FEEDLOT PERFORMANCE, CARCASS AND OFFAL YIELD OF KENANA X FRIESIAN BULLS FINISHED ON RATIONS CONTAINING DIFFERENT LEVELS OF MOLASSES

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The average daily gain, over a 100-day feeding period, of Kenana X Friesian bulls on a ration containing 25% cane molasses (A), 50% cane molasses (B) or 45% sorghum grain (C) was 0.991, 0.698 and 1.351 kg respectively. Feed conversion ratio and the cost of a kilo gram of body gain were higher on group B followed by group A and C in descending order. The molasses fed groups lost some animals during the course of the experiment. The weight of the carcass and non-carcass components of the empty body did not differ sip,nificantly (P> 0.05) between treatment groups; but animals of group C had more omental fat than animals of the other two groups.

Key words: Cane, molasses cattle, average daily gain, feed conversion ratio, economics of meat production

Dura (Sorghum) grain is a major source of energy but in the Sudan it is generally too costly for animal feeds because it is also an important human feed. On the other hand, cane molasses has a high energy content and is produced in large quantities as a by-product of the sugar industry. Cane molasses is cheaper in price than sorghum grain and a considerable reduction in the cost of feeding cattle may be achieved if molasses can replace aura as the main source of energy.

This work was concerned with the effect of feeding rations containing 25% and 50X molasses on performance, carcass and offal yield of Kenana X Friesian cattle.

Materials and Methods

Cattle: Thirty-three Kenana X Friesian bull calves ranging in age between 6-21 months and in live weight between 62-265 kg were obtained from private dairy farms which are located around the Artificial Insemination Unit in Wad Medani, Sudan. The unit was established to serve farmers in the irrigated Gezira area of the Sudan. On arrival in the Unit the animals were rested, ear tagged and drenched with broad spectrum anthelmintics.

Treatments: The animals were divided according to age into three groups (i.e. A, B and C) of eleven animals each and each group was penned separately. Each group was randomly allocated to one of three rations which were composed of agricultural by-products readily available to farmers in the Gezira area, Group A received a ration which was composed of cottonseed cake 20%, sorghum grain 5%, wheat bran 29%, rice bran 19%, molasses 25% and a mixture of vita mins+mineral+salt 2%. The ration of group B was made up of cottonseed cake 25%, wheat bran 23%, molasses 50% and a mixture of vitamins+minerals+salt 2%.

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Group C was offered a ration which contained cottonseed cake 20%, sorghum grain 45%, wheat bran 33% and a mixture of vitamins+minerals+salt 2%, In rations A and B molasses was mixed with the other ingredients. Mineral salt licks and water were available at all times for each group of animals. All groups were allowed a standardization period of seven days during which they were introduced to their respective rations. Subsequently each group was fed ad libitum and daily feed intake recorded throughout the 100-day feeding period. All animals were weighed weekly and at the end of the feeding period they were fasted for 12 hours then weighed and slaughtered,

Slaughter procedure: After slaughter the feet were cut off at the proximal end of the cannon bones and the head was removed at the atlanto-occipital joint. After dressing and evisceration the internal organs and offals were removed and weighed. The alimentary tract was weighed full then cleaned of contents and reweighed to determine the weight of contents by difference, The weight of the alimentary tract contents was subtracted from the slaughter weight to obtain empty body weight (EBW), The warm carcass weight was recorded immediately after dressing and removal of internal organs.

Statistical analysis: Because some animals were lost during the experiment variance and covariance analysis using unequal number of observations were carried out. Slaughter data were transformed into logarithms and analysed by covariance technique using EBW as a covariate. All analyses followed the procedures described by Snedecor and Cochran (1969).

Results and Discussion

The chemical composition of the rations used in this study (Table 1) shows that they compared favourably in their concentrations of metabolizable energy; but ration C

Table 1:
Chemical composition (on dry matter basis) and cost of the rations used

Item	Rations		
	25% Molasses	50% Molasses	45% Sorghum grain
Dry matter (DM)	91.5	86.9	96.5
Crude protein	14.5	11.9	17.0
Ether extract	6.6	2.9	4.6
Ash	5.1	6.4	4.2
Calcium	0.8	0.8	0.9
Phosphorous	0.6	0.4	0.2
Magnesium	0.5	0.4	0.4
Metabolizable energy, ME. (MJ ME/Kg DM)	11.3	11.2	11.7
Ration cost/kg[1] (Sudanese £)[2]	0.029	0.022	0.052

[1] Based on January 1979 feed prices
[2] 1 Sudanese £ = 1.252 US$

had a higher crude protein content than the other two rations. However, the crude protein content of ration A or B was probably satisfactory for animals in each treatment group.

