

## Materials and Methods

Two hundred and forty flesh chicks of the ROSS variety were randomly selected to be parts of 12 lots of 20 each. Ten (10) diets were prepared as different treatments using crude, boiled and grilled *Acacia macrostachya* seeds at a rate 5, 10 or 15% including the control diet or treatment. The nine (9) diets (treatments) using Acacia seed were fed to the lots of chicks respectively, but the control diet was repeated three times, in order to determine the best diet. Two durations of breeding were observed.

## Results

At the end of the experiment using 15% boiled seed of *Acacia* in the diet of chicks resulted in the best weight gained as well as the lowest index of consumption and the best economic profit during the time of the breeding. The 10% feed level of boiled seeds was also better than the control. The worst result was the crude seed fed at 10%.

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# Grazing sugar cane by cattle during winter

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## Introduction

Sugar cane is an important forage resource during the winter or dry season. It has recently been shown that the weight gain of steers was similar for animals fed on sugar cane in feedlots or grazing sugar cane in the field without affecting the persistence of the plantations (Benvenuti *et al.*, 2005). However, the low protein content of the sugar cane requires the use of protein supplements which are usually expensive. *Axonopus catarinensis* is a grass species that tolerates low temperatures and its use with sugar cane can potentially reduce the cost of beef production during winter. The objective of this study was to evaluate the weight gain of steer grazing sugar cane and *A. catarinensis* simultaneously.

## Materials and Methods

The experiment was conducted at INTA Cerro Azul research station, at 27°37'S, 55°26'W from 2 July to 25 September 2008. Thirty steers (220 ± 22 kg) were allocated to the following feeding treatments: T1: chopped sugar cane fed in troughs with protein supplement; T2: grazing sugar cane with protein supplement and T3 sugar cane and *A. catarinensis* grazed simultaneously without protein supplement. The sugar cane of T1 was processed using a chopping machine and there was no evidence of selection by the animals of this chopped material. The protein supplement of T1 and T2 consisted of 700 g of soybean expeller as-fed (89% dry matter) per steer per day. All animals received 120 g of urea per day mixed with 1 kg of chopped sugar cane which allowed good distribution of intake of urea among the herd. All animals had free access to water and mineral supplement which contained sulphur to balance the non-protein N of urea. The fully mature sugar cane of T3 was grown separately from the grass with a global stocking rate of 2 head per hectare. The significance of the difference in weight gain between treatments was determined using ANOVA.

## Results and discussion

The animal performance of T1 was similar to the results observed in scientific literature where cattle have been fed chopped sugarcane as a basal diet (Preston 1977). There was no significant difference between T1 and T2 ( $P \geq 0.05$ ) (Table 1). This is in line with previous studies

**Table 1** The effect of sugar cane feeding method on the weight gain of steers ( $\pm$ SEM). T1: chopped sugar cane fed in troughs with protein supplement; T2: grazing sugar cane with protein supplement and T3 sugar cane and *A. catarinensis* grazed simultaneously without protein supplement. Treatments with different letters differed significantly ( $P \leq 0.05$ )

	T1	T2	T3
Initial weight (Kg)	216	229	214
Final weight (Kg)	268	284	250
Weight gain (g steer day)	611 ± 27 <sup>a</sup>	647 ± 28 <sup>a</sup>	428 ± 25 <sup>b</sup>

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(Benvenuti *et al.* 2005) where the animals had similar weight gains either grazing sugar cane or feeding chopped or whole sugar cane in troughs. However, the cane grazing method is more cost effective as it avoids the cost of cutting, carrying and chopping the sugar cane. The steers of T3 had a significantly lower weight gain than those of T1 and T2 ( $P \leq 0.05$ ). *A. catarinensis* did not seem to provide the same level of nutrition as the protein supplement used in T1 and T2. However, the weight gain of the animals of T3 was reasonable considering that the protein supplement was not used in this treatment. This reduces the costs and contributes to the economic sustainability of beef production.

### Conclusions

Fully grown sugar cane grazing results in similar weight gain to chopped sugar cane fed in troughs. The simultaneous grazing of sugar cane and *A. catarinensis* results in lower weight gain than grazed sugar cane with protein supplement. However, the use of *A. catarinensis* is cost effective as it does not require the use of protein supplement and allows a reasonable animal performance during winter.

### Acknowledgements

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### References

- Benvenuti MA, Pavetti DR and Moreno FC 2005. Grazing fully grown sugar cane in winter. Informe de avance N° 6 INTA, EEA Cerro Azul, 24 p.  
 Preston TR, 1977. Nutritive value of sugar cane for ruminants. Tropical Animal Production 2, 21–25.

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## Nutritional evaluation of a bagasse-based ration for cows

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### Introduction

In Mauritius the most readily available plant material to be used as ruminant feed is from the sugar cane industry. With the phasing out of the sugar protocol in 2009, much attention is being given to alternative use of sugar cane including livestock production. The use of sugar cane by products as animal feeds has therefore been reconsidered locally and in many countries (Pires *et al.*, 2004). It is within this context that this study was carried out so as to evaluate the use of locally available materials for formulating a feed for ruminants based on bagasse as the source of fibre. Other locally available ingredients such as molasses, wheat bran, mineral mixture, salt and urea were used. The objective was to assess the palatability and intake of a bagasse-based ration by cows and to determine its effect on milk production.

### Materials and Methods

Sugar cane bagasse (35%) was used with other locally available ingredients (molasses (35%), wheat bran (16%), cotton seed cake (10%), common salt (0.5%), mineral mixture (0.5%) and urea (3%)) to constitute a ration for ruminants, bagasse based feed (BBF). The digestibility of BBF was studied with ten entire male and two female goats in a completely randomized design in digestibility crates. The experimental period lasted for 18 days and comprised an adaptation period (10 days) followed by a feed intake, digestibility and nitrogen balance trial and rumen fluid sampling on the last 2 days of measurements for ammonia-N and PH determination. *In-situ* dry matter degradability of BBF was also investigated using nylon bag technique with fistulated bulls according to the procedures described by Ørskov, 2000. A feeding trial was conducted with fourteen lactating cows in 100 days in milk to determine the effects of feeding BBF on milk production. The animals were grouped in a completely randomised block design, each animal representing one block.

### Results

The apparent digestibility of DM, OM and NDF for BBF were 76.92, 76.77 and 59.14 compared to the control diet were 68.21, 69.98 and 69.87 which was significantly different ( $P < 0.05$ ). There was no difference in the apparent digestibility of CP, which was on average 73.5. The N- retention was on average 72% of the N- intake for both of the diets. BBF did not affect the rumen pH but there was a significant increase in ammonia-N. The DM degradability of BBF was 77% compared to control diet 57%. There was no significant difference of DM intake for the BBF compared to the control diet. The milk production was not significantly different ( $P < 0.05$ ) for the BBF compared to the control diet. There was a positive live weight change during the experiment for both groups of animals. The high dry matter intake of the BBF was mainly

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