

## Cow-calf production on perennial pastures in the central semi-arid region of Argentina

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**Introduction** In cow-calf production systems in San Luis, the annual crops are heavily used (eastern region) or the natural pastures are over-used (western region). Both cases constitute unsustainable systems. In the present study, the possibility of structuring an efficient and stable stockbreeding agroecosystem based exclusively on perennial summer grasses was tested. The objectives were: 1) to test a cow-calf production system based on perennial pastures: *Digitaria (Digitaria eriantha* Steudel subsp. *eriantha* cv Irene), without protein supplement during winter, and 2) to determine the physical and economical efficiency of the production system and sustainability of such indicators in the short-term (6 years of performance).

**Material and methods** The experiment was conducted in Villa Mercedes, San Luis, Argentina (33° 39' S, 65° 22' W) and at an altitude of 515 m. This region has a dry continental climate. The soil is classified as Ustic Torripsament. The system was tested on an experimental area of 90 ha of only one perennial summer grass, *Digitaria*, using information about its production, quality and management from the region. The pasture was divided into 2 plots to allow rotational grazing. The cow-calf herd was composed of the Hereford breed. In both cows and heifers, live weight (LW) and body condition score (BCS) were recorded. Birth date and LW of calves at birth, 60 days and at weaning were recorded.

**Results** Table 1 shows the cows' LW and BCS throughout the year. By the end of the summer they had the highest LW and BCS. It is necessary to achieve this state of body reserves (BCS=3.4) to survive the winter period without intake of a protein supplement, as the nutritional value of the pasture is quite low (crude protein and neutral-detergent fibre concentrations of 40 and 750 g/kg DM respectively: in vitro dry matter digestibility of 0.34). During this period, the cows lost 4.1% of LW and 11.7% of BCS. Although this response did not affect the animals' reproductive performance (Table 2), it is slightly below the expected values according to those obtained from animals using deferred *Digitaria* in winter (Stritzler *et al.*, 1986). Although this production system is characterised by simplicity of management, it is necessary to perform periodic checks of the cows' BCS and pasture availability to avoid intake restrictions. The present system is compatible with: a) high reproductive rates (93% weaning), b) stability in mean calving date, c) acceptable weaning LW (174 kg at 150 days), d) high productivity per unit area (106kg LW ha<sup>-1</sup> year<sup>-1</sup>), and e) good economic indices (production cost: 0.14US\$ kg<sup>-1</sup>LW; gross margin: 45US\$ ha<sup>-1</sup>).

**Table 1** Production system using *Digitaria* during the whole year. Live weight (kg) and body condition score (BCS, scale 1-5) of cows at different physiological states. Mean of 6 years' data (n= 225 cows)

State	Month	LW (kg)	BCS
Pre-calving	Sept.	468 ± 3.2 <sup>a</sup>	3.0 ± 0.03 <sup>a</sup>
Pre-mating	Dec.	474 ± 3.6 <sup>a</sup>	3.3 ± 0.04 <sup>b</sup>
Weaning	March	488 ± 4.0 <sup>b</sup>	3.4 ± 0.05 <sup>c</sup>
Pregnancy	June	492 ± 3.4 <sup>b</sup>	3.1 ± 0.03 <sup>b</sup>

**Table 2** Productivity of cow-calf system. Mean of 6 years' data

Records	Min.	Mean	Max.
Stocking rate (CE ha <sup>-1</sup> year <sup>-1</sup> )	0.57	0.69	0.85
Weaning rate (%)	90	93	95
Calving date (day/month)	09/10	17/10	26/10
Weaning live weight (kg)	161	174	198
Age at weaning (days)	128	150	168
Daily liveweight gain (g calf <sup>-1</sup> day <sup>-1</sup> )	844	904	956
Liveweight gain per unit area (kg ha <sup>-1</sup> year <sup>-1</sup> )	95	106	125

**Conclusions** The reproductive performance of cows, the live weight of calves at weaning, the live-weight production per hectare with low costs and the pasture stability indicate that the implementation of this system

### References

Stritzler, N.P., C. M. Rabotnikof, H. Lorda & A. Pordomingo (1986). Evaluación de especies forrajeras estivales en la región pampeana semiárida III. Digestibilidad y consumo de *Digitaria eriantha* y *Bothriochloa intermedia* bajo condiciones de diferimiento. Revista Argentina de Producción Animal, 6, 67-72 with the stocking rates used in this study is completely feasible.