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Research Article

EFFECT OF SUPER NAPIER GREEN FODDER ON GROWTH PERFORMANCE OF NELLORE BROWN LAMBS

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ABSTRACT

An investigation on the growth performance of Nellore Brown lambs fed with Super Napier green fodder was carried out at Livestock Research Station. Forty-eight Nellore Brown weaners were selected for the study and distributed into three treatments (T1, T2 and T3) with 4 replicates in each treatment and each replicate containing four weaners. T1 group animals fed with Super Napier green fodder; T2 group fed with Super Napier green fodder supplemented with *Styloxanthes hamata* green fodder at rate 1.0% body weight; T3 group Super fed with Napier green fodder supplemented with Concentrate feed at rate 1.0% of the body weight. The body weight gain (kg) during the experiment was 02.69±0.16, 03.79±0.11 and 06.15±0.23 at 6 months of age. The effect of the feeding system showed a significant ($P < 0.01$) effect on the average daily gain in post-weaning. The average daily gain (g) was significantly ($P < 0.01$) higher in T3 (68.33±2.60) than in T2 (42.15±1.25) and T1 (29.93±1.79). The feed efficiency of the three feeding systems was 13.60±1.46, 10.69±0.71, and 9.09±0.59 in the T1, T2, and T3 groups, respectively. The T3 group (13.60±1.46) animals showed better feed efficiency than the T2 group (10.69±0.71) and T1 group (9.09±0.59) animals and differed significantly ($P < 0.05$).

Keywords: Growth performance, Nellore brown lambs, Super Napier

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Small ruminants contribute ten per cent of total livestock sector contribution in agriculture gross domestic product of India. Sheep are serving not only as a source of livelihood and nutritional security but a strategy for risk minimization for the farming community. In developing countries, forages continue to be the principal source of feed for livestock (Jung and Allen, 1995). A shortage of feed and fodder accounts for half of the overall production losses in livestock sector. There is now a net shortfall of green fodder, dry agricultural leftovers, and concentrate feeds throughout the nation. Therefore, in order to feed the animals for augmented production, it becomes necessary to look for the best-yielding and fastest-growing fodder variety. One of the highest producing fodder crops in the nation is Napier grass, among the several types of fodder available. The nutritional composition of Super Napier fodder is on par with that of other Napier varieties. It grows more quickly and achieves greater plant height even in difficult environmental conditions. It exhibits a higher yield, quicker growth, and shorter cutting interval, which is why it is becoming more and more popular. Hence, the present research work was designed to investigate the growth performance of Nellore Brown lambs fed with Super Napier grass.

MATERIALS AND METHODS

Forty-eight Nellore Brown weaners were divided into three treatment groups at random of sixteen animals each, with each treatment containing 4 replicates and each replicate containing four Nellore Brown weaners. The experiment was conducted at Livestock Research Station, Siddarampuram, Andhra Pradesh. The group average of weaning weights in T1, T2 and T3 were recorded as 9.53±0.21, 9.51±0.15 and 9.51±0.23 kg, respectively.

The treatment group details are as follows:

T1 - Super Napier green fodder ad-libitum (Control group)

T2 - Super Napier green fodder ad-libitum with *Styloxanthes hamata* green fodder @ 1% body weight.

T3 - Super Napier green fodder ad-libitum with concentrate feed @ 1% body weight.

All the experimental animals were offered with ad-libitum chopped Super Napier fodder, and the weaners in T2 and T3 groups were supplemented with green *Styloxanthes hamata* fodder and concentrate mixture at rate 1.0 per cent of body weight, respectively. A digital weighing machine was used to record the body weights of the animals at weekly intervals prior to providing them feed and water in the morning during the 90 day growth study. In accordance with the guidelines established by Snedecor and Cochran (1994), the statistical data was analyzed using an SPSS software programme for statistical significance.

