

The effect of breed and different ratios of groundnut hay / Dura on performance and carcass composition of Sudan Desert Sheep.

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SUMMARY

The effect of breed and different ratios of groundnut hay to dura on performance and carcass composition were investigated on twenty seven males of Sudan Desert lambs which consisted of three different ecotypes namely Shugor, Dubasi and Watish. These males were five to seven months of age and weighed 18.59 ± 2.47 kg on average. The experimental period lasted for seventy days. The three groundnut hay to dura ratios were 3:1 (A), 1:1 (B), and 1:3 (C). No significant differences were found on the performance characters except for average daily feed intake which was lower ($P < 0.01$) in group C (1.21 kg/head/day) compared with the other two groups, A (1.41 kg) and B (1.43 kg). The mean daily gain for the three treatment groups A, B and C pooled over the three breeds were 188.78, 200.89 and 195.33 g respectively. The corresponding values for the feed conversion ratio (FCR) were 7.55, 7.39 and 6.78 kg feed/kg gain respectively. No significant differences among either treatments or breeds were observed on most of the carcass characters. Breed had significant ($P < 0.05$) effect on both lean percent and lean: bone ratio, while the treatment (diets) had a significant ($P < 0.05$) effect on bone percent. No significant effect of either treatment or breed were observed on fat percent. Watish lambs had better carcass composition than the Dubasi and Shugor lambs as evidenced by lean : bone ratio. The mean values of lean:bone ratio for these breeds were 2.81, 2.62 and 2.44 respectively.

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INTRODUCTION

Agricultural by-products such as cereal straws, groundnut hay and hulls, sugar cane tops, molasses, baggasc and sesame residues are viable alternatives for use in animal feeds. The groundnut hay being widely abundant all over the Sudan is a good choice for use as animal feeding-stuff. The work of Mansour et. al. (1988b) was a preliminary study in order to highlight the importance of groundnut hay for use in animal diets. Many factors are known to influence carcass composition, among which breed type is an important one (Gaili, 1979).

The objective of the work reported herein is to study the effect of both groundnut hay to Dura (Sorghum grains) ratio and that of breed on performance and carcass composition of Sudan Desert sheep.

MATERIALS AND METHODS

Twenty seven males Sudan Desert lambs aged five to seven months and weighed 18.59 ± 2.47 kg on average were used in the study. The lambs were divided randomly into three groups of nine lambs each. In each group there were three lambs from each breed. These lambs were dewormed, sprayed with gamatox and were individually housed in pens with free access to clean drinking water. All the lambs were allowed a three weeks period to acclimatize themselves to the environment of the experiment.

Three complete diets containing groundnut hay, dura (Sorghum grains), cotton seed cake and wheat bran were used. The three diets contained different groundnut hay to dura ratio namely 3:1, 1:1, and 1:3 and were designated as A, B, and C, respectively.

The composition and chemical analysis of these experimental diets are given in Table 1. The diets were then allocated at random to each lamb group. The experimental period continued for 70 days during which the lambs were individually fed *ad libitum*. The live-body weights were recorded every two weeks after an overnight fast. At the end of the experimental period all the lambs were slaughtered and prepared for subsequent studies according to Smith et. al. (1978).

For statistical analysis, the data were analyzed according to analysis of variance using randomized complete block design (Steel and Tonie, 1980).

RESULTS AND DISCUSSION

The health of the animals were generally good. Feedlot performance results of the experimental lambs are shown in Table 2. No significant differences were observed in all performance characters except for the average daiN feed intake, where the effect of diet type was highly significant ($p < 0.01$). Lambs of group A and B consumed more feed than those of group C. The mean values for these three groups averaged overall breeds were 1.41, 1.43 and 1.27 kg of feed/day respectively.

Information from literature show that feeding groundnut hay with for example Veld hay (Ndhlovu and Hove, 1989) to goats enhanced dry matter intake and that the best benefits were obtainable when groundnut hay was fed at the rate of 400 g / head / day. In the present study the level of performance obtained by feeding about 300 g of groundnut hay (group 13) gave approximately the same performance as feeding 450 g / head / day (group A).

Munthali (1987) showed that adequate fattening gains can be achieved by supplementing basal diets (maize stover or maize bran) with groundnut hay or other feeding stuffs as nitrogen sources. Also Mansour et. al. (1988b) concluded that groundnut hay may quite effectively be used in fattening Sudanese lambs. They indicated that groundnut hay was utilized to the same extent by growing lambs as other feed sources reported in literature.

On average the growth rate, feed intake, and feed conversion ratio (FCR) reported in the present study were 195 g / day, 137 kg / day and 7.24 kg feed / kg gain respectively. These results were better than those reported by Mansour et. al. (1988a) and Mansour et. al. (1988b) for Sudan Desert lambs. On the other hand, the present results could reasonably

be compared with those reported by El Khidir et. al. (1983) who found that feeding Balanite Kernel cake to Sudan Desert sheep was associated with a daily growth rate of 191 g / day.

There were no significant differences between breeds and also no breed X diet interaction on lamb performance (Table 3). The absence of the interaction indicates that the effect of the different diets was the same on the different breeds for the parameters studied.

Carcass characters are presented in Tables 4 and 5. No significant differences between either treatments or breeds were observed for all carcass characters. For carcass compositions however, these results indicate that breed had significant ($p < 0.05$) effect on both lean percent and lean: bone ratio (Tables 5), while treatment (diet) had significant ($p < 0.05$) effect on bone percent (Tables 4). These results were in agreement with Fourie et al. (1970) who reported significant ($p < 0.01$) differences between breeds in the growth coefficient of bone and muscle.

The results reported herein regarding carcass characteristics and carcass composition did not differ from previous reports on Sudan Desert Sheep (Gaili et al. 1977; Osman, 1985; Mansour et al. 1988a and Mansour et al. 1988b).

Scrutinizing Tables 5, the results show that Watish lambs had higher ($p < 0.05$) lean percent and lean: bone ratio in all dietary treatments while shugor lambs had lower values of these parameters. The mean values of lean percent and lean:bone ratio were 58.57%, 2.81; 57.95%, 2.62 and 55.56%, 2.44 for Watish, Dubasi and shugor lambs respectively. A note to mention is that shugor type generally has large frame size indicating lower muscle:bone ratio. On the other hand, Watish, being of a compact size would be expected to have a higher muscle: bone ratio. Dubasi type is an intermediate between the former two types. In contrast, El Karim and Owen (1987) reported no differences between the two types of Sudan Desert sheep (Shugor and Dubasi) in values of lean, fat, bone percentage and lean:bone ratio.

To conclude, this study showed that:

- Groundnut hay may effectively be used in fattening Sudanese Desert lambs at the ratio of 3:1 groundnut hay to dura, which may lead approximately to the same performance as those of 1:1 groundnut hay to dura ratio.
- The effect of breed and its interaction with diet were insignificant sources of variation on both performance and carcass characters.
- Breed differences were observed on carcass composition (lean percent and lean: bone ratio). Watish lambs had better carcass composition ($p < 0.05$) than the Dubasi and Shugor lambs as evidenced by lean:bone ratio.

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