Int.J.Curr.Microbiol.App.Sci (2020) *9*(3): 383-388

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 9 Number 3 (2020)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2020.903.045

A Study on Body Weight and Benefit Cost Ratio of Weaned Kids of Sirohi Goat Fed with Different Levels of Concentrates

Hanuman Lal Nehra[1*], Athar Uddin[1], Vinod Bhateshwar[2] and Hitesh Muwal[3]

[1]Department of Livestock Production Management, Sri Karan Narendra Agriculture University, Jobner (Raj.) India
[2]Department of Animal Husbandry & Dairying, Banaras Hindu University, Varanasi (U.P.) India
[3]Maharana Pratap University of Agriculture and Technology, Udaipur (Raj.) India

**Corresponding author*

Keywords

Concentrates, Body weight, Benefit cost ratio and Sirohi goat kids

Article Info

Accepted:
05 February 2020
Available Online:
10 March 2020

A B S T R A C T

The present research work was carried out to study the effect of concentrate feeding on body weight and benefit cost ratio of weaned kids of Sirohi goat. Twenty four kids of Sirohi breed between 3-4 months age were randomly selected on the basis of uniform body weight, age and divided into 3 groups of 8 kids each at the goat farm of S.K.N. College of Agriculture, Jobner. Group T_1 served as control supplemented with 50 g concentrate per kid per day for 3 months. Group T_2 (treatment) supplemented with 50, 100 and 150 g concentrate and T_3 (treatment) with 100, 150 and 200 g concentrate per head per day for 1st, 2nd and 3rd month, respectively. Other management practices were similar for each group. Fodder of khejri loom was offered ad-libitum to all groups. Body weight of kids was recorded weekly. Group T_3 fed with more quantity of concentrate achieved the highest (85.77 g/day) average weekly weight gain followed by T_2 (69.22 g/day) and control group T_1 (61.33 g/day). Maximum average total weight gain per kid was observed in group T_3 (7.72 kg) followed by T_2 (6.23 kg) and least was found in T_1 (5.52 kg). It is concluded from the results that there was significant increase in weekly and monthly weight gain ($P \leq 0.01$) of kids supplemented with higher quantity of concentrate in diet. Thus from above findings it can be concluded that T_2 and T_3 treatments showed significantly improved body weight in Sirohi kids and higher level (T_3) was relatively the best level in terms of both biological and economical returns.

Introduction

Goats have multifaceted utility as a livestock species and play significant role in rural economy. Rearing of goats is very useful for small and marginal farmers and landless labourers especially in the areas, where crops and dairy farming are not economical. Goat plays an important role in generating employment in rural areas. Being small in size, they do not require any large management skills and can be easily handled and managed by women and children. Goats can survive in areas with low quality

vegetation. In India, goats are mainly fed on crop residues, green fodder, top feeds and non-conventional feed resources.

Goat meat has no religious taboo and the market for it is well established. They are traditionally raised by poverty stricken village people in a secondary system of grazing on harvested fellow land, along the road and canal sides, community pasture land without any supplementation.

For the poor farmers who are unable to maintain large ruminants, goat justifies its designation as "the poor man's cow". Under the changing agro-geo-climatic conditions and depleting resources for livelihood, the goat has tremendous potential to be projected as the 'Future Animal' for rural prosperity. As per 19th livestock census 2012, the Goat population of India is 135.17 million, which is 26.40% of total livestock population of the country. The goat population reduced by 3.82 percent in 2012 over 2007 census, India rank 2nd in total goat meat production and average yield of meat of indigenous goat is 10.74 kg/animal (Annual report 2015-2016, Department of Animal Husbandry ,Dairy and Fisheries, GOI).

Supplementation of concentrates is important for growth and productivity of goats (Kochapakdee *et al*., 1994). By feeding good quality concentrate we can satisfy requirement of both protein and energy. Increasing concentrate levels in kid diet results in increased live weight, as well as carcass weight (Ryan *et al*., 2007).

However, reports on the nutrient requirements are scanty and very little information is available particularly on the contribution of dietary protein and energy to the performance of growing kids under farm conditions and the cost benefit of feeding additional concentrates has not been fully explored in goat-production systems and needs to be evaluated. The quality and quantity of concentrate fed to growing kids has got very much importance for their maintenance and weight gain. Many farmers in India rear goats for the purpose of meat production and for them the growth is most valuable.

Supplementation of concentrate is required for faster weight gains, but it should also be economical. So it is necessary to decide the adequate level of concentrate for faster growth rate.

