

Dry-matter intake constraints on production in dual-purpose goats: a possible solution by feeding defoliated maize leaves

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Material and methods

Feeding trials were conducted at Maseno, Kenya, based on maize leaves taken from the plant (defoliated) from three plots measuring 0.25 ha each. On average each plot produced 359 ± 40 kg dry matter of defoliated leaves. Defoliation which commenced at the tasselling stage at the rate of one leaf per week per maize plant did not affect the grain yield. The defoliated maize leaves forage had 120 g crude protein per kg and *in vivo* dry matter digestibility of 0.6.

Leaves from the first plot were assigned to two lactating does. For 3 months the two does were fed only with leaves from this plot. Within this period each doe produced 81 kg milk. The second plot served as a control with no removal of leaves. The third plot sustained growth of three yearlings for 3 months at the rate of 45 g/day per yearling. This performance was compared with two other pens of yearlings given a grass mixture or concentrates.

Results

Table 1 Maize grain and defoliated leaf production per 0.25 ha

	Plot 1 (Does)	Plot 2 (Control)	Plot 3 (Yearlings)	Overall	
				Mean	s.d.
No. of plants	7875	7536	9278	8230	924
No. of leaves	110250	105504	129892	115215	12930
Leaf dry matter (kg)	344	329	405	359	40
Grain yield (kg)	1362	1263	1387	1337	66
Grain yield per plant (g)	173	168	149	163	13

Table 2 Chemical composition of the diets (g/kg)

	Grass mixture		Maize leaves		Concentrates	
	Mean	s.d.	Mean	s.d.	Mean	s.d.
Dry matter (DM)	310 ^a	32	340 ^a	36	940 ^b	9
Crude protein	120 ^a	8	120 ^a	8	180 ^b	10
<i>In vitro</i> DM digestibility	0.57 ^a	0.021	0.64 ^b	0.018	0.78 ^c	0.019
<i>In vivo</i> DM digestibility	0.61 ^a	0.064	0.60 ^a	0.045	0.68 ^b	0.029

^{abc} Means in the same row having no superscript in common differ at the $P < 0.05$ level.

Table 3 Performance of dual-purpose goat yearlings fed grass mixture, defoliated maize leaves or concentrates

	Grass mixture	Maize leaves	Concentrates
Dry matter intake (g/day)	764	788	723
Dry matter intake (g/kg body weight)	35	35	31
Average daily gain (g/day)	27	45	89

Table 4 Production of defoliated maize leaves per plot size and dual-purpose goat feeding days

Maize plot size (ha)	Defoliated leaves production potential (no.)	Dry matter yield	Potential feeding days for a 40-kg doe producing 0.7 kg milk per day	
			per season	per year†
1.0	460860	1437	1105	2210
0.5	230430	719	553	1106
0.25	115215	359	276	552
0.1	46086	144	111	222

† Two growing seasons per year.

Discussion

In maize-growing areas, where there is no pasture or land for growing fodder, it is recommended that the feeding and management of goats should be matched to maize production. Lactation period should coincide

with availability of maize leaves, while yearlings should take full advantage of maize leaves in the diet because it is likely to give a better performance than a grass-mixture diet.