

Performance of Growing Yankasa Rams Fed Graded Levels of *Ficus Sycomorus* Leaf Meal (FSLM) in Semi-Arid Zone of Borno State

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Abstract: The experiment was conducted at Ramat polytechnic Maiduguri teaching and research farm to investigate the performance of growing Yankasa rams fed diet containing graded levels of *Ficus sycomorus* leaves meal (FSLM) at 5, 10, and 15% representing treatment B, C, and D respectively. Treatment A served as control with 0% inclusion FSLM. Sixteen entire males Yankasa rams with initial average weight of 24kg were used for the experiment. The rams were quarantined for two weeks during which they were fed basal diet and subsequently fed test diets. The experimental animals were allotted into four experimental treatments with four animals per treatment in complete randomized design (CRD). Results obtained revealed that incorporation of FSLM in the diets of growing Yankasa rams up to 15% gave impressive output. Treatment D (15% inclusions) recorded the highest mean for final body weight. Diet with higher Inclusion level of FSLM at (15% inclusion) recorded significantly higher ($P < 0.05$) value in terms of feed intake (139.57g), Average daily gain (0.31g) and feed conversion ratio (6.47). It was concluded that inclusion of *Ficus sycomorus* leaf meal up to 15% in the diet of rams improves performance. It is therefore recommended that (FSLM) at 15% inclusion in the diets of growing sheep should be adhered.

Keywords: *Ficus sycomorus*, performance, rams

Introduction

Competition between man and his animals for human food supplies makes it difficult to provide energy and protein supplementation for livestock. Thus during the long dry season when pasture starts to dry off animals lose the weight gain. During the raining season when good quality pasture are available. As the dry season progresses, the pasture remain rarely available, and where they exist, they are often of low quality (Ajiji and Nyako, 2013). Wilson (2001) estimated that as much as 15% of the animal body weight attained at the end of the previous raining season could be lost during the following dry season. The problem is more acute in north western Nigeria especially in the semi-arid zone where the bulk of the ruminant livestock are found. In view of this, it is paramount to look for alternative source of feed ingredients in other to optimize Animal performance. But inadequate knowledge of most of non-conventional feedstuff and their suitability as feed has led to the slow pace in the alternative feed resource in livestock rations. However the advantage of using non-conventional feeding stuffs that is readily available cheaper and not competed for as food for man.

Sheep and goat are meat producing animals that require simple management as compared to poultry and other classes of livestock. Sheep's are economical converter of browse, grasses concentrates and crop residues into profitable products (meat and wool). Inadequate nutrition is one of the major problems facing ruminant's animal production in Nigeria (Sultan *et al.*, 2009).

Ficus Sycomorus tree are hardy and can provide year-round fodder to be used as a supplement in lean periods. With proper management and propagation techniques, this fodder can be a viable feed resource to supplement small Ruminants feeding. It also serves as soil erosion control and sand-dunes fixation and riverbank stabilization. A *Ficus* leaf is a rich protein source (crude protein CP; 35-38%) and the protein in the leaf is relatively balance in its amino acid and mineral profiles (Njidda and Ikhimiaya 2010). The use of *Ficus* leaves could help improve ruminant's livestock production.

In Nigeria, there is a low animal protein intake due to escalating cost of feed ingredients like cotton seed cake which in turns affect the cost of Ruminants production. Hence the need for other alternative feed ingredient is necessary; *Ficus (Ficus Sycomorus)* is one of such alternative feed for Ruminants and its abundance and is available all year round within the local environment for this could be an encouragement for Ruminants production (Aseigu and Anugwa, 2005). The objective of this study was to assess the growth performance of yankasa rams fed *Ficus sycomorus* leaf meal in semi-arid zone of Nigeria.

Key words: ruminants, non-convectonal feeds, performance

Materials and Methods

Experimental Site

The study was carried out at the Livestock Unit of the Teaching and Research Farm, Department of Animal Production Technology, Ramat Polytechnic, Maiduguri. Maiduguri, the Borno State Capital, is located between latitude 11°5' and 12° North, longitude 13°09' E and 14° East at an altitude of 354m above sea level (Alaku, 2009). The area has a semi-arid tropical climate with a wide seasonal diurnal range of temperature. The hottest months are April and May with a range between 39.4 and 40.1 °C under shade (Wikipedia, 2013). There is a long dry season of 7 – 8 months between the months of October to May. The first three (3) months of dry season are characterized by the harmattan wind blowing from the Sahara Desert. During the last 2 – 3 months of the dry season there is hot diurnal temperature and comparatively cooler nights. The average annual rainfall is about 500 mm. The relative humidity is about 45% in August and usually lowers to about 5% in December and January. The vegetation of the area consists of certain grass species that thrive on flat landscape with occasional shrubs and scanty trees. Thus only quick maturing crops like millet, sorghum and cowpea are grown where the soils are suitable. Livestock and poultry rearing is an integral part of the occupation of the people.