Most of the small farmers rear goats by keeping animals free for grazing on local grass, bushes, tree leaves and kitchen waste only. These are deficient mainly in protein and energy. For obtaining optimum growth of kids, it is essential to supplement required quantity of concentrate.

The kids after weaning suffers with the deficiency of nutrients which hamper their growth and their available feeds need supplementation of concentrate to increase the growth rate and economic returns.

Materials and Methods

Place of work

The experiment was conducted at goat farm, S.K.N. college of Agriculture, S.K.N. Agriculture University Jobner, District Jaipur, (Rajasthan, India).

Selection of experimental animals and design

Twenty four Sirohi goat kids of either sex having approximately uniform body weight and age group (4 months) were selected. These kids were divided into three equal groups consisting of eight kids in each group and the study was carried out for a period of

thirteen weeks. The experiment was conducted using randomized block design.

Housing and management of experimental animals

Similar housing and managemental facilities were provided to all the groups. Animals were penned in well-ventilated enclosures for the experiment.

Feeding of experimental animals

The concentrate mixture in pelleted form was obtained from local market Concentrate and roughages were fed separately to each kid in all treatment groups. The concentrate was fed once in a day at 10:00 am. Whereas, the roughage (khejri loom) was offered at 10:30 am and 4:00 pm to all treatment groups. Ad-libitum clean drinking water was available round the clock to all treatment groups.

Body weight

All the experimental kids were weighed early in the morning, before offering the feed, at weekly intervals upto 13 weeks from the commencement (4 months of age) of the experiment. Weighing was carried out by digital weighing balance/electronic. The experimental kids were weighed individually at the start of the experiment and at weekly intervals thereafter, up to 90 days on weighing balance.

Benefit cost ratio of concentrate feeding

It was calculated on the basis of additional cost involved in supplementation of concentrate and value of additional weight gain. The cost of additional concentrate mixture was calculated as per the prevailing market rates. The cost of additional weight gain was also calculated as per the prevailing rate of kids on kg live weight basis.

Statistical analysis

Statistical analysis was carried out by standard statistical methods RBD and the calculation of ANOVA was done. This formula was given by Fisher and Yates (1950). Superscripts are used for significantly difference in means by DMRT method. Duncan's new multiple range test (DMRT) is a multiple comparison procedure developed by David B. Duncan in 1955.

Results and Discussion

Body weight

Table 3 shows the total gain in body weight 5.52, 6.23 and 7.70 kg for groups T_1, T_2 and T_3, respectively. There was significant difference ($P \leq 0.01$) between three treatments. The total gain in weight of kids from group T_3 was significantly ($P \leq 0.01$) higher than kids from group T_1 and T_2. However, total gain in weight of kids from group T_2 was significantly ($P \leq 0.01$) higher than that of T_1. Guru *et al.,* (2004*)* observed that at the end of the experiment kids with higher levels of concentrate supplementation tended to maintain heavier body weights. Anil Kumar *et al.,* (2009) also recorded at the end of experiment that the body weight of the ewes which were fed higher amount of concentrates was significantly heavier than ewes receiving less amount of concentrates. The results obtained in present trial were in agreement with these findings.

Benefit cost ratio

The input- output relationship is presented in Table 4. Total concentrate intake for groups T_1, T_2 and T_3 was 4.30, 8.50 and 12.50 kg/kid, respectively, during a period of three months of feeding concentrate. It was observed that the cost incurred was Rs.86.00, 170.00 and 250 per kid for groups, T_1, T_2 and T_3,

respectively, indicating higher cost of feeding for group T_3 than T_2 and T_1. Total live weight achieved at the end of experiment was 16.57, 17.31 and 18.73 kg/kid for T_1, T_2 and T_3, respectively. Additional weight gain for T_2 and T_3 was 0.74 and 2.16 kg, respectively. Additional Income realizable from total gain in weight during trial period for treatment groups T_2 and T_3 was Rs. 222.00 and 648.00 per kid and additional profit from total weight gained was Rs.138.00 and 484.00 rupees, respectively. Thus, the extra profit of Rs.346.00 per kid can be obtained due to feeding 100, 150 and 200 g in T_3, followed by Rs 138.00 due to feeding of 50, 100 and 150 g in T_2 than feeding of 50 g concentrate in control group.