RESULTS AND DISCUSSION

The body weight gains (kg) along with post weaning weight gain are presented in the Table 1. The means of birth, weaning and 6 months body weights were 3.41±0.15, 9.53±0.21 and 12.22±0.11 kg, respectively in T1 group; 3.40±0.11 and 9.51±0.15, 13.31±0.19 kg, respectively in

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T2 group; and 3.51±0.11, 9.51±0.23 and 15.66±0.31 kg, respectively in T3 group. The mean pre-weaning weight gains were 6.11±0.23, 6.11±0.18 and 6.00±0.27 kg for T1, T2 and T3 groups, respectively. The mean post-weaning weight gains were 2.69±0.16, 3.79±0.11 and 6.15±0.23 kg in T1, T2 and T3 groups, respectively. The weight gain in post weaning lambs was significantly ($P < 0.01$) higher in T3 (06.15±0.23) followed by T2 (03.79±0.11) and T1 (02.69±0.16) groups, respectively.

The post weaning body weight gain in Nellore Brown weaners in the present study were differed significantly ($P < 0.01$). The higher post weaning weight gain in T3 was due to the supplementation of the concentrate (at rate 1.0% of the BW) than in T2 and T1. These results corroborate the findings of Karunanithi *et al.* (2007), who noted that the group supplemented with high amount of concentrate feed per day gained high body weight than the group supplemented with lower amount of concentrate feed. The supplementation of *Styloxanthes hamata* (@ 1.0% of the b.wt) resulted in better body weight gain in T2 than the T1 group fed with adlibitum Super Napier grass alone. The lower body weight gain in T1 group (Super Napier grass adlibitum) might be due to fiber and cell wall constituents which are less digestible seen in Super Napier green fodder.

The pre weaning, post weaning and overall average daily weight gain of Nellore Brown weaners are presented in Table 2. The average post weaning daily weight gain (g) was significantly ($P < 0.01$) higher in T3 (68.33±2.60) than the T2 (42.15±1.25) and T1 (29.93±1.79) groups.

The post weaning average daily gains (g) was 29.93±1.79 in T1, 42.15±1.25 in T2 and 68.33±2.60 in T3 groups. Post weaning average daily gain in T3 group was significantly ($P < 0.01$) higher than T1 and T2 group. The overall average daily gains (g) was 97.91±1.80 in T1 group, 110.13±2.16 in T2 group and 135.00±3.80 in T3 group, and there was a significant ($P<0.01$) difference among the treatments. The higher post weaning average daily gain (ADG) observed in T3 might be attributed to concentrate supplementation which provides the all the required nutrients to the body. These average daily gains are in concurrence with the Negi *et al.* (1987) in Gaddi sheep; Jagtap *et al.* (1989) in Deccani and their crossbreds and Kaila *et al.* (1989) in Muzaffarnagari and their crossbreds; Reddy *et al.* (1989) also reported that supplementation of subabul leaves, GNC and maize with NB-21 fodder resulted in better growth rates in Nellore Brown weaners.

Further, Karunanithi *et al.* (2007) observed that the supplementation of concentrate feed in higher amount resulted in more ADG in Mecheri sheep. However comparable average daily gains of 59.00±5.92 g were reported by Rahmann *et al.* (2013) in goats supplemented with Napier grass+1.0 % commercial pellet feed. The average daily gains (g) of T2 (42.15±1.25) group were better than the T1 group (29.93±1.79) obtained in our study might be resulted from the addition of legume fodder *Styloxanthes hamata* (@ 1.0 % of b.wt) in addition to offering of ad-libitum Super Napier grass. Similar ADG were recorded in Madras Red sheep (Balasubramanyam *et al.*, 2010); in Mecheri sheep (Jeichitra and Rajendran, 2013) and in Deccani sheep (Kumar *et al.*, 2017). Devasena and Krishna (1996) also opined that supplementation of the legume forage to lambs fed with colonial guinea grass basal ration resulted in better average daily gains due to increase in the DCP content of ration. In contrast to above observations higher ADG's were observed by Shinde *et al.* (1995) in Avivastra lambs; Karim *et al.* (2002) in Awassi × Malpura crossbreds and Kaila *et al.* (1989) in Dorset × Muzaffarnagari crossbreds might be due to better conversion efficiency in crossbreds compared to native breeds.