Collection and Processing of *Ficus sycomorus* Leaves

The leaf of *Ficus sycomorus* were harvested within the Province of Mahammet Lawan College of Agriculture Maiduguri and its environs. The leaves were air dried on a concrete floor in a well-ventilated Room and later ground into finely particles, Until the Commencement of the feeding Trial.

Experimental Animals, Treatments and Design

Four complete experimental diets A, B, C, and D were formulated, containing 0 (control), 5, 10, 15% *Ficus sycomorus* leaves were used for this study. The Net composition of the experimental diets is shown in Table 1. All the ingredients used except *Ficus* leaves were purchased from the Maiduguri Livestock market. Sixteen yankasa Rams were allotted randomly to the four treatments with four animals per treatment in a complete Randomized design (CRD).

Management of Experimental Animals

Prior to the commencement of the experiment, the experimental Animals were treated against endo-parasite and ecto-parasite using Ivomcetin and Albendazole(R) occurring to the Manufacturers recommendation. Sixteen (16) yankasa Rams with average age of 12 months and weighing 20±kg obtained from Gubio Local government Area of Borno State Livestock Market. The animals were housed in individual pens.

Table 1: Table for the proportion of feed ingredient Diet (%)

Ingredients	(%) A (0%FSLM)	B (5%)	C (10%)	D (15%)
FSLM	0	5	10	15
Maize	8	8	8	8
Groundnut haulms	15	13	10	8
Cowpea husk	15	15	15	16
Maize Bran	27	27	23	19
Cotton seed cake	18	13	15	15
Rice milling waste	15	17	17	17
Bone meal	1	1	1	1
Salt	1	1	1	1
Total	100	100	100	100

Data Collection

Daily records of feed intakes were taken by weighing the feed offered and the leftover the following day in the morning. The daily intake of feed was estimated for each animal by subtracting the feed leftover from the quantity offered to the individual animals. Weight of individual animal was measured at the onset of the trial. Weekly gain is measured by each animal throughout the feeding trial. Weight gain was determined by subtracting the initial weight from the final weight within the feeding period.

Results and Discussions

Proximate Composition of the Experimental Diets

The Proximate Composition of the experimental diets was indicated in Table 2 below. The Results showed that dry matter (DM) values ranged from 92.67 - 94.88%. It could be deduced that treatment C (10% *Ficus sycomorus* leaf meal) having the highest dry matter (94.88%) with treatment B (5%FSLM) having the lowest (92.94%) value. The dry matter of the experimental treatment (92 - 94%) were within the values recommended by (Omotosho *et al.*, 2015) on the utilization of rice straw ensiled with soybean meal by yankasa rams in the semi arid zone of Nigeria.

The Crude protein level of the experimental treatment ranged from 16.98 - 17.35%. The CP Content was higher in treatment A (0%FSLM) Control with 17.36% and lower in treatment D 16.89%. The values for all the treatment were within the protein requirement ranged (15 to 18% CP) recommended by ARC (1990) for growing sheep. Similarly Purian and Gupta (2001) reported 15-18 CP Levels when he replaced maize with brewers grains in the diets of growing sheep.

The Crude fibre content of the experimental treatments ranged from 12.11 - 14.21%. The CF value were higher in treatment A (14.21%) followed by 13.11% in treatment C and B. While the lowest (12.11%) value was in treatment D. Similarly the CF content reduced slightly from the control treatment A (0%FSLM) to treatment D (15%FSLM) with highest inclusion of *Ficus sycomorus* leaf meal. The CF content obtained in the study met the minimum requirement recommended for ruminants by Banarjee (2010). The values of 12.11 - 14.21 were lower than the values of 32-37% reported by Nayawo (2010).

Ether extract of the experimental treatments ranged from 2.95 - 3.58%. The EE content decline with increasing level of *Ficus sycomorus* leaf meal (FSLM). The values obtained were lower than the values reported by Nayawo (2010) when he replaced rice milling waste with offal in the diets of Kano Brown Goat.

