Performance of dual-purpose cows on a native pasture-*Arachis pintoi* association in the humid tropics of Mexico

E. CASTILLO-GALLEGOS[1], J. JARILLO-RODRÍGUEZ[1], E. OCAÑA-ZAVALETA[1], B. MARÍN-MEJÍA[1], L. 't MANNETJE[2] AND A. ALUJA-SCHUNEMANN[3]

[1] *CEIEGT, FMVZ-UNAM, Martínez de la Torre, Ver. 93600 México, E-mail: pime11302002@yahoo.com.mx,*

[2] *Wageningen University, The Netherlands,* [3] *UADY, Mérida, México*

Introduction

Native grasslands (NG) are the main feed supply of dual-purpose (DP) cows in the Mexican humid tropics. NG comprise about 85% of *Paspalum*, *Axonopus* and *Cynodon* species, about 5% of native legumes, mainly *Desmodium* spp., and the remaining 10% are narrow- and broad-leafed weeds. *Arachis pintoi* (Ap) is a persistent, grazing-tolerant tropical legume. In association with sown grasses, it has improved dry matter (DM) yield and nutritive quality of forage and increased milk yield up to 9 kg/cow/d (González *et al*. 1996). The objective was to determine if productive performance of DP cows could be improved by the introduction of Ap into native grassland.

Materials and methods

The experiment was carried out from 1998–2001 in the State of Veracruz in a hot (23.5°C mean temperature) and humid (annual rainfall 1980 mm) climate with acid soils (pH 4.5–5.2) of low fertility (<2 ppm of avail. P). Treatments were NG and NG + Ap (CIAT 17434) sown in 1996; no fertiliser was used during the experiment. A 1-day grazing/20-day rest system was used. Stocking rate was 2 cows/ha from February to October, and 3.2 cows/ha for the remaining time. F1 (Holstein × Zebu) DP cows were used that calved from March–July each year. The cows were milked once a day (08:00 h). Lactation length averaged 200 days and drying-off occurred when liquid saleable milk yield (SMY) fell to <3 kg/d, or during the last week of January to keep a 1-year production cycle. Molasses (1 kg DM/hd/d) was fed during milking. The calves suckled for 0.5 h after milking and for 0.5 h at 14:00 h in 1998, 1999 and 2000; there was no afternoon suckling in 2001. Calves grazed separately from their dams and consumed 0.9 kg DM/calf/d of concentrate (13% CP, 11.2 MJ EM/kg DM) up to weaning (4 months). The liveweight of cows (LWC) was recorded monthly, and that of calves (LWc) weekly before and after suckling, to calculate by difference the daily milk intake (DMI). The daily gains (ADG) and losses (DWL) of the cows before and after peak LWC and the daily gain of calves (ADGc) were estimated by regressing the LW (Y) against days (X), the regression coefficient being an estimate of daily LW change. Data were analysed separately for each year.

Results

The treatment effect was not consistent from year to year either for ADG or DWL (Table 1), and while the ADGc was significantly (P < 0.05) higher for NG + Ap than for NG in 3 out of the 4 years, the differences were too small to be of biological significance (Table 2). The DMI of NG + Ap was significantly lower than that of NG in 1998, but there were no treatment differences (P > 0.05) in 1999 and 2001. There was a difference (P < 0.05) between treatments in SMY only in 1999.

Table 1. Average daily gains (ADG, kg/cow) before peak LWC and daily weight loss (DWL, kg/cow) after peak LWC.

Year	ADG		DWL	
	NG	NG + Ap	NG	NG + Ap
1998	0.772 a	0.759 a	0.426 a	0.137 b
1999	0.635 a	0.140 b	0.038 a	0.020 a
2000	0.191 a	0.807 b	0.303 a	0.513 a
2001	0.869 a	0.601 a	0.580 a	0.321 b

ADG and DWL values within a year, with different letter are statistically different (P < 0.05).

Table 2. Calf daily gains (ADGc, kg/calf/day) and milk intake (DMI, kg/calf/day), and cow saleable milk yield per lactation (SMY, kg/cow).

Year	ADGc		DMI		SMY	
	NG	NG + Ap	NG	NG + Ap	NG	NG + Ap
1998	0.59 a	0.51 b	4.2 a	3.6 b	1212 a	1299 a
1999	0.70 a	0.74 b	4.7 a	4.6 a	1175 a	1465 b
2000	0.56 a	0.57 a	4.0 a	3.9 a	1229 a	1214 a
2001	0.57 a	0.54 b	2.1 a	2.1 a	1356 a	1336 a

ADGc values and DMI and SMY means within a year, with different letter are statistically different (P < 0.05).

Conclusion

The introduction of Ap into the NG failed to improve productive performance of the DP cows.

References

González, M.S., Van Heurk, L.M., Pezo, D.A. and Argel, P.J. (1996) Producción de leche en pasturas de estrella Africana (*Cynodon nlemfuensis*) solo y asociado con *Arachis pintoi* o *Desmodium ovalifolium*. *Pasturas Tropicales,* **18**, 2–12.