

Are Commercial Total Mixed Rations Viable in Intensifying Sheep Production?

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MINI ABSTRACT

Total Mixed Rations (TMRs) having different metabolizable energy (8.73 and 10.53 MJ/kg) and crude protein (14% and 16% per kg) designed by a private feed enterprise in Nellore were compared with a control diet (7.74 MJ ME and 12% CP) for fattening two different breeds of sheep (Rambouillet and Judipi). Ten sheep each were allotted to three treatments in each breed and feed intake (DMI) recorded daily and weight gain (ADG) twice monthly. No significant differences were found in DMI and ADG between the TMRs. Average DMI in high TMR ranged was 1069 g/d (946 – 1463 g/d), in medium TMR 1001 g/d (711 – 1341 g/d) and control 1016 g/d (743 – 1210 g/d). Average ADG in high TMR was 139 g/d (93 – 189 g/d), in medium TMR 123 g/d (94 – 175 g/d) and in control 128 g/d (107 – 161 g/d) in Rambouillet. In Judipi in high TMR average ADG was 93 g/d (75–126 g/d), in medium TMR 73 g/d (47–105 g/d) and in control 81 g/d (59 – 104), respectively. Between the breeds significant differences were found for DMI intake and ADG ($P < 0.01$) and FCR ($P < 0.001$) which was 8 and 10.4 kg per kg ADG in Rambouillet and Judipi, respectively.

Keywords: Total mixed ration, dry matter intake, weight gain, feed conversion rate

INTRODUCTION

The demand for small ruminant meat is increasing rapidly in India. Despite this growing demand for mutton and chevon, small ruminant rearing is still dominated by extensive or semi extensive systems, with huge productivity gaps. Smallholder farmers generally send their goats/sheep for open grazing on marginal land with little supplementary feeding and the animals lose considerable energy in walking long distances, which would have otherwise used for production. Further, unlike in dairy, efforts to produce commercial feed for small ruminants is still limited. Fertile Green Inc a private feed company based in Nellore attempts to change this and has started to explore the economics of producing commercial total mixed rations (TMR) for more intensive small ruminant fattening.

MATERIALS AND METHODS

Fertile Green produced two types of TMRs with different qualities. The medium quality TMR had a CP content of 14% and a ME content of 8.73 MJ ME per kg. The high quality TMR had 16% CP and 10.53 MJ ME per kg. A lower quality on farm feed option with 12% CP and 7.74 MJ ME was designed as a control diet. At the ILRI research station at

Patancheru the three TMRs were tested with two breeds of sheep, Rambouillet and Judipi. The roughage concentrate ratio of the TMRs ranged between 62 and 75% per kg DM.

Sixty sheep with average body weight of 21 kg were allocated to three groups of the two breeds. The sheep was housed in metabolic cages fed *ad lib* with the three different TMRs allowing for about 10–15% of refusals. The feeding trial lasted for 124 days. Dry matter intake (DMI) was recorded daily and weight gain (ADG) was measured at 14 days interval.

RESULTS

DMI, ADG and FCR are summarized in Table 1. No significant differences were found between TMRs for DMI, ADG and FCR though ADG and FCR tended ($P=0.07$) to differ between TMRs in the Judipi breed with TMR high being superior to Control and TMR medium. Highly significant differences for DMI, ADG and FCR though were observed between the breeds with Rambouillet superior to Judipi.

Table 1: Summary of dry matter intake (DMI), dry matter intake (DMI g/kg LW), average daily weight gain (ADG), feed conversion rate (FCR) and relative feed cost in Rambouillet (R) and Judipi (J)

	DMI (g)		DMI (g/kg LW)		ADG (g)		FCR (kg/kg ADG)		Feed Cost (%)	
Within breeds										
	R	J	R	J	R	J	R	J	R	J
High	1069	869	38.0	33.6	139	93	7.8	9.4	46	56
Medium	1001	802	36.8	32.9	123	73	8.2	11.1	43	59
Control	1016	864	36.1	33.4	128	81	8.0	10.8	37	50
Prob>F	0.61	0.53	0.37	0.84	0.29	0.07	0.81	0.07	0.01	0.12
Across breeds										
Mean	1029	845	37	33	130	83	8.0	10.4	42	55
Prob>F	<0.0001		0.0005		<0.0001		<0.0001		<0.0001	
LSD	78.3		1.5		10.9		0.8		4.2	

CONCLUSION

Rambouillet breed of sheep seems the better option for fattening sheep compared to Judipi. TMR can be made with lower CP and ME content than used in the commercial high quality TMR. Feeding cost in stall feeding can be brought down to below 50%, refuting the perception that stall feeding of small ruminants is not viable.