

## Wastage of Green Fodder under Different Feeding Systems in Rohilkhandi Kids

Anjali Kumari\* and B.H.M. Patel

Division of Livestock Production Management, Indian Veterinary Research Institute, Izzatnagar (U.P)-243 122, India.

### Abstract

The present study was conducted at the Sheep and Goat Farm of LPM section, IVRI with an attempt to rear kids by different feeding system for 3 months. The local goat of Rohilkhand region maintained in the farm were used. A total of 21 growing goats weighing around 7-11 kg and ageing 4-5 months were selected. These animals were made in to 3 groups. Group I was fed un-chopped green fodder in circular feeder (newly designed). Group II was fed un-chopped green fodder in linear feeder that was similar to the exiting farm practice. Group III was fed chopped green fodder in linear feeder (modified version). Amount of concentrate and dry fodder fed was kept constant for all the three groups subject to equal increment in accordance with their increasing age. Adlib green fodder was made available to the animals but in the end left over was recorded. The green fodder wastage was significantly ( $P < 0.05$ ) higher for Gr I ( $4.49^c \pm 0.04$ ) followed by Gr-II ( $4.25^b \pm 0.04$ ) and the lowest was Gr-III ( $3.49^a \pm 0.08$ ). It can be concluded that provision of unchopped fodder in circular feeder did not give any advantage over linear feeding trough instead it lead to increased wastage of fodder. Further chopping helped in reducing the feed wastage.

\*Corresponding Author:

Anjali Kumari

Email: [anjali8992@gmail.com](mailto:anjali8992@gmail.com)

Received: 16/08/2015

Revised: 09/09/2015

Accepted: 11/09/2015

**Key words:** Feeding goat, Chopped fodder, Growth, Feeder type, Feed Wastage.

### 1. Introduction

Goat is being reared under different systems depending upon region, breed and type of farmer. Keeping demand in view, many progressive farmers started opening goat farms in and around the urban and peri-urban areas. Under this situation, intensive system /confinement are the only option due to scarcity of space and here goats are exclusively stall-fed (zero-grazed). Whether intensive or semi-intensive there should be some arrangement for feeding of goats as per the browsing behaviour of the animals. Goats spend 26% of their time in feeding during day. Goats naturally prefer to eat at the height of about 20 to 120 cm above the ground (Peacock, 1996) in standing position. Thus if any feeding arrangement is not according to their behaviour there is possibility of wastage of fodder. Most of the feeders are available in the market are mostly linear or hexagonal. Similarly, earlier researchers (Mishra *et al.*, 1992; Singh *et al.*, 1992 and Van *et al.*, 2005) have attempted to feed the green fodder in chopped form but they found that it resulted in variable intakes. According to Walker (1980), 85.4% of foliage from the strata 0 to 1m could

be consumed by the animals, but only 10% from strata 1 to 2.5 m and 4.2% from strata 2.5 to 5m. They can stand on their hind legs for long period. Goats find it difficult to eat directly off the ground. As goats are selective feeders by natural habit, they do not eat once the feed is dropped on the ground and stamped (Peacock, 1996). Dziba *et al.* (2003) found that DM bite size and intake rates of Boer goats or Nguni goats increased when the feeding height was increased from 0.3 to 1.5 m. They also develop adapted harvesting behaviour like 'stripping' lateral leaves off the plant stems by vertical traction (Meuret, 1997). Goats forage opportunistically (Lu, 1988) and will thus forage at any height within their reach depending on food availability. Keeping above points in view, we have attempted to compare different feeders in terms of wastage by feeding the un-chopped fodder in newly designed feeding trough and chopped fodder in modified linear feeder.

### 2. Materials and Methods

A total of 21 growing goats weighing around 7-11 kg and ageing 4-5 months were selected. These

animals were made in to 3 groups consisting 7 animals each.



Plate 1: Picture of wastage of green fodder in circular feeder in Rohilkhandi kids (unchopped fodder).



Plate 2: Picture of wastage of green fodder in linear feeder in Rohilkhandi kids (unchopped fodder).



Plate 3: Picture of wastage of green fodder in linear feeder in Rohilkhandi kids (chopped fodder)

**Group I (Circular):** All goats under this group were maintained on un-chopped fodder. This un-chopped fodder was fed using the circular feeder (Plate 1). This circular feeder was newly developed by farm workshop, IVRI. This measured 94cm in diameter

(lower), 168 cm in height (total). This feeder was sufficient for feeding atleast 7 goats.

**Group II (Linear):** The un-chopped fodder was fed in the linear feeder which measured 240cm in length, 54 cm in breadth and 88 cm in height (Plate 2). This feeder was being used since long time in the farm.

**Group III:** Goats were fed chopped fodder in linear feeder having length 153cm, breadth 46 cm, height 88 cm (Plate 3). However, the feeder was modified in such a way that only head of the animal could get into the manger not the whole animal. The length of chopped fodder was 1-2 inch for maize during the experimental period.

All the three groups were fed same amount of green fodder whose weight was taken before feeding. Amount of concentrate and dry fodder fed was kept constant for all the three groups subject to equal increment in accordance with their increasing age. Experiment was conducted for 3 months. The daily intake of green fodder (maize) was recorded and the left over was subsequently calculated for each group. The statistical analysis was done using SAS as per the standard procedure.

