IMPROVING MEAT PRODUCTIVITY OF SHEEP UNDER SMALL HOLDER SYSTEM IN INDIA WITH CROP RESIDUES BASED COMPLETE FEED

P Baswa Reddy, S Girish Patil, C Ramakrishna, N Kondaiah, and Y Ramana Reddy[1]

ICAR- National Research Centre on Meat, Chengicherla, Boduppal, Hyderabad, India-500092

[1]College of Veterinary Science, Rajendranagar, Hyderabad, India - 500030

Abstract – Under the traditional rearing systems of sheep in India, the meat productivity is very poor due to severe nutritional stress during most parts of the year. Utilizing locally available crop residues as feed ingredients in the form of complete feeds has the potential to improve productivity of rearing systems. A field study has been carried out in the premises of small holder famers to compare growth performances and carcass yields of ram lambs reared under traditional extensive grazing system with that of stall feeding with crop residues based complete feeds. Complete feed was prepared utilizing maize straw and ground nut straw as roughage components and offered to sheep under stall feeding. After 120 days of feeding, the animals under stall feeding reached significantly ($p<0.05$) higher average daily gain (ADG) of 122 g when compared to the control group reared under traditional rearing system (77g). The dressing percentage was also higher in the stall fed group (50.4%) than in the control (47.6%). It was found that the meat productivity of sheep increased by 36% under stall feeding through nutritional intervention by utilizing locally available crop residues as roughage component in complete feed.

Key Words – Key words: Ram lambs, Stall feeding, meat yield.

I. INTRODUCTION

Sheep and goat with their multi-facet utility for meat, milk, wool, skin and manure, form an important component of rural economy, particularly in the arid and semiarid areas of India. The rearing of sheep in India is at present in the hands of shepherds, who are mostly illiterate and superstitious nomads and majority of them are landless, small or marginal farmers. Due to lack of scientific rearing practices and non-availability of feed resources, these animals are most often prone to severe nutritional stress which adversely affects their production performance (Singh et al., 2005; Shinde and Sejian, 2013).

To address the issues of low growth rates and meat productivity of sheep in India, a different feeding practice needs to be developed to improve the slaughter/marketable weight of sheep by effectively utilizing the locally available crop residues and agro industrial by-products as feed resources.

A study has been carried out in the farmers' fields under the world bank funded National Agricultural Innovation Project (NAIP) to evaluate growth performances and carcass characteristics of ram lambs under stall feeding with crop residues based complete feed as compared to those of ram lambs under traditional rearing practices.

II. MATERIALS AND METHODS

A rural feed processing unit has been established at Chennur in Nellore district of Andhra Pradesh state in India for production of complete feeds (total mixed ration) utilizing the crop residues available in the locality. The sheep farmers in the villages around this unit were involved in the study. The flock size of the farmers ranged between15 to 60 animals. A total of 670 weaned ram lambs of Nellore-jodipi breed belonging to fifteen farmers were included in the study. Of them, 600 ram lambs were reared under stall feeding with complete feed and the remaining animals were reared under traditional extensive grazing system wherein no additional feed supplementation has been provided. Feed intake and body weight gain of all the animals were recorded at fortnightly intervals. After 120 days of feeding trial, twelve representative animals from each group were slaughtered to record their

dressing yields. The data obtained were analyzed for statistical significance as per the procedures of Snedecor and Cochran (1994).

III. RESULTS AND DISCUSSION

The initial weights of grazing and intensively fed lambs were 14.12 and 15.34 kg, respectively. The complete feed was prepared by incorporating 50% roughage and 50% concentrate ingredients (Table 1). Maize straw and ground nut (peanut) straw which were locally available as crop residues were used roughage components in the complete feed. After 120 days of feeding, the treated group showed a significantly higher growth rate with mean final weight of 30.1 kg when compared to animals under traditional grazing which weighed 23.4 kg (Table 2). The average daily gain was significantly higher in treated group which had ADG of 122 g while the control group showed 77 g. The weight gains observed in this study were higher than those of the reports of Babu et al., (2015) and Venkateshwarlu et al., (2014). This study revealed that better productivity can be obtained in sheep by utilizing crop residues as roughage source in complete feed. The dressing percentage of animals reared under stall feeding with complete feeds was 50.4 as compared to 47.6 under extensive system. The higher growth rates coupled with higher dressing yield resulted in increase in meat productivity per animal by 36 percent. Small holder farmers could perceive the benefits of sheep rearing under stall feeding with crop residues based complete feeds as the lambs needed lesser period for attaining marketable age and required less labour for rearing as there is no need take animals for grazing.

Table 1: Ingredient composition of complete feed

Ingredient	Kg/100Kg
Maize straw	20
Groundnut haulms	30
Maize	20
Soya cake	12
Rice polish	15
Jaggery	2
Mineral mixture	2
Salt	1
Vitamin premix(g/100kg)	40

Table 2: Growth and carcass characteristics of ram lambs reared under different feeding systems.

	Stall feeding with complete feed	Traditional rearing
Initial weight(kg)	15.3±0.3	14.1±0.5
Final weight (kg)	30.1±1.0[a]	23.4±1.4 [b]
Wt. gain (kg)	14.7 ± 0.8 [a]	9.3 ± 0.3 [b]
ADG (g)	122.7 ± 2.2 [a]	77.3 ± 3.6[b]
Total feed consumed (kg)	99.0	---
Feed intake (g/d)	825.2	---
Feed efficiency	1 : 6.7	---
Dressing percentage	50.4[a]	47.6[b]

Values with different superscripts in a row differ significantly ($p<0.05$)

IV. CONCLUSION

Average daily gain and meat productivity of sheep under small holder system was improved through nutritional interventions. Utilizing locally available maize straw and ground nut (peanut) straw as roughage source in complete feed for ram lamb rearing under stall feeding increased the meat productivity by 36% when compared to traditional system.

ACKNOWLEDGEMENTS

Authors sincerely acknowledge the financial support from World Bank through National Agricultural Innovation Project (NAIP) of Indian Council of Agricultural Research (ICAR). We sincerely thank the field support from the officials of Andhra Pradesh Animal Husbandry Department and Mandava foundation, Nellore.

REFERENCES

1. Singh,V.K., Suresh,A., Gupta, D.C. and Jakhmola,C.(2005) Common property resources rural livelihood and small ruminants in India: A review. Indian Journal of Animal Sciences 75(8):1027-1036

2. Shinde, A.K. and Sejian,V. (2013) Sheep husbandry under changing climate scenario in India: An overview. *Indian Journal of Animal Sciences* 83 (10): 998–1008

3. Snedecor, G. W. and Cochran, W. G., 1994. Statistical methods. 8th edition, Iowa State University Press, Ames, Iowa, USA-50010

4. Babu, J., Nalini Kumari,N., Ramana Reddy,Y., Raghunandan,T. and Sridhar K (2015) Effect of feeding sweet sorghum stover-based complete rations on the growth performance and carcass characteristics of ram lambs. Trop Anim Health Prod (2015) 47:623–626

5. Venkateswarlu,M., Ramana Reddy,Y., Nagalakshmi,D., and Mahender M. (2014) Effect of Feeding Sorghum Straw Based Complete Rations with Different Roughage to Concentrate Ratio on Growth and Carcass Characteristics in Nellore Ram Lambs. Animal Nutrition and Feed Technology (2014) 14 : 563-572