The feeding of Super Napier alone resulted in lesser post weaning ADG in T1 than T2 and T3. The lesser post weaning average daily gains obtained in the T1 group (29.93±1.79) were coinciding with the daily gains observed by Thiruvenkadan *et al.* (2011) in Mecheri sheep; Albial *et al.* (2014) in Nali sheep and Gopaldass *et al.* (2004) in Magra sheep. The lesser post weaning gain obtained in T1 group in the present study might be due to fiber and cell wall constituents which are less digestible seen in Super Napier fodder.

However, higher ADG were observed by Santra *et al.* (2002) who reported average daily gains of 98.1g among weaner lambs fed concentrate supplemented at 1.5% of body weight while grazing on established pasture. The variability seen in the average daily gain between treatments is due to differences in feed consumption and efficiency of feed utilization.

The feed efficiency (Dry matter intake/kg gain) for the three feeding systems is presented in Table 3. The feed efficiency of the three feeding systems was 13.60±1.46 in T1, 10.69±0.71 in T2 and 9.09±0.59 in T3 groups. The T3 group (9.09±0.59) animals showed better feed efficiency than the T2 group (10.69±0.71) and T1 group (13.60±1.46) animals and three treatments differed significantly ($P < 0.05$).

The feed efficiency was higher for T3 due to supplementation of concentrate feed (@ 1.0% of the b.wt) followed by T2 which was supplemented with *Styloxanthes hamata* (1.0% of the b.wt) to the basal diet i.e. Super

Table 1. Body Weight gain (kg) in Nellore brown weaner lambs at different ages

S.No.	Growth characteristics	Treatment-I	Treatment-II	Treatment-III
1.	Birth weight (kg)	03.41±0.15	03.40±0.11	03.51±0.11
2.	Weaning weight (kg) (Initial weight)	09.53±0.21	09.51±0.15	09.51±0.23
3.	Pre-weaning weight gain (kg)	06.11±0.23	06.11±0.18	06.00±0.27
4.	Final weight** (kg)	12.22±0.11^{a}	13.31±0.19^{b}	15.66±0.31^{c}
5.	Post- weaning weight gain (kg)**	02.69±0.16^{a}	03.79±0.11^{b}	06.15±0.23^{c}
6.	Total weight gain (kg)**	08.81±0.16^{a}	09.91±0.19^{b}	12.15±0.34^{c}

abc values in a row not sharing common superscripts differ significantly ** ($P < 0.01$).

Table 2. Average daily gain (g) in Nellore brown lambs in different treatments

S. No.	Average daily gain	Treatment-I	Treatment-II	Treatment-III
1.	Pre weaning ADG (g)	67.98±2.56	67.98±2.01	66.66±3.02
2.	Post weaning ADG (g)**	29.93^{a}±1.79	42.15^{b}±1.25	68.33^{c}±2.60
3.	Overall ADG (g)**	97.91^{a}±1.80	110.13^{b}±2.16	135.00^{c}±3.80

abc values in a row not sharing common superscripts differ significantly ** ($P < 0.01$).

Table 3. Feed efficiency of the animals in three feeding systems

S. No.	Treatment	Feed efficiency (Dry matter intake/kg gain)
1.	Treatment-I**	13.60^{b} ± 1.46
2.	Treatment-II**	10.69^{ab} ± 0.71
3.	Treatment-III**	09.09^{b} ± 0.59

abc values in a row not sharing common superscripts differ significantly ** ($P < 0.05$)

Napier grass fed ad-libitum (T1). The feed efficiency increases with the increase in protein and energy content in the ration reported by Agnigothri and Raj kumar (2001).

CONCLUSION

It was concluded that the nutritional value of Super Napier fodder is on par with that of other Napier varieties. The voluntary intake of Super Napier fodder was adequate for maintenance requirement and reasonable growth rates. For faster growth rates and quality meat production, supplementing with concentrate feed at 1.0 percent of body weight is advised.

REFERENCES

Agnigothri, M.K. and Raj Kumar, V. (2001). Carcass traits of sheep and goat under various Feeding/Management regimen. Proceedings of the National seminar on scope and strategies for increasing meat production from small ruminants and rabbits in millennium, November 9-11 Coimbatore.

Albial, A.M., Singh, J., Singh, D.P. and Niwas, R. (2014). Environmental influences on growth traits of Nali sheep. *Indian J. Anim. Res.* **48(1)**: 77-74.

