

## Feeding sorghum stover to Ethiopian goats and sheep: effect of amount offered on intake, selection and performance

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### Introduction

Aboud, Owen, Reid and McAllan (1990) found that intake and selection of sorghum stover by sheep increased as the *ad libitum* amounts offered (g/kg mass per day) were increased from 25 to 50 and 75. The greater intakes resulted in improved growth rates. In view of the importance of goats in smallholder tropical-agriculture and the fact that goats are considered selective feeders, the present trial compared the response of goats and sheep when offered increasing *ad libitum* quantities of sorghum stover.

### Material and methods

Sorghum (bird-resistant Seredo) was grown at Melkassa in the Rift Valley. Fourteen days after hand-harvesting grain in November 1988, stover was hand-cut and transported to the International Livestock Centre for Africa at Debre Zeit. The stover was chopped (tractor-mounted Alvan Blanch Chaff Cutter) and stored for 1 month before feeding.

Twenty-four Galla bucks (*ca.* 12 months old) and 24 Ethiopian Lowland rams (*ca.* 15 months old) were used in a 2 × 3 factorial experiment with eight replicates. Animals were individually penned and given 155 g/day of cottonseed cake and offered one of three *ad libitum* amounts of stover (25, 50 or 75 g/kg mass per day). Salt lick and water were provided. Following a preliminary period of 21 days, the experiment lasted 75 days. Amounts of stover offered and refused were recorded daily; samples were fractionated into leaf, leaf sheath and stem to assess selection.

### Results

For intake and growth rate, there were no significant interactions between species and amount of stover offered ( $P > 0.05$ ). Main effect means are shown in Tables 1 and 2. Ram growth rates were more than twice those of bucks; mature weight differences (sheep 27 to 32 kg; goats 18 to 26 kg) would contribute to this.

Table 1 Main effect means for species

	Species		s.e.	Significance of species†
	Goats	Sheep		
No. of animals	21	23		
Initial weight (kg)	14.5	17.0		
Growth rate (g/day)	21.5	48.2	3.74	***
Stover offered (g DM per day)	731	752		
Stover refused (g DM per kg DM offered)	369	272	8.3	***
Stover intake (g DM per day)	428	475	11.1	***

† There were no significant species × amount interactions ( $P > 0.05$ ).

**Table 2** Main effect means for amount of stover offered

	Amount offered (g stover per kg mass per day)			s.e.	Significance†
	25	50	75		
No. of animals	15	15	14		
Growth rate (g/day)	19.5	39.8	47.9	4.58	***
Stover offered (g DM per day)	352	757	1143		
Stover refused (g DM per kg DM offered)	103	356	509	10.2	***
Stover intake (g DM per day)	315	487	563	13.7	***

† There were no significant species × amount interactions ( $P > 0.05$ ).

Both species responded similarly (cf. absence of interaction) in that intake and growth rate increased with increasing amounts of stover offered (Table 2). The largest response occurred to increasing the amount of stover from 25 to 50 g/kg mass per day.

The composition (g/kg) of the stover offered was: leaf, 84; leaf sheath, 237; stem, 616. Mean leaf content (g/kg) of refusals from the 25, 50 and 75 offer-rates were: goats, 1, 2, 5; sheep, 0.1, 0.5, 12. Leaf-sheath contents (g/kg) of refusals were: goats, 40, 67, 113; sheep, 29, 60, 145. Both goats and sheep selected for leaf and leaf sheath.

### Conclusions

The data indicate that both goats and sheep are capable of selective feeding leading to increased intake and growth when they are offered increasing

*ad libitum* amounts of chopped sorghum stover. For the genotypes used, growth rate of rams was more than double that of bucks. The generous feeding strategy used offers a method of alleviating the low nutritive value of sorghum stover as a dry-season food for small ruminants.

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### Reference

Aboud, A. A. O., Owen, E., Reed, J. D. and McAllan, A. B. 1990. Feeding sorghum stover to Ethiopian sheep: effect of stover variety and amount offered on growth, intake and selection. *Animal Production* 50: 593 (abstr.).