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EFFECTS OF MIXED FORAGES- BREWERS' SPENT GRAIN ON THE CARCASS YIELD OF WAD GOAT

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Introduction

The ultimate aim of keeping goats in Nigeria is to provide animal protein principally in the form of goat meat to the teeming populace. However, goat production in Nigeria is characterized by low productivity levels due mainly to nutritional constraints (Tolera *et al.,* 2000), resulting in low production and reproductive performance, slow growth rate , loss of body condition and increased susceptibility to diseases and parasites. Goat meat evaluations have received little attention and as a result knowledge of yield and quality of goat meat is given little consideration when compared to mutton and beef (Warmington and Kirton, 1990; Anous and Mourad, 1993; Pinkerton, 2003). Therefore, there is the need for performance evaluations and designing of appropriate improvement breeding methods for goats (Bourdon, 2000; Jansen and Burg Kees, 2002). The dressing percentage of slaughter goats may be influenced by age, feed, weight, sex, body condition, amount of gut fill at slaughter, whether the carcass is weighed hot or cold and by the number of body components included in the yield calculation (Pinkerton, 2003). The study herein reported was, therefore, designed to determine the effect of mixed forages-brewers' spent grains feeding regime on the carcass yield, wholesale cuts and offals of the West African Dwarf (WAD) goat.

Materials and Methods

The study was conducted at the Goat Unit of the Department of Animal Science, University of Uyo, Uyo, Akwa Ibom State. Sixteen WAD goats (8 bucks, 8 does) aged 6-9 months with average initial body weight of 9.36 ±0.40 kg were purchased from small holder farmers in Uyo. They were treated against parasites and vaccinated against peste des petits ruminants (PPR). They were divided into 4 groups of 4 goats each with each group comprising 2 bucks and 2 does and randomly assigned to the following 4 experimental diets: Diet 1 - *Gliricidia sepium* (*G. sepium*) forage (*ad lib*) plus 200g brewers' spent grains (BSG); Diet 2 - *Panicum maximum* (*P. maximum*) grass (*ad lib*) plus 200g BSG; Diet 3 - *G. sepium* and *P. maximum* (both *ad lib*) plus 200g BSG; and Diet 4 (Control)- *G. sepium* and *P. maximum* (both *ad lib*). At the end of the feeding trial, the animals were fasted and weighed in the morning before they were slaughtered. Eight goats in all were thereafter slaughtered, with two animals taken from each diet (i.e. A buck and a doe). They were skinned and the carcass together with the offals and viscerals were harvested and weighed.

Data collected on daily feed intake (as main effect), weekly weight changes and the weight of the meat cuts were subjected to statistical analysis according to the Statistical Analysis System (1990).

Results and Discussion

The dry matter intake (DMI) is presented in Table 1. There were significant differences ($p < 0.05$) amongst the groups in total DMI. The highest DMI of 388.32 g/d. was observed for animals on Control. The values reported here were higher than those of Ifut (1987) and lower than those of Ajayi *et al.* (2005). Effect of the feeding regime as evident in Table 2, showing mean weekly body weight changes, supports the claims of Tolera *et al.* (2000), and Okello *et al.* (1996) that supplementation of forages with concentrate feedstuffs would be an important step to enhancing the productivity of goats (i.e. body weight, body condition scores and even carcass weights). This is evident in goats on Diet 3 which had significantly ($p< 0.05$) higher weight gain (78.93 g/d.) than those on other diets. This value was higher than the value of 23.81 g/d. obtained by Ajayi *et al.* (2005) for goats fed *G. sepium, P. maximum* and concentrates. This high growth rate may be attributed to a higher protein and energy supply from the

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BSG, which impacted efficiency of nutrient absorption/utilization (Tolera *et al.,* 2000). The lowest value of -28.39g/d. was observed for animals on Control, which incidentally recorded highest DMI. This may be attributed to an unfavourable energy to protein ratio obtained from the diet.

