

Sustainability of beef, dairy and goat production with Batiki grass (*Ischaemum aristatum* var. *Indicum*) in the dry season in Samoa

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Introduction Batiki grass (*Ischaemum aristatum* var. *indicum*) was introduced to Samoa from Fiji in the early 1970s to complement other existing natural or unimproved grasses and is now the most common propagated pasture grass in Samoa. The contrast between the wet and the dry seasons has a great impact on the nutritive value of batiki grass. Aregheore (2002) observed reduced growth rate, poor body condition score and low performance in steer calves and goats offered batiki as the sole diet during the dry season. This paper reports on the sustainability of beef, dairy and goat production with batiki grass in the dry season in Samoa.

Results The mean nutrient composition of batiki grass for four years (2000-3) is given in Table 1, together with the results of a feeding experiment with goats. Decline in crude protein (CP) and high fibre contents in the dry season are responsible for low voluntary dry matter (DM) intake and growth rate in steer calves (Aregheore, 2003) and goats (Aregheore, 2002), and milk production of dairy cows (personal communication, Lome, 2002). Crude protein content in the rainy season was well above 7 %, the level below which DM intake becomes depressed, but was below that value in the dry season. Poor performance by goats and steers when no supplements are fed was confirmed in Table 2. However supplementation with *Leucaena leucocephala* increased DM intake and growth rates significantly ($P<0.05$) (Aregheore, 2003). Apparent digestibility of DM and CP also significantly ($P<0.05$) improved with supplementation resulting in increases in digestible energy intake and nutritive value index.

Conclusion The nutrient content of batiki grass declines rapidly in the dry season. Lactating cows on batiki grass alone have poor body condition scores, but beef cattle, goats and sheep utilised it to meet their requirements for maintenance of body conformation without depleting their body reserve, as is usually the situation in most tropical countries during the dry season. Supplementation with *Leucaena leucocephala* improved intake and animal performance and is one way to sustain beef, dairy and goat production in Samoa. In other experiments we have shown similar responses to supplementation with foliage of *Moringa oleifera* and *Erythrina* spp.

Table 1 Nutrient composition (% of dry matter) of batiki grass, voluntary dry matter intake, growth rate and nutrient digestibility in the dry and rainy seasons (10 goats per treatment)

| Nutrients (%) | Rainy | Dry |
|--|--------|--------|
| Crude protein | 11.1 | 5.3 |
| Crude fibre | 32.8 | 52.2 |
| Animal response | 10 | 10 |
| DM intake (g/kg ^{0.75} per d) | 71.2a | 50.6b |
| Daily live-weight gain (g) | 71a | 36b |
| DM digestibility (%) | 76.6a | 54.8b |
| CP protein digestibility (%) | 76.6 | 58.2 |
| Digestible energy intake (MJ/kg ^{0.75} per d) | 305.0a | 415.2b |

^{a,b} Means within row with different superscript differ ($P<0.05$)

Table 2 Effects of supplementation with 50 % of *Leucaena leucocephala* (fresh weight) on DMI and growth and nutrient digestibility of goats and steer calves in the dry season

| Animal species Supplementation | Goats | | Steer calves | |
|--|-------|-------|--------------|-------|
| | No | Yes | No | Yes |
| DM intake (g/kg ^{0.75} per d) | 41.2 | 50.8 | 4.9 | 6.2 |
| Daily live weight gain (g) | 57a | 90b | 172a | 375b |
| DM digestibility (%) | 58.3a | 70.2b | 50.1a | 65.1b |
| CP digestibility (%) | 45.4a | 66.7b | 48.3a | 70.6b |
| DE (MJ/kg ^{0.75} per d) | 11.6 | 13.3 | 10.0 | 12.5 |
| NVI (Kj/kg ^{0.75} per d) | 226a | 438b | 211a | 408b |

^{a,b} Means within row with different superscript differ ($P<0.05$)

References

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