USE OF POULTRY LITTER IN A DIET OF MOLASSES AND BAGASSE FOR FATTENING BULLS

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Eight bulls averaging 144 kg liveweight were fed a mixture which contained raw bagasse 20%, molasses 35%, poultry litter 37X, fish meal 3%, groundnut meal 4% and salt 1% for a period of 185 days. The daily liveweight gain over 185 d averaged 650 + 55 g with a dry matter intake of 4.02% of liveweight. The overall feed conversion was 12.7 kg DM/kg gain. It appears that the feed has a low energy concentration with molasses constituting most of the utilizable energy.

Key Words: Cattle, poultry litter, molasses, bagasse

Use of poultry litter as a source of non-protein nitrogen in ruminant feeding is becoming increasingly popular in terms of utilization of waste products and in decreasing feed costs. This trial was undertaken to evaluate the use of poultry litter in a molasses based diet for growing bulls.

Materials and Methods

Animals and Treatments: Eight bulls (six Friesian x Creole and 2 Simmental x Friesian) of about 140 kg liveweight were used to evaluate a diet consisting of poultry litter, molasses, bagasse and a protein supplement (Table 1), The bulls were housed in a slatted floor pen in the feedlot at Richelieu Livestock Breeding Station of the Ministry of Agriculture. The trial started in November 1978 and lasted for 185 days.

Feeds and Management: The different feed ingredients were mixed in a Gehl mixer and stored in bags. One ton of the mixture was made at one time, sufficient to feed the animals for about 10 days. Poultry litter was obtained from the Poultry Breeding Centre of the Ministry of Agriculture. The refusals were weighed each morning before feeding the fresh mixture. Fresh water was available at all times.

The poultry litter and the complete mixed feed mixture were analysed periodically. The animals were weighed every fortnight. The average daily liveweight gain was determined by regression of liveweight on time.

Results

The composition of the poultry litter and of the complete feed was fairly uniform during the trial (Table 1). The ash content of the mixture was quite high (15% of DM). For this reason, dicalcium phosphate was not included in the mixture as it is known that poultry litter is rich in phosphorus and it was assumed that the animals' requirements were met.

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Table 1 :
Composition of diet and proximate analysis

COMPOSITION	%		ANALYSIS, %	
Ingredient			Poultry litter	Complete diet
Raw bagasse	20	Dry matter	88.6 + 1.22	76.4 + 1.0
Molasses	35	N x 6.25[1]	18.7 + 0.9	14.9 + 0.48
Poultry litter	37	Crude fibre[1]	18.9 + 0.3	18.0 + 0.43
Local fish meal	3	Ether extract[1]	0.71 + 0.09	0.55 + 0.03
Groundnut meal	4	Ash[1]	19.7 + 1.46	15.0 + 0.56
Salt	1			

[1]Dry matter basis

The animals were in good health throughout the trial and there were no apparent digestive troubles. At one stage, the animals had distended abdomens such as in the case of bloat, but this did not persist.

The intake of the poultry litter mixture increased from 7 kg/d initially to about 12 kg/d by the end of the trial with a mean intake of about 10 kg (Table 2). The mean daily liveweight gain of 650 g was associated with a dry matter intake of over 4 kg/100 kg liveweight. The intake of molasses was equivalent to about 1.8% of body weight which is similar to that observed when liquid molasses is given ad libitum together with restricted forage (Preston 1972).

Table 2 :
Mean values (X ~SE-1 for growth rate, feed intake and conversion of eight bulls fed a diet of molasses, poultry litter, bagasse and protein supplement 1185 day trial)

Initial weight, kg	144.2
Final weight, kg	264.9
Liveweight gain, g/d	649 + 55
Feed intake, kg/d	
Complete diet	10.8
Dry matter	8.22
Consumption index[1]	4.02
Conversion[2]	12.7

[1] kg DM/100 kg LW [2] DM consumed/LW gain

Discussion

The important feature of the results of this trial is that although the feed conversion rate (12.7 kg DM/kg gain) was poor, there was still a reasonable growth rate of 650 g/d. Similar results have been observed in commercial feedlots in El Salvador, where an almost identical ration has been used (Preston T R unpublished observation). In comparison, liquid molasses/urea based diets employing restricted levels of cassava or sweet potato forage as the only source of protein and roughage have supported similar growth rates, with a much better feed conversion (Ffoulkes and Preston 1978; Hulman et al 1978). It therefore appears that the efficiency of the rumen fermentation is inferior on the poultry litter/bagasse/molasses diet. One possible reason for this could be a low turnover rate of rumen digesta, which is known (a) to reduce the efficiency of microbial protein synthesis (Stouthamer and Bettenhousen 1973; Elliott et al 1978) and (b) to also lead to wasteful secondary fermentation associated with oxidation of VFA to methane and carbon dioxide (Rowe et al 1979). Other work with molasses based diets (Salads et al 1977) has shown that sugar cane fibre fed with liquid molasses/urea does not result in efficient feed conversion or rapid growth. It is suggested that this is because the cane fibres do not have "good" roughage characteristics. It may be that the diet used here would be improved by the inclusion of a forage known to have beneficial effects on rumen function such as for example the legume Leucaena (Alvarez et al 1978). This hypothesis will be examined in future studies with this diet.

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