PERFORMANCE OF CATTLE GIVEN MOLASSES AND POULTRY LITTER MIXED OR AS SEPARATE FEEDS[1]

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In a basic diet of molasses, poultry litter and whole cottonseed a comparison was mode of two levels of litter (1.5 or 3.0 kg/d) and of molasses and poultry litter offered either in separate feeders or combined. The design was a 2 x 2 factorial arrangement with two replications using 8 steers of 225-270 kg initial liveweight kept in individual stalls. The trial lasted 84 days.

The animals which received their molasses and poultry litter in separate feeders had a better performance in teens of feed intake, liveweight gain and feed conversion. The lower level of poultry litter was better than the higher level. On the treatment of 1.5 kg/d of poultry litter with ad libitum molasses given separately the liveweight gain was 780 g/d with a feed conversion of 7.1. the poorer results when the molasses and poultry litter were combined in a single feed was due apparently to the difficulty that the animals experienced in consuming this type of mixture.

Key words: Cattle, molasses, poultry litter, growth

In tropical countries, the dry season is the period of the year which creates most problems for livestock production. It has become common practice in the Dominican Republic to deal with this situation by feeding molasses. Molasses is principally an energy source and must be supplemented with fermentable nitrogen, forage and minerals, particularly: phosphorus and sodium. Usually urea has been used as the source of non protein nitrogen while the roughage has been given in the form of restricted grazing or sugar cane.

Recently, poultry litter has been used in combination with molasses for ruminant feeding. Encouraging results were reported by Mapoon et al (1979) with mixtures of approximately equal part of molasses, poultry litter and sugar cane bagasse supplemented with oil seed protein.

The poultry litter and molasses have been given usually as a complete mixture. However, this system has certain disadvantages. In the first place, there is the additional cost of obtaining appropriate mixing machinery or there is a high requirement of hand labour in order to prepare the mixtures. Secondly, the texture of the mixture occasionally causes problems to the extent that the animals have difficulties in eating it.

The main objective of this preliminary trial was to determine the effect of giving the molasses and the poultry litter either in separate feeders or as a mixture. It was also decided to use the poultry litter as the only source of, roughage in view of the fact that in some situations during the dry season, neither pasture nor any other source of forage may be available.

Materials and Methods

Animals, treatments and design: Eight cross bred (Zebu x Holstein bulls, (225 to 270 kg) were used to evaluate two levels of poultry litter (1,5 or 3.0 kg/animal/d) and two feeding systems (mixing the litter and the molasses, or giving them separately). The design was a 2 x 2 factorial arrangement with two replications. The trial lasted 84 days.

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Diets: In addition to the molasses and the poultry litter all the animals received 1 kg/d of whole cotton seed. This contained 89% of DM and 18% of protein in the DM. The poultry litter came from a broiler farm which used sugar cane bagasse as the litter base. The average content of DM was 79% with 3.5 % nitrogen in the DM. The molasses contained urea at a concentration of 2.5%.

Procedure: Each morning, the animals received the corresponding amount of poultry litter together with the cotton seed (1 kg/d) and minerals (70 g/d). For animals receiving molasses ad libitum the troughs were filled daily, and the amount added was noted, with the amount left at the end of the experiment being weighed. Where the components of the diet were offered as a mix, 2 kg of molasses was added to the appropriate weight of poultry litter. Later in the experiment, molasses was offered according to the appetite of the animal.

Measurements: The animals were weighed individually at the beginning of the experiment and subsequently at 14 d intervals. The gain in liveweight was determined by the regression of liveweight on time. Feed refusals were weighed daily,

Results and Discussion

The results are presented for the individual treatments (Table 1) and for the main effects (Table 2).

Table 1 :
Mean values for feed intake weight gain and conversion in steers receiving molasses and two levels of poultry litter mixed together or given separately.

Feeding system:	Separate		Mixed		
Level of poultry litter:	Low	High	Low	High	SEx
Feed intake, kg/d					
Molasses	4.84	3.87	4.65	1.13	±.13
Poultry litter	1.09	1.42	0.24	1.42	±.20
Total DM	5.48	4.06	4.60	2.93	±.24
Consumption index[1]	2.04	1.92	1.74	1.19	±.062
Liveweight gain, g /d	780	378	144	194	±.128
Conversion[2]	7.11	19.5	38.9	16.4	±.9.8

[1] Daily DM intake as % liveweight
[2] DM intake/Liveweight gain

In general terms, it was noticed that the animals which received molasses and poultry litter in separate feeders responded better from the point of view of voluntary intake, liveweight gain and feed conversion. There were also significant differences in favour of the lower level of poultry litter. The effect of increasing the amount of poultry litter was to reduce the intake of molasses at the expense of the greater intake of poultry litter. However, the overall consumption of DM was less.

Table2:
Performance of steers fed molasses and poultry litter: mean values for main effects of level of poultry litter and system of feeding.

Feeding system:	Separate			Poultry litter			
Level of poultry litter:	Low	High	P	Low	High	P	SEx
Feed intake, kg/d							
Molasses	4.15	2.89	.001	4.74	2.30	.001	± 09
Poultry litter	1.25	0.83	.05	0.66	1.42	.01	±.01
Total DM	5.07	3.76	.001	5.04	3.80	.001	±.17
Consumption index[1]	1.98	1.46	.001	1.89	1.55	.001	±.04
Liveweight gain, g /d	579	169	.001	461	286	.01	±90
Conversion[2]	13.3	27.7	.22	23.0	17.9	.26	±.70

[1] Daily DM intake as % liveweight
[2] DM intake/liveweight gain

The analysis of the principal treatment effects showed clearly that combining the molasses and poultry litter in the same feeder led to a reduction in all parameters of animal performance. Apparently the response on this treatment was affected by the difficulties that the animals experienced in consuming the mixture of the two ingredients.

The treatment combination of 1.5 kg/d of poultry litter, with ad libitum molasses/urea in a separate feeder gave a growth rate of 780 g/d and DM feed conversion of 7.1.

Conclusions

These preliminary data must be interpreted with caution in view of the small number of animals that was employed. Nevertheless it was apparent from the appearance of the cattle that those receiving the low level of poultry litter given separately from the molasses, had improved in body condition in accordance with the liveweight.

References

Mapoon L K, Boodoo A A, Hulman B & Preston T R 1979 Use of poultry litter in a diet of molasses and bagasse for fattening bulls Tropical Animal Production

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