

Growth trial

The mean average daily dry matter intake and the average daily gain measured after 91 days are shown in Tables 1 and 2. Ammoniation of maize residue increased ($P < 0,01$) average daily dry matter intake and average daily gain at the 0 and 20% concentrate levels. In both these parameters level of concentrate had a significant ($P < 0,01$) effect only when untreated maize residue diets were fed. Lambs fed ammoniated maize residue and 80% concentrate grew significantly less ($P < 0,05$) than those fed untreated maize residue and 80% concentrate.

Table 1 Mean average daily dry matter intake of lambs fed untreated and ammoniated maize residue and different proportions of concentrate

Concentrate (%)	DMI (g)		Significance (Untreated vs Ammoniated)
	Untreated	Ammoniated	
0	496,3	827,9	$P < 0,01$
20	547,9	858,0	$P < 0,01$
40	749,0	796,8	NS
60	811,7	820,1	NS
80	830,0	779,6	NS

Significance (effect of concentrate level)	$P = 0,0001$	$P = 0,3051$
S.E.	23,6	23,8
C.V.	18,9	15,4

Table 2 The mean average daily gain of lambs fed untreated and ammoniated maize residue and different proportions of concentrate

Concentrate (%)	ADG (g)		Significance (Untreated vs Ammoniated)
	Untreated	Ammoniated	
0	44,0	141,4	$P < 0,01$
20	78,6	155,9	$P < 0,01$
40	128,8	152,5	NS
60	142,7	165,4	NS
80	192,3	153,9	$P < 0,05$

Significance (effect of concentrate level)	$P = 0,0001$	$P = 0,6361$
S.E.	7,2	5,4
C.V.	32,87	18,55

The lambs receiving untreated maize residue and 0 or 20% concentrate were excluded at this stage owing to poor performance. All other lambs were slaughtered at 40 kg body mass corrected for rumen fill. Final feed intake and growth results were similar to those shown in Tables 1 and 2. The rumen digesta mass (kg), dressing percentage, and feed conversion to carcass measured in lambs offered untreated

maize residue with 40, 60 or 80% concentrate and those fed ammoniated maize residue with 0, 20, 40, 60 or 80% concentrate were 5,30, 41,2, 13,97; 4,53, 43,4, 10,08; 4,21, 44,5, 8,09; 5,97, 41,2, 14,63; 4,79, 44,5, 11,59; 4,24, 45,2, 9,88; 4,08, 45,4, 9,35 and 3,93, 45,6, 8,50, respectively. Differences measured at the 40% concentrate levels were significant ($P < 0,05$). Concentrate level had significant ($P < 0,05$) effects on the above parameters in both untreated and ammoniated groups.

Digestibility trial

The apparent *in vivo* digestibility of the diets is shown in Table 3. Ammoniation significantly increased ($P < 0,01$) digestibility at the 0 and 20% concentrate levels. Concentrate level significantly affected ($P < 0,01$) digestibility in both untreated and ammoniated diets. Ruminal pH and ammonia-N levels (mg/l) measured in lambs fed untreated maize residue with the same concentrate levels, were 6,75, 229,1; 6,59, 223,5; 6,47, 202,7; 6,21, 214,2; 6,18, 179,9 and 6,44, 231,5; 6,44, 243,2; 6,24, 249,8; 6,06, 199,4; 5,94, 229,6, respectively. Ammoniation decreased ($P < 0,05$) ruminal pH at all concentrate levels. The differences in ruminal ammonia-N were only significant ($P < 0,05$) at the 40 and 80% concentrate levels. Increasing concentrate levels decreased ($P < 0,001$) ruminal pH in both ammoniated and untreated maize residue diets but had no effect on ruminal ammonia-N levels.

The retention time of water was not significantly affected ($P > 0,05$) by either concentrate level or ammoniation. Rumen water volume was slightly reduced by ammoniation at all concentrate levels with the reduction at the 0% level being significant ($P < 0,05$). Increasing concentrate level significantly decreased ($P < 0,05$) rumen water volume only in the untreated maize residue diets.

Table 3 Mean apparent *in vivo* dry matter digestibility of diets containing untreated and ammoniated maize residue and different proportions of concentrate

Concentrate (%)	DMD (g)		Significance (Untreated vs Ammoniated)
	Untreated	Ammoniated	
0	62,4	66,8	$P < 0,01$
20	66,6	70,9	$P < 0,01$
40	71,8	74,5	NS
60	76,9	75,3	NS
80	78,4	78,7	NS

Significance (Effect of concentrate level)	$P = 0,0001$	$P = 0,0004$
S.E.	0,5	0,4
C.V.	3,75	2,59

Conclusions

The increased intake by lambs of diets containing ammoniated maize residue is in agreement with the results of most researchers (Solaiman, Horn & Owens, 1979). Am-