POTENTIAL OF UTILIZING SUGAR CANE BY-PRODUCTS AS RUMINANT FEED

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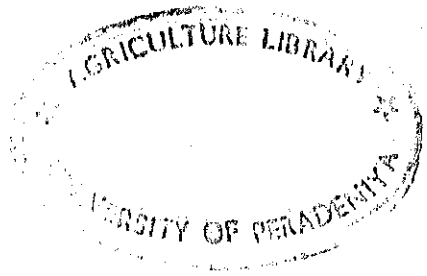

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ABSTRACT

A series of experiments were conducted to evaluate the potential of utilizing sugar cane by-products as ruminant feed. In the first experiment, possibility of ensiling sugar cane tops and improving fermentation characteristics and nutritive value with urea and molasses as additives was investigated. Green cane tops were well preserved without additives. Urea [1%, dry matter (DM basis)] did not improve crude protein content but impaired fermentation characteristics by increasing pH. Molasses improved the fermentation characteristics when urea was added to cane tops but not when ensiled alone. However, it increased crude protein content and digestibility of the silage.

Two experiments were conducted to study the effect of urea treatment and its duration (expt. 2a) and sulphur supplementation (expt. 2b) on degradation characteristics of sugar cane bagasse using nylon bag method to evaluate the potential of bagasse as ruminant feed. Urea treatment of bagasse increased DM degradability from 32% (untreated) to >40% (treated). Readily soluble fraction (a) was neglible. Ensiling duration for more than 4 days did not increase DM degradation, readily soluble or potentially degradable fraction. When sulphur was added, all above parameters were increased. Degradation of organic matter was similar to that of DM.

Although urea treatment and sulphur supplementation improved all parameters discussed, bagasse as a sole or basal feed for ruminants is not very promising.

Experiment 3 was conducted to study the effect of level of urea in the urea-molasses-mineral bolus on degradation characteristics and rumen and blood parameters to evaluate the possibility of using urea-molasses-mineral block to improve bagasse utilization. Level of urea in the bolus increased neither DM or OM degradation from the nylon bags nor the rate of rate of degradation. Although potential degradability was increased by increasing the level of urea in the bolus, it was still low to be utilized as the sole or basal roughage. Increased level of urea in the bolus increased ammonia concentration in the rumen fluid but it could not enhance the degradation of bagasse or the rate of it. pH was uniform but blood urea nitrogen was higher than normal physiological values when the urea level in the bolus was 12%. No specific trend in total volatile fatty acids was observed.

Final experiment was to study the effect of sources of protein on straw utilization and nitrogen (N) balance of the animal using molasses as the available source of fermentable carbohydrate in the rumen. Provision of concentrate improved neither nutrient digestibility nor DM intake. Instead it decreased straw DM intake. Source of protein also did not affect these parameters. Although N intake was improved by different sources of protein, N status of the animal was not improved.

Concentrate supplements increased urinary N output ($p < .05$). Results suggested that supplementation of straw with 2% urea is sufficient to maintain the adult goats in positive N balance and provision of concentrate to such animals is not necessary.

In conclusion, sugar cane tops were well preserved without any additive, bagasse as a sole or basal diet was not encouraging and different sources of protein did not improve roughage utilization and N balance by the non-producing mature ruminant when molasses was used as a source of fermentable carbohydrate in the rumen.