correlated with body weight for males and females of the Nilotic sheep. In another study, Afolayan *et al.* [20] found significant ( $P < 0.001$ ) correlation coefficient between chest girth and body weight.

### Economics

The results of present study i.e. the net profit obtained under semi-intensive management system was higher (Rs.337/kid) as compared to kids of the same breed kept under intensive management system, showed resemblance with the findings of Patel *et al.* [21], who reported higher incremental return per goat/year as Rs 235.9 (Marwari goat) and Rs 226.3 (Parbatsari goat) in semi-intensive system and comparative lower incremental return per goat/year which was observed in intensive system (Rs 188.2 and Rs 108.2 for Marwari and Parbatsari goats, respectively). Similarly according to Paramasivam *et al.* [7] semi-intensive system was beneficial for rearing of Barbari goats. Patel *et al.* [21] described that economic analysis of extensive, semi-intensive and intensive systems revealed that total return were maximum in intensive management system but input cost was also high in this system. The net return was more in semi-intensive system. According to the findings of Nagpal *et al.* [22] intensive management system was costly then semi-intensive management system as there was no significant difference in growth.

### CONCLUSION

From the findings of present study it was concluded that, the male Teddy kids reared under semi-intensive management system showed higher body weight. Semi-intensive management system showed better body conformation (girth, height and length) in male Teddy kids. Economically, rearing of male Teddy kids under semi-intensive management system was more profitable than intensive management system. For earning high profits from fattening of male Teddy kids, the kids should be given concentrates along with grazing. Further, studies of goat kids and sheep lambs should be conducted fattening trait to compare weight gain and conformation between them.

## REFERENCES

- [1] GOP. Pakistan Economic Survey., 2012-13. Government of Pakistan, Economic Adviser's Wing, Finance Division, Islamabad 2013-14.
- [2] Kuthu ZH, Javed K, Babar ME, Sattar A, Abdullah M. Environmental Effects On Growth Traits Of Teddy Goats. JAPS, Journal of Animal and Plant Sciences 2013; 23(3): 692-698.
- [3] Oluwatayo IB, Oluwatayo TB. Small Ruminants as a Source of Financial Security: A Case Study of Women in Rural Southwest Nigeria 2010.
- [4] Hashmat AK. Goat production 2:5-6 LPRI (Okara) Pakistan 1987.
- [5] Johnson DD, McGowan CH. Diet/management effects on carcass attributes and meat quality of young goats. Small Ruminant Research 1998; 28(1): 93-98.  
[http://dx.doi.org/10.1016/S0921-4488\(97\)00071-0](http://dx.doi.org/10.1016/S0921-4488(97)00071-0)
- [6] Herrera PZ, Bermejo JVD, Henríquez AA, Vallejo MEC, Costa RG. Effects of extensive system versus semi-intensive and intensive systems on growth and carcass quality of dairy kids. Revista Brasileira de Zootecnia 2011; 40(11): 2613-2620.  
<http://dx.doi.org/10.1590/S1516-35982011001100045>
- [7] Paramasivam A, Arunachalam S, Sivakumar T, Ramesh V. Growth performance and carcass traits of Barbari goats under different systems of management. Indian Journal of Animal Sciences 2002; 72(11): 1016-1018.
- [8] Karim SA, Porwal K, Kumar S, Singh VK. Carcass traits of Kheri lambs maintained on different system of feeding management. Meat Science 2007; 76(3): 395-401.  
<http://dx.doi.org/10.1016/j.meatsci.2006.06.008>
- [9] Barham GH, Baloch MH, Nizamani AH, Khaskheli, Gulbahar KM, Pirzado SA, Magsi AM, Soomro H, Fazilani H. Effect of management systems on growth and conformation of male lambs of Kachhi and Kooka sheep. International Journal of Plant and Animal Sciences 2013; 1(6): 064-069.
- [10] Vargas S, Larbi A, Sanchez M. Analysis of size and conformation of native Creole goat breeds and crossbreds used in smallholder agrosilvopastoral systems in Puebla, Mexico. Tropical Animal Health and Production 2007; 39(4): 279-286(8).
- [11] Notter DR, Kelly RF, McClaugherty FS. Effects of ewe breed and management system on efficiency of lamb production: II. Lamb growth, survival and carcass characteristics. Journal of Animal Science 1991; 69(1): 22-33.
- [12] Ravimurugan T, Thiruvankadan AK, Sudhakar K, Panneerselvam S, Elango A. The Estimation of Body Weight from Body Measurements in Kilakarsal Sheep of Tamil Nadu, India. Iranian Journal of Applied Animal Science 2013; 3(2): 357-360.
- [13] Zahraddeen D. Evaluation of some factors influencing growth performance of local goats in Nigeria. African Journal of Food, Agriculture, Nutrition and Development 2009; 8(4): 464-479.  
<http://dx.doi.org/10.4314/ajfand.v8i4.19206>
- [14] Musa AM, Idam NZ, Elamin KM. Heart Girth Reflect Live Body Weight in Sudanese Shogur Sheep under Field Conditions. World Vet J 2012; 2(4): 54-56.
- [15] Iqbal M, Javed K, Ahmad N. Prediction of body weight through body measurements in Beetal goats. Pakistan J Sci 2013; 65(4): 458-461.
- [16] Caroasco S, Ripoll G, Sanz A, Rodriguez JA, Panea B, Revilla R, Joy M. Effect of feeding system on growth and carcass characteristics of ChurraTensina light lambs. J Meat Sci 2008; 80(2): 239-248.
- [17] Nogalski Z, Pogorzelska-Przybyłek P, Wroński M, Wielgosz-Groth Z, Purwin C, Sobczuk-Szul M, Mochol M. The Effect of Body Conformation on Carcass quality in Young Bulls. Journal of Animal Production Advances 2012; 2(4): 182-188.
- [18] Agastin A, Naves M, Farant A, Godard X, Bocage B, Alexandre G, Boval M. Effects of feeding system and slaughter age on the growth and carcass characteristics of tropical-breed steers. Journal of Animal Science 2013; 91(8): 3997-4006.  
<http://dx.doi.org/10.2527/jas.2012-5999>
- [19] Atta M, Khidir OA. Use of heart girth, wither height and scapuloischial length for prediction of live weight of Nilotic sheep. J Small Rum Res Sci 2004; 55(1): 233-237.  
<http://dx.doi.org/10.1016/j.smallrumres.2004.01.005>
- [20] Afolayan RA, Adeyinka IA, Lakpini CAM. The estimation of live weight from body measurements in Yankasa sheep. J Anim Sci 2006; 51: 343-348.
- [21] Patel AK, Mathur BK, Rohilla PP, Rani U, Patil NV. Comparative analysis of different management systems in arid goat breeds. Indian Journal of Animal Sciences 2009; 79(5): 514-518.
- [22] Nagpal AK, Singh D, Prasad VSS, Jain PC. Effect of weaning age and feeding system on growth performance and carcass traits of male kids in three breeds in India. Small Ruminant Research 1995; 17(1): 45-50.  
[http://dx.doi.org/10.1016/0921-4488\(95\)00649-6](http://dx.doi.org/10.1016/0921-4488(95)00649-6)

Received on 21-01-2016

Accepted on 04-04-2016

Published on 29-04-2016

<http://dx.doi.org/10.6000/1927-5129.2016.12.28>© 2016 Rizwana *et al.*; Licensee Lifescience Global.

This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.