### 3. Results and Discussion

The total green fodder wastage at different fortnightly intervals by kids has been presented in Table 1. The total green fodder wastage in Gr I, II and III during the first fortnightly interval was  $3.9 \pm 0.11$ ,  $3.70 \pm 0.10$  and  $2.70 \pm 0.19$  kg, respectively. The corresponding values for the VI fortnight were  $4.42 \pm 0.04$ ,  $4.26 \pm 0.07$  and  $2.84 \pm 0.08$  kg, respectively (Table 1). The results indicated that green fodder wastage was higher in Gr I followed by Gr II and lowest was in Gr III which did not differ significantly at different intervals of time (plate I, II, III). The similar trend followed till the end of the experiment. However, the overall values of green fodder wastage differed significantly ( $P < 0.05$ ) between the groups. The overall values of green fodder wastage in Gr I, II and III were  $4.49 \pm 0.04$ ,  $4.25 \pm 0.04$  and  $3.49 \pm 0.08$  kg, respectively. The green fodder wastage was significantly ( $P < 0.05$ ) higher for Gr I followed by Gr-II and the lowest was for Gr-III. It can be concluded that Linear feeding trough helped in saving the green fodder in comparison to circular. Our finding is in agreement with Upreti *et al.* (2005) who have concluded that wastage of green forage (stylo) was substantially low (7.74%) in rectangular feeder compared to hexagonal (20.49%). Further, they also found that the rectangular feeder had lowest losses of straw (10.49%), napier (13.86%) and fodder (6.61%) compared to other feeder types. These findings of fodder and grass in hexagonal feeder are contrary to the finding of Singh *et al.* (1992).

Table 1: Wastage of green fodder under different feeding systems at fortnightly intervals.

	I	II	III	IV	V	VI	Overall
Gr I	3.92 <sup>c</sup> ±0.11	4.48 <sup>c</sup> ±0.11	4.61 <sup>c</sup> ±0.09	4.79 <sup>c</sup> ±0.06	4.70 <sup>c</sup> ±0.09	4.42 <sup>c</sup> ±0.04	4.49 <sup>c</sup> ±0.04
Gr II	3.70 <sup>b</sup> ±0.10	4.21 <sup>b</sup> ±0.13	4.35 <sup>b</sup> ±0.11	4.66 <sup>b</sup> ±0.07	4.30 <sup>b</sup> ±0.09	4.26 <sup>b</sup> ±0.07	4.25 <sup>b</sup> ±0.04
Gr III	2.70 <sup>a</sup> ±0.19	3.51 <sup>a</sup> ±0.20	3.81 <sup>a</sup> ±0.22	4.21 <sup>a</sup> ±0.12	3.85 <sup>a</sup> ±0.23	2.84 <sup>a</sup> ±0.08	3.49 <sup>a</sup> ±0.08

The lower feed wastage in Gr III could be due to method of fodder presentation (chopped) as well as modified linear feeder. The contamination of concentrate, green forage, straw and fodder twigs with faeces and urine was almost totally prevented with the use of hexagonal and rectangular feeders (Upreti *et al.*, 2005). The wastage in Gr I was relatively higher which could be due to fact that feeder had vertical rods which did not help to retain the stems. Van *et al.* (2005) also observed that the animals tried to eat Jackfruit very quickly and in the process some of the leaves ripped off were not consumed but fell to the floor. The animals did not eat leaves from the floor, which resulted in lower intake from Jackfruit hung than Jackfruit put in the trough. Preston and Leng (1987) suggested that smell from dung or urine in feed is often the most important factor affecting feed intake. Animals may reject feed even without tasting it. This may be the reason for more wastage of green fodder in Gr I and Gr II which were fed unchopped fodder because stems once fallen on ground become unpalatable to goats.

## References

- Dziba LE, Scogings PF, Gordon IJ and Raats JG (2003). The feeding height preferences of two goat breeds fed *Grewia occidentalis* L. (Tiliaceae) in the Eastern Cape, South Africa. *Small Ruminant Research*, 47: 31- 38.
- Lu CD (1988). Grazing behaviour and diet selection of goats. *Small Ruminant Research*, 1: 205-216.
- Meuret M (1997). Food harvesting by small ruminants foraging on rangeland and woodland undergrowth. *Animal Production*, 10: 391-401.
- Mishra RP, Saini D and Singh K (1992). Development of rectangular feeders for goats. In: *Proceedings of V<sup>th</sup> International Conference on Goats, 2-8<sup>th</sup> March 1992, New Delhi. ICR and IGA*. pp. 381-385.
- Peacock C (1996). Improving goat production in the tropics. *Published by Oxfam, UK and Ireland*.
- Preston TR and Leng RA (1987). Matching ruminant

Less wastage in Gr III may be due to the chopped nature of the fodder leading to consumption of stems along with leaves and since no stripping action is there, minimal wastage is there.

## 4. Conclusion

The overall values of green fodder wastage in three treatment groups, lowest values were observed in Gr-III. The studies indicate that provision of chopped fodder in linear feeder is the best system for feeding the kids to minimize the wastage of fodder due to falling and contamination. Hence finally it can be concluded that linear feeder and chopped fodder help in reducing fodder wastage.

## Acknowledgement

Authors are highly thankful to Director, IVRI for providing all the facilities to carry out this research work at Sheep and goat farm, IVRI, Izzatnagar.

production systems with available resources in the tropics and sub-tropics. *Penambul Books, Armidale, NSW, Australia*, pp 245.

- Singh K, Misra RP, Saini AL, Singh D and Kumar P (1992). Development of hexagonal feeders for goats. In: *Proceedings of V<sup>th</sup> International Conference on Goats, 2-8<sup>th</sup> March 1992, New Delhi. ICR and IGA*. pp. 445-449.

- Upreti CR, Kuwar BS and Panday SB (2005). Development and evaluation of improved feeders for goats suitable to stall-fed management system Nepal. *Agricultural Research Journal*, 6: 78-83.

- Van DT, Mui NT and Ledin I (2005). Tropical foliages: effect of presentation method and species on intake by goats. *Animal Feed Science and Technology*, 118: 1-17.