Table 3 shows the carcass yield (Dressing out percent). Goats on Diet 3 had the highest average carcass yield of 42.22%. This is attributed to the effect of the diet. Values for diets 1, 2 and 4 were 37.76%, 40.03% and 40.88%, respectively. These values are close to those of Dadi *et al.* (2005) which ranged from 41.00% to 45.90% for Borana and Arsi-Bale goats fed forages and supplemental concentrates while the values reported by Okello et al (1996) were higher at 53.00% - 58.50% in intact Mubende goats.

Values obtained for Diet 1 were not in agreement with those of Chadhokar (1982) who reported that *Gliricidia* supplementation up to the level of 80% with low quality basal feed gave a carcass yield of 51.00% in ewes and lambs. However, for Diet 3 the value falls within the range of that obtained by Dadi *et al.* (2005).

For condition scoring, the goats on Diets 1, 2 and 4 showed a positive response. The carcass yields of goats on these diets increased with the condition scores. The reverse was obtained in Diet 3 where the does with a condition score of 3.5 had a carcass yield of 40.66% while the bucks had a score of 3.4 with a carcass yield of 43.77%. A similar paradox was reported by Okello *et al.* (1996) in which omental fat deposition was implicated, which is usually higher in the female goat (Diet 3) than in the male.

Conclusion

This study showed that the inclusion of 200g brewers' spent grains in the diets (*G. sepium and P. maximum*) of the West African Dwarf goats heralded numerical improvements in the carcass weights, carcass yields and offals even though there were no significant diet effects.

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Table 1: Dry matter intake (g/d.) of WAD goats fed forages and BSG

Feeds (g/d)	Diet 1	Diet 2	Diet 3	Diet 4
Gliricidia sepium				107.57
Panicum maximum				280.75
BSG	154.98	[illegible]	[illegible]48	-------
Total DM	235.91^{c}	237.42^{c}	345.22^{b}	388.32^{a}
SEM	18.50	10.56	24.62	43.27

a, b, c = Means on the same row with different superscripts are significantly different ($p<0.05$)

Table 2: Mean weekly body weight changes (g) of WAD goats fed forages and BSG

Week	Diet 1	Diet 2	Diet 3	Diet 4
1	**10**	**- 100**	**10**	**-220**
2	30	- 40	-20	-360
3	130	210	390	-270
4	400	100	580	-400
5	360	110	540	-260
6	350	-140	830	-70
7	40	-270	840	370
8	410	-10	1250	360
ΣX	1730	-140	4420	-1590
$\bar{X}$ (WEELY)	216.30^{b}	-17.50^{bc}	552.50^{a}	-198.75^{cd}
Av. wt. gain (g/d.)	30.90	-2.50	78.93	-28.39
SEM	63.43	54.73	402.19	232.76

a, b, c = Means on the same row with different superscripts are significantly different ($p<0.05$).

Table3: Carcass yield (dressing out percent) of WAD goats fed forages and BSG

Diet	Sex	L.Wt (kg)	Carcass Wt (kg)	Offal Wt(kg)	Dressing Wt (%)	Av.D Wt (%)	Offal Wt (%)	Av. Off (%)	ConditionScore	FAT (Omental)
1	Male	10.10	4.20	5.90	41.58	37.76	58.42	62.24	2.6	+
	Female	10.90	3.70	7.20	33.94		66.06		2.3	+
2	Male	9.40	4.00	5.40	42.55	40.33	57.45	59.98	3.0	+
	Female	12.00	4.50	7.50	37.50		62.50		2.4	-
3	Male	13.25	5.80	7.45	43.77	42.22	56.23	57.78	3.4	++
	Female	9.10	3.70	5.40	40.66		59.34		3.5	++++
4	Male	9.40	3.10	6.30	39.36	40.88	60.64	59.12	2.1	+
	Female	12.50	5.30	7.20	42.40		57.50		3.3	+++