Table.1 Distribution of experimental Sirohi goat kids

Treatments	No. of Animals	Average body weight (in kg)
T_1	08	11.05±0.80
T_2	08	11.08±0.71
T_3	08	11.03±0.78

Table.1 Feeding schedule of weaned kids of Sirohi goat

Experimental period (days)	T_1	T_2	T_3
	Concentrate supplementation gram/head/day		
0-30	50	50	100
31-60	50	100	150
61-90	50	150	200

Table.2 Chemical composition (%DM Basis) of concentrate mixture

S.N.	Nutrients	Percentage
1.	Total digestible nutrient (TDN)	75%
2.	Crude protein (CP)	18%
3.	Crude fibre (CF)	10%
4.	Common salt (CS)	1.0%
5.	Mineral mixture(M.M.)	2.0%

Table.3 Average total weight gain (kg/week) of Sirohi kids in different groups

	T_1 (Mean±SE)	T_2 (Mean±SE)	T_3 (Mean±SE)
Initial body weight (kg)	11.05	11.08	11.03
Final Body Weight (kg)	16.57	17.31	18.73
Total gain in weight	5.52^{c}±0.14	6.23^{b}±0.20	7.70^{a}±0.24
Weight gain/day/kid	0.061^{b}±0.04	0.069^{b}±0.03	0.085^{a}±0.01

Table.4 Benefit cost ratio of Sirohi goat kids

Attributes	T1	T2	T3
Initial body weight(kg)	11.05	11.08	11.03
Final Body Weight(kg)	16.57	17.31	18.73
ADG(gm)	61.33	69.22	85.55
Total concentrate intake (kg/kid)	4.30	8.50	12.50
Cost of concentrate/kid (Rs) 20/kg	86	170	250
Additional concentrate ration cost	-	84	164
Additional weight gain (kg)	-	0.74	2.16
Cost of live weight @ Rs 300/-per kg	4971	5193	5619
Gross Benefit (Rs)	-	222	648
Net Benefit (Rs)		138	484
Extra Benefit (Rs)	-	-	346

Similar observations were reported by *Guru et al.,* (2004) who concluded that of all levels of supplementation of concentrate for feeding of growing kids, higher level (450g/h/d) was relatively the best level in terms of both biological and economical returns. Haddad (2005) also observed that higher concentrate diets had reduced production costs compared to lower concentrate diets fed to kids. The results are in agreement with Jabbar and Anjum (2008) who recorded that higher concentrate level in diet (forage to concentrate ratio of 25:75) most appropriate for economical mutton production from Lohi lambs.

On the basis of the present investigation, it may be concluded that feeding concentrate at the rate 100, 150, 200 g per day per kid is useful. This higher level of concentrate feeding improved the absolute body weight of growing kids and also resulted in improved feed utilization, along with increased gross profit per kid. Further it was concluded that growing kid, may be supplemented with higher level of concentrate which improved the body weight, the feed utilization and ultimately the profit to the farmer.

References

Anil Kumar, R., Thiruvenkadan, A. K. and Iyue, M. 2009. Influence of feeding regimes from lamb hood on productive and reproductive performance of Sandyno ewes. *Indian Journal of Animal Sciences*, 79(5): 511-513.

Annual report 2015-16, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, GOI, Livestock Population. 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, M/o Agriculture, GOI.

Fisher, R. A. and Yates, F. 1950. Statistical tables, Oliver and Boyd, Edinburgh, London. p.p. 146.

Guru, M., Tesfaye, L., Sisay, A., Dadi, H. and Assefa, E. 2004. Growth performance of arsi-bale kids supplemented with different levels of concentrate. *African Journal of Livestock Extension*, 3*:* 82-86.

Haddad, S. G. 2005. Effect of dietary forage: concentrate ratio on growth performance and carcass characteristics of growing Baladi kids. *Small Ruminant Research*, 57(1): 43-49.

Jabbar, M. A. and Anjum M. I. 2008. Effect of diets with different forage to concentrate ratio for fattening of lohi lambs. Pakistan Journal of Veterinary Science, 28(3): 150-152.

Kochapakdee, S., Pralomkam, S., Saitanoo, A. and Norton, B. W. 1994. Productivity of female goat grazing newly established pasture with varying levels of supplementary feeding. *Asian-Australian Journal of Animal Science*, 7: 289-293.

Ryan, S. M., Unruh, J. A., Corrigan, M. E., Drouillard, M. M. and Seyfert, M. 2007. Effects of concentrate level on carcass traits of Boer crossbred goats. *Small Ruminant Research*, 73: 67-76.

How to cite this article:

Hanuman Lal Nehra, Athar Uddin, Vinod Bhateshwar and Hitesh Muwal. 2020. A Study on Body Weight and Benefit Cost Ratio of Weaned Kids of Sirohi Goat Fed with Different Levels of Concentrates. *Int.J.Curr.Microbiol.App.Sci.* 9(03): 383-388.
doi: https://doi.org/10.20546/ijcmas.2020.903.045