

Short Communication

The nutritive value of the leaves and pods of *Acacia tortilis*.

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Acacia tortilis twigs with leaves or seedpods, from the Tugela valley, were milled and fed to five two-tooth wethers for 6 days in separate digestion trials, after a suitable adaptation period. The twigs with leaves contained 10,8% CP and 45 TDN on a DM basis. The seedpods contained 15,8% CP and 59 TDN on a DM basis. The DM intakes for the twigs with leaves were 1,34%, and for the seedpods 1,40% of body mass. Live mass losses were recorded on both the twigs with leaves (-194 g/day) and seedpods (-125 g/day) indicating that *Acacia* twigs with leaves or seedpods alone cannot sustain sheep.

Takkies met blare of saadpeule van *Acacia tortilis*, in die Tugela vallei geoes, is na 'n geskikte aanpassingsperiode aan vyf tweetand-hamels vir 6 dae in afsonderlike verteringsproewe gevoer. Die takkies met blare het 'n RP-inhoud van 10,8% en 'n TVV van 45 op 'n DM-basis gehad. Die saadpeule het 'n RP-inhoud van 15,8% en 'n TVV van 59 op 'n DM-basis gehad. Die droëmateriaalinname vir die takkies met blare was 1,34% en vir die saadpeule 1,40% van die liggaamsmassa. Liggaamsmassaverliese het op beide die takkies met blare (-194 g/dag) en saadpeule (-125 g/dag) diëte voorgekom. Dit blyk dus dat Akasia-takkies met blare of saadpeule nie in die onderhoudsbehoefte van skape kan voldoen nie.

Keywords: *Acacia tortilis*, nutritive value, sheep

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The recent drought conditions experienced in the Tugela Valley of Natal caused livestock owners to resort to the feeding of *Acacia* branches and the pods of certain *Acacia* species to their livestock. At the request of an agricultural mission project at Tugela Ferry, the nutritive value of the dry twigs and leaves as well as the seedpods of *Acacia* were determined by *in vivo* digestibility trials at the Cedara Agricultural Research Station. Samples of *Acacia tortilis* were obtained from

the Tugela Ferry area, situated in Veld type 23a, the northern variation of The Valley Bushveld (Acocks, 1975).

The *in vivo* digestibility determinations were carried out using five, two-tooth, SA Mutton Merino wethers, with an initial mass of $47,2 \pm 3,1$ kg, per trial. Initially low dry matter intakes were encountered, but milling both twigs with leaves and the seedpods through a 25-mm screen increased the intake slightly. The wethers were adapted to both types of feed by mixing these with *Eragrostis curvula* hay. After an initial 6-day period the proportion of hay was gradually reduced over a period of 18 days, before feeding the milled material on test alone for 10 days (Table 1) prior to the 6-day digestion trial. Feed intakes, as a percentage of body mass, were measured and the digestion coefficients were calculated on the ingested material only (Table 2).

The results of the digestion trials conducted after the adaptation period on the *Acacia* twigs with leaves and seedpods are presented in Table 2. The crude protein (CP) values recorded for the twigs with leaves were higher (10,8 vs 6,1) than those recorded by Ludeman (1966a), whereas the crude fibre (CF) values recorded were lower (24,5 vs 49,0). Digestibility values for *Acacia*

Table 1 The Intake of hay and *Acacia* material during the adaptation phase

Twigs and leaves				Seedpods			
Ration composition				Ration composition			
Twigs + leaves (%)	Hay (%)	Days fed	Intake (g/day)	Seedpods (%)	Hay (%)	Days fed	Intake (g/day)
50	50	2	308	50	50	2	350
35	65	2	593	35	65	2	695
33	67	2	708	33	67	2	758
45	55	2	650	45	55	2	822
50	50	2	690	50	50	2	809
75	25	2	902	75	25	2	979
80	20	6	680	80	20	6	1020
100	0	10	729	100	0	10	944

Table 2 The chemical composition and digestion coefficients for the twigs with leaves and the seedpods of *Acacia tortilis*

	Chemical composition % of DM						Digestion coefficient %					DMI % BM TDN	
	DM % 'as fed'	CP	EE	NFE	CF	OM	CP	EE	NFE	CF	OM		
Twigs and leaves	94,9	10,8	6,2	48,2	24,5	89,6	21,13	34,46	58,24	41,71	47,65	1,34	45,37
Std. Error							$\pm 9,1$	$\pm 10,8$	$\pm 4,4$	$\pm 10,0$	$\pm 5,6$	$\pm 0,2$	
Seedpods	95,2	15,8	2,8	51,2	23,7	93,4	47,61	83,98	71,18	41,43	60,03	1,40	59,01
Std. Error							$\pm 3,3$	$\pm 4,9$	$\pm 6,5$	$\pm 7,8$	$\pm 3,6$	$\pm 0,6$	

BM — Body mass

Table 3 The live mass changes of the sheep consuming the twigs with leaves or the seedpods of *Acacia tortilis* alone or in combination with hay

Plant fraction	Acacia and Eragrostis hay	Acacia only
Twigs and leaves	-58 g/day	-194 g/day
Seedpods	33 g/day	-125 g/day

tortilis were not found in the literature, but the CP, CF and TDN values recorded for the pods fall within the range of values cited by Schneider (1947) for *Acacia* pods.

The live mass changes of the sheep are presented in Table 3. A combination of seedpods and Eragrostis hay proved sufficient for a small daily gain over the 18-day pre-adaptation period and this combination appears adequate for the maintenance of sheep. The twigs and leaves combined with Eragrostis hay resulted in a moderate daily mass loss and would not be an appropriate feed for maintaining sheep. The mass losses when only seedpods or twigs with leaves were fed were substantial, indicating that *Acacia* seedpods or leaves are inadequate as a maintenance ration for sheep. This is surprising considering the chemical composition and nutritive value of the seedpods.

These observations correspond with those of Ludeman (1966a,b). He found that the feeding of the twigs or leaves of edible tree species, including *Acacia tortilis*, alone did not offer a solution to the problem of keeping cattle alive during droughts. Another roughage, namely teff hay, had to be included in the rations, as the

feed intake on twigs or leaves alone was very poor. *Acacia tortilis* produced the best results of several species of edible trees with regard to feed intake and animal performance (Ludeman, 1966a,b). He also found that the supplementation of leaves and twigs with molasses appeared to be essential, both for continued reasonable feed intakes as well as normal functioning of the digestive tract. Similar results have been found for other *Acacia* species, as recorded by Kotze (1965) who found that the ground branches of the black thorn *Acacia*, *Acacia mellifera* and a kilogram maize meal per day adequately sustained oxen for 4 months and cows with calves for 2 months on the Neudam Experimental Farm.

In conclusion, the feeding of the twigs with leaves or seedpods of *Acacia tortilis* is insufficient to maintain live mass in animals, but the inclusion of another roughage source, e.g. Eragrostis hay, or concentrate in the ration can sustain animals for fairly long periods.

References

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