Five animals (2 from group A and 3 from group B) died during the course of the experiment. Before death the animals showed salivation, staggering gait and accelerated breathing. These symptoms are typical of molasses toxicity (Preston and Willis, 1974).

The performance of treatment groups throughout the feeding period is shown in Table 2. The groups compared favourably in age but differed in initial feedlot weight, This difference was, however, insignificant (P> 0,05) Group B had ;he heaviest average initial feedlot weight followed by animals of group A and C respectively in a descending order. The overall average daily gain differed significantly (P < 0.01) between treatment groups whether or not the results were adjusted for differences in initial feedlot weight,

Table 2:
Performance of treatments groups throughout the feeding period

Item	Rations			
	25% Molasses	50% Molasses	45% Sorghum grain	F-value
Average age (months)	13.3± 4.3	13.0 ± 4.3	12.8 ± 4.5	0.3 NS[1]
Average initial weight (kg)	143.2 ± 63.4	152.1 ± 38.1	126.4 ± 61.8	0.7 NS
Average final weight (kg)	242.4 ± 73.1	221.9 ± 43.1	249.2 ± 74.8	0.6 NS
Average overall daily gain (kg)	0.991 ± 0.2	0.698 ± 0.2	1.351 ± 0.3	20.4**
[2]Adjusted average final weight (kg)	274.7 ± 8.9	210.8 ± 7.0	265.2 ± 7.7	8.7 **
[2]Adjusted average daily gain (kg)	0.989 ± 0.06	0.688 ± 0.09	1.37 ± 0.11	18.2**
Average feed intake/heat (kg)	7.7	8.5	6.6	-
Kg DM/kg body gain	7.1	11.8	5.2	-
Feed cost/kg gain (£)	0.225	0.303	0.253	-
No. of animals	9	8	11	-

[1] NS P > 0.05
** P < 0.01
[2] Adjusted to a common initial body weight of 141.0 kg

Average final body weight did not differ significantly (P> 0,05) between treatment groups; but after adjustment was made for differences in initial feedlot weight, treatment effect on final feedlot weight was highly significant (P < 0,01). Direct comparison of the present results with similar published data is probably invalid because of differences between experimental animals in previous nutritional history, animal type and the rations offered. Gaili and Osman (1979) reported average daily gains between 1,13-1,36 kg in Western Sudan Baggara cattle of varying ages which were fed ad libitum on a ration containing 20% molasses.

Generally average daily feed consumption per animal (Table 2) was higher on group B and lowest on ration C. Group A was intermediate. Food conversion ratio followed a similar trend. Table 1 shows that a kilogram of ration C cost 1,8 and 2,4 times as much as the price of a similar quantity from ration A or B respectively, However, feed cost per kilogram body gain (Table 2) was considerably higher on ration B than on ration A or C; being lowest on ratio A. This is attributed to the poor performance of the animals on ration B which contained 50% molasses. Feeding high levels of molasses is a highly exacting technique (Preston and Willis, 1974). Further research studies are. needed to investigate the levels of molasses which could be incorporated in the finishing rations of cattle in the Sudan to give satisfactory results.

Slaughter data of treatment groups (Table 3) indicate that there was no significant (P > 0,05) treatment effect on the adjusted weights of carcass and non-carcass components of the body with the exception of the omental fat which was heavier in animals of group C than in the other treatment groups, This result is in line with the findings of Tulloh (1964) that differences in body composition of animals are explained in terms of differences in empty body weight.

Table 3 :
Adjusted mean carcass And non-carcass components weight (kg) of treatment groups

Item	25% Molasses	50% Molasses	45% Sorghum grain	Treatment effect
Warm carcass	120.2	120.9	121.9	NS[2]
Hide	16.7	17.1	17.0	NS
Head	13.4	13.6	!13.8	NS
Alimentary tract	17.9	18.0	18.2	NS
Heart	1.0	1.0	1.0	NS
Lungs and trachea	3.8	3.9	3.9	NS
Liver	4.1	4.2	4.1	NS
Spleen	0.4	0.4	0.4	NS
Omentum	1.5	2.1	2.8	*
Feet	5.8	6.0	6.0	NS

[1] Adjusted to a geometric mean empty body weight of 214.1 kg along the.slope of the common regression line
[2] NS, P >O. 05
* P< 0,05

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