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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Productive performance of goats and calves fed different levels of mulberry forage

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Key words: mulberry, goats, cattle, nutrition.

Introduction The high nutrient content, digestibility and palatability of mulberry forage (Murillo et al. 2000) suggest it will be useful as a concentrate providing protein and energy for milk, meat or egg production. Mulberry can sustain 4 L day⁻¹ milk production in dairy goats or about 15 L day⁻¹ in dairy cows (Murillo et al. 2000). The objective of this study was to quantify the productive response of milking goats and growing calves when they were fed different levels of mulberry forage in their diets.

Materials and methods In trial 1, thirty-one lactating Anglo-Nubian x Creole goats were randomly allotted to three treatments: T1: control grazing natural pasture; T2: 50% of requirements supported by mulberry forage and 50% by natural pasture; and T3: 100% of requirements supported by mulberry forage. Goats were milked once a day and individual milk production was measured every week. During the day goats grazed natural pasture and in the evening they were fed supplements. In trial 2, twelve 5-month old weaned calves were randomly distributed to three treatments: T1: 100% concentrate; T2: 70% concentrate and 30% dry matter equivalent of green mulberry forage; and T3: 40% concentrate and 60% mulberry forage. Concentrate composition was: alfalfa hay (60%); wheat bran (20%); soybean oil meal (10%); corn grain (10%). Mulberry forage had 23.8% crude protein, 12.6 MJ kg⁻¹ metabolizable energy. For both studies, mulberry forage was cut every day. Calves were weighed every ten days and intake was measured daily. Samples of concentrate and mulberry forage were taken weekly for chemical analysis. In both trials a complete randomized design was used.

Results Significant differences ($P \leq 0.05$) were found among treatments (Table 1) for total milk production in Trial 1 with T2 and T3 producing more milk than T1. Daily gain had similar trend indicating that in T2, mulberry forage together with natural pasture fulfills the requirements needed for that level of production. In Trial 2, calf intakes were similar among treatments. No differences were found with 60% mulberry forage in the diet (T3) for daily gain and total gain compared to T1, but T2 gave lower gains than either T2 or T3.

Table 1 Production of goats (Trial 1) and calves (Trial 2) fed mulberry forage.

Goats	T1	T2	T3
Total milk production (kg)	281.9 a	386.5 b	345.7 b
Average daily gain (g day ⁻¹)	-27.34	71.61	13.02
Calves			
Dry matter intake (kg day ⁻¹)	4.93	4.79	4.87
Total gain (kg)	48 a	37.3 b	46.8 a
Daily gain (kg day ⁻¹)	1.25 a	0.98 b	1.18 a

Different letters within the row indicate significant differences ($P \leq 0.05$)

Conclusion Mulberry forage can contribute with 100% of milk production requirements during the last third of lactation in crossbred goats and can replace 60% of a concentrate in growing calves without affecting productive performance.

Reference

Murillo J., Sanguines, G. & Lara L. 2000. Simposio Internacional "Sistemas agroforestales Pecuarios en América del Sur". FAO. Juiz do Fora, Brasil, 135 p.