Balasubramanyam, D., Jaishankar, S. and Sivaselvam, S.N. (2010). Performance of Madras Red sheep under farmer's flocks. *Indian J. Small Rumin.* **16(2)**: 217-220.

Devasena, B. and Krishna, N. (1996). Effect of concentrate supplementation on nutrient digestibility and nutrient utilization sheep fed colonial grass based rations. *Indian J. Anim. Sci.* **66(9)**: 949-951.

Gopaldass, Singh, V.K., Chopra, S.K. and Ayub, M. (2004). Growth performance of Magra sheep in hot arid climate. *Indian J. Anim. Sci.* **74(4)**: 441- 443.

Jagtap, D.Z. Khanna, A.S. and Narawade, V.S. (1989). Nongenetic factors affecting daily weight gains in Deccani and its Half breds with Dorset and Merino. *Indian J. Anim. Sci.* **59(11)**: 1416-1420.

Jeichitra, V. and Rajendran, R. (2013). Effect of non-genetic factors on post weaning average daily gains in Mecheri sheep. *Int. J. Livest. Res.* **3(2)**: 169-173.

Jung, H.G. and Allen, M.S. (1995). Characteristics of plant cell walls affecting intake and digestibility of forages by ruminants. *J. Anim. Sci.* **73(9)**: 2774-2790.

Kaila, O.P. Sinha, N.R. and Khan B.U. (1989). Body weight growth in Muzaffarnagari sheep and its exotic crossbreds. *Indian J. Anim. Sci.* **59(7)**: 877-880.

Karim, S.A. Santra, A. and Verma, D.L. (2002). Growth, feed conversion efficiency and carcass characteristics of Malpura and Malpura ×Awassi crossbred lambs in a hot semi-arid environment. *Asian-Australas J. Anim. Sci.* **15(3)**: 377-381.

Karunanithi, K., Thiruvenkadan, A.K., Senthivel, K. and Muralidharan, J. (2007). Growth rate and economics of rearing Mecheri lambs under different levels of concentrate feeding. *Tamilnadu J. Vet. Anim. Sci.* **3(2)**: 83-88.

Kumar, D.A.P., Prakash, M.G., Gupta, B.R., Raghunandan, T. and Chandra, A.S. (2017). Average daily gain and Kleiber Ratio in Deccani Sheep. *Pharm. Innov.* **6(6)**: 194.

Negi, P.R., Pran P., Bhat, and Garg, R.C. (1987). Average daily weight gains in Gaddi sheep and their halfbreds with Rambouillet and Russian Merino. *Indian J. Anim. Sci.* **57(5)**: 489-492.

Rahman, M.M., Abdullah, R.B., Wan Khadijah, W.E., Nakagawa, T. and Akashi, R. (2013). Feed intake, digestibility and growth performance of goats offered Napier grass supplemented with molasses protected palm kernel cake and soya waste. *Asian J. Anim. Vet. Adv.* **8(3)**: 527-534.

Reddy, V.P., Prasad, J.R., Krishna, N. and Prasad, D.A. (1989). Effect of supplementation of energy and protein to forage based basal ration in Nellore weaner lambs. *Indian J. Anim. Nut.* **6(4)**: 301-306.

Santra, A., Karim, S.A. and Chaturvedi, O.H. (2002). Effect of concentrate supplementation on nutrient intake and performance of lambs of two genotypes grazing a semiarid rangeland. *Small Rumin. Res.* **44(1)**: 37- 45.

Shinde, A.K., Karim, S.A., Singh, N.P. and Patnayak, B.C. (1995). Growth performance of weaner lambs and kids under intensive and semi-intensive feeding management. *Indian J. Anim. Sci.* **65**: 830-833.

Snedecor, G.W. and Cochran, W.G. (1994). Statistical methods. (8th Edn.), Lowa, State University press, Ames, lowa.

Thiruvenkadan, A.K., Karunanithi, K., Muralidharan, J. and Babu, R.N. (2011). Genetic analysis of pre-weaning and post-weaning growth traits of Mecheri sheep under dry land farming conditions. *Asian-Australas J. Anim. Sci.* **24(8)**: 1041-1047.