

A NOTE ON THE PROCESSING OF SUGAR CANE BAGASSE WITH ALKALI

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The rumen bag digestibility (24 h) of bagasse was measured with supplements of urea or sodium hydroxide, each in the presence or absence of poultry excreta (43% digestibility); urea alone had little effect on degradability (14%) but poultry excreta increased this to 36%. The untreated bagasse was degraded by 4%.

Key words: bagasse, NaOH, urea, ammonia, poultry excreta

Materials and Methods

The two principal methods for improving the nutritive value of fibrous residues are treatment with sodium hydroxide and ammonia, either anhydrous or generated from urea. Some doubts have been expressed concerning the effectiveness of urea with some agroindustrial by-products because of the low content of urease found in these materials. The objective of the present study was therefore to evaluate the use of poultry litter as a source of urease for urea treatment of sugarcane bagasse.

The treatments consisted of sugarcane bagasse treated with urea or with sodium hydroxide (5% DM) alone, or in the presence of poultry litter (32% DM). The litter was composed of droppings from caged layers.

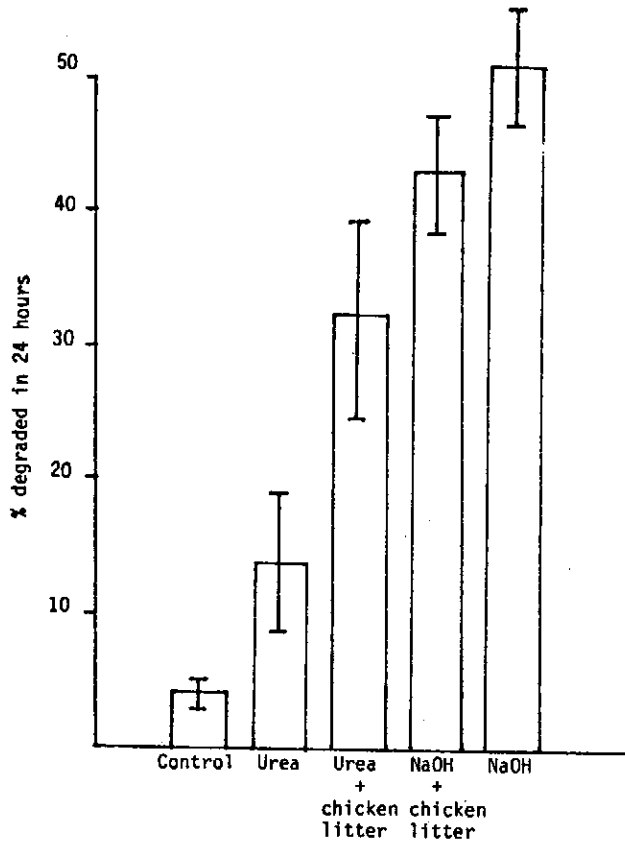
The sodium hydroxide and the urea were first dissolved in water. These solutions were then mixed with the dry materials, finally compacting the mixtures in plastic PVC buckets (4 litres capacity) which were then sealed, and stored at ambient temperatures. After a 4 month period, samples were removed, dried and ground for determination of DM digestibility by the nylon bag method (Ørskov et al 1980). Five bags (containing approximately 3 g DM in each) representing the four treatments and an untreated bagasse control were placed, for 24 hours, in the rumens of each of three adult sheep which were consuming a ration of poor quality forage supplemented with cottonseed meal.

Results

There were highly significant differences between treatments ($SE_{\bar{x}} = \pm 4\%$; $P = .0002$). The results shown in the Figure indicate a very low degradability for the untreated bagasse. The most effective treatment was sodium hydroxide and this was not affected by the presence of the poultry litter. Urea alone slightly improved the digestibility of the bagasse and this effect was significantly increased by the incorporation of poultry litter in the mixture.

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Figure 1:
 Degradability of treated and untreated
 sugarcane bagasse



Conclusions

It is concluded that when urea is utilized as a source of ammonia for the treatment of fibrous industrial residues, it may be necessary to add also a source of urease in order to guarantee a rapid release of ammonia.

References

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