Pasture management in deer farms in Mauritius

P. Grimaud[1], P. Thomas[2] and J. Sauzier[3]
[1]Cirad-Elevage, 7 Chemin de l'IRAT, F97410 Saint Pierre, Email: grimaud@cirad.fr, [2]UAFP, PK 23, F97418, Plaine des Cafres and [3]MDFCSL, Holp Building, Quatre Bornes, Mauritius

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Introduction Rusa deer (*Cervus timorensis russa*) were introduced into Mauritius in 1639, and with a population of 65,000 deer now provide the first source of red meat in the island. From June to September, the hunting period, extensive ranches ensure the venison market, while intensive farms provide it for the rest of the year. A pasture survey was carried out over 3 years to advise deer farmers on their sward management.

Materials and methods On 10 farms, soil and grass herbage were collected for 3 years at each season (CS, cold season; HS, hot season) from 3 to 6 paddocks. From each paddock, a soil analysis combined 7-9 samples collected by auger within the 5-15 cm horizon. Values of pH, exchangeable cations and phosphorus (P) content were determined. Grass herbage was harvested to a height of 5 cm from 6-10 quadrats, located in areas of pure grass representative of the studied paddock. Total green weight was recorded in the field and a representative 1 kg sample was taken for DM (80^{o} C for 48 h) and ash content (550^{o} C for 6 h) determination. The indices of mineral element dilution in the forage (IN, Ip and IK) were calculated from analysis of N (Kjeldahl method), P (atomic absorption spectrophotometry) and K (continuous flew colorimetry) according to Blanfort (1998). Values of IN, IP and IK were compared to standard values (100, 80 and 100, respectively).

Results Low IP values confirmed a soil-P deficiency, while very high IK values suggested a luxury consumption of potassium that soil analyses did not reveal (Table 1). Soil pH was non-limiting. The low IN values suggested low availability of N, which inhibited pasture growth potential in the CS.

Table 1 Soil analysis and available biomass of south-western Mauritian pastures according to the dominant grass species

	Soil analysis			Available biomass	
	pH	Phosphorus	Potassium/ Base	DM (%)	t DM / ha
Bothriochloa pertusa (sikin)					
Cold season	5.5 – 6.5	Low / Medium	Very Low/ Low	54	2.9
Hot season	5.5 – 6.5	Low / Medium	Very Low/ Low	39	3.1
Cynodon plechtostachium (star grass)					
Cold season	5.5 – 6.5	Low / Medium	Low / Medium	51	3.6
Hot season	5.5 – 6.5	Low / Medium	Low / Medium	35	3.8
Ischaemum aristatum (silver grass)					
Cold season	6.0 – 6.5	Very Low/Low	Very Low/ Low	34	4.2
Hot season	6.0	Very Low/Low	Very Low/ Low	26	3.5

Star grass (*C. plechtostachyum*) and silver grass (*I. aristatum*) were more productive than sikin (*B. pertusa*). High DM contents provide evidence that consumption of the grass at the end of HS will have a low nutritive value.

Conclusion Results of the present study suggest that a sward management improvement strategy could allow the rusa deer to reach its growth potential: an adapted pasture fertilisation should provide to the grass the requirements in N, P, and K that they need in the CS, and thus allow the pastures to have significant yields throughout the year. Such a management, combined with a relevant rotation in the paddocks corresponding to the grass seasonal rhythms, has been successful implemented in the neighbour Reunion Island for ten years in cattle farms.

References

Blanfort, V.(1998). Agroécologie des pâturages d'altitude à l'île de la Réunion, PhD thesis, Université de Montpellier, France, 259 pp.