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

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Introduction Native grasslands (NG) are the main feed supply of dual-purpose (DP) cows of the Mexican humid tropics. NG comprise about 85% of *Paspalum*, *Axonopus* and *Cynodon* species, about 5% of native legumes, mainly of *Desmodium*, 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, nutritive quality of forage, and milk yield up to 9 kg/cow/day (González *et al*., 1996). The objective was to determine if productive performance of DP cows could be improved by the introduction of AP into NG 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 Feb. to Oct., and 3.2 cows/ha the remaining time. F1 (Holstein x Zebu) DP cows were used that calved from Mar.-July each year. The cows were milked once a day (8:00 AM). Lactation length was on average 200 days and drying-out occurred when liquid saleable milk yield (SMY) fell to < 3 kg/day, or till the last week of Jan. to keep a 1-year production cycle. One kg of DM/head/day of molasses was given during milking. The calves suckled ½-hour after milking and for ½-hour at 2:00 PM from1998 to 2000; there was no afternoon suckling in 2001. Calves grazed separately from their dams and consumed 0.9 kg of DM/calf/day of concentrate (13% CP, 11.2 MJ EM/kg DM) up to weaning (4 months). The liveweight (LW) of cows (LWC) was recorded monthly, and that of calves (LWc) every week 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 calves daily gain (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 in NG+Ap than in NG in 3 out of the 4 years, the differences were too small to be of agronomic significance (Table 2). The DMI of NG+Ap was significantly lower than that of NG in 1998, but there was no difference (P>0.05) between 1999 and 2001. There was a difference (P<0.05) between treatments in SMY only in 1999.

Conclusion The introduction of AP into the NG grassland could not improve productive performance of the DP cows.

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)

References

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