The Ash values ranged from 3.26 - 4.81%. This indicates that the diet has optimal mineral supply. The Ash values were higher in treatment C (10%FSLM) with 4.81% and lower in treatment A (0%FSLM) with 3.21% value.

The NFE (Nitrogen free extract) obtained from this study ranged from 57.99 - 54.26%. This could be deduced that there was optimal amount of fermentable carbohydrate present in the diets to provide energy to the Rams. Observed values were higher than the values reported by Muhammad (2005) when he fed yankasa Rams graded levels of Rice milling waste (RMW) and Soya bean Meal Residue (SBMR) in North western part of Nigeria.

Table 2: Proximate Composition of the Experimental Diets and *Ficus Sycomorus* Leaf Meal (FSLM)

PARAMETERS T4(15)	T1(0%)	T2(5%)	T3(10%)
Dry Matter (DM) 93.50	92.67	93.13	94.88
Crude Protein (CP) 16.89	17.36	16.98	17.04
Crude Fibre (CF) 14.21	12.80	13.11	12.11
Ether Extract (EE) 3.13	3.58	2.96	3.29
Ash 3.38	3.26	4.13	4.81
Nitrogen free extract (NFE) 57.99	54.26	56.26	56.63

Table 3: Growth Performance Indices of Yankasa Rams fed graded levels of *Ficus sycomorus* leaf meal

Parameters	Treatments				SEM
	T1	T2	T3	T4	
Initial body weight (kg)	24.500	24.375	24.375	24.500	1.0346
Final body weight (kg)	38.00 ^b	44.250 ^a	44.125 ^a	46.375 ^a	1.5318
Total body weight (kg)	13.50 ^b	20.375 ^a	19.750 ^a	21.875 ^a	1.2635
Average daily gain (g/day)	0.1929 ^b	0.2911 ^a	0.2821 ^a	0.3125 ^a	0.0180
Feed Conversion Ratio	8.1641 ^a	7.9736 ^a	7.9603 ^{ab}	6.4693 ^b	0.4875
Feed Intake (kg)	109.10 ^b	161.77 ^a	155.73 ^a	139.57 ^a	7.6224

Performance of Yankasa Rams Fed graded Levels of *Ficus Sycomorus* Leaf Meal

The Results for the growth Performance Indices of yankasa Ram fed graded levels of FSLM is presented in Table 3. The results showed that the Initial body weight (24.37 – 24.50kg) did not significantly ($P>0.05$) between the treatment mean. This shows that no bias among the treatment animals for the Initial body weight.

The Final body weight gain for treatment B (5%FSLM) with 44.25kg was statistically similar to treatment C (10%FSLM) with 44.12kg. Treatment D recorded significantly higher ($P<0.05$) value with (15% FSLM) inclusion. This indicates that treatment D has higher final body weight gain with (46.37kg); this shows that (15%FSLM) inclusion has the best performance among the treatment animals.

However, the Total body weight gain for treatment D recorded significantly higher ($P<0.05$) with (15%FSLM) inclusion than treatment B, C and treatment A. It could be deduced that 15% *Ficussycomorus* leaves meal inclusion gave the highest total body weight gain (21.87kg) value.

This experiment also indicate that the Average daily gain (ADG) were significantly ($P<0.05$) influenced by the experiment treatments with animals on treatment D (15%FSLM) having the highest mean daily gain (0.31g/day) while the lowest mean daily gain was recorded in treatment A (0.19g/day) for Rams receiving 0% FSLM inclusion. The observed highest ADG was recorded in treatment D (0.31g/day) for Rams receiving 15% FSLM. The lower value ADG exhibited by animals on treatment A (control) could be associated with the incidence of diarrhoea which led to loss of weight by animals on the treatment.

The Feed Conversion Ratio (FCR) was significantly higher ($P<0.05$) in Rams at 15%FSLM inclusion level with (8.16) value. This implies that the efficiency at which the Rams converted feeds for their body weight gain in treatment with 15% inclusion is the lowest, indicating a better feed conversion ratio of the feed.

Results of this experiment indicate an increase in feed intake with increasing levels of *Ficus sycomorus* leaf meal (FSLM) even though treatment A(control) with (0%FSLM) had a lower feed intake compared to treatment D but not significantly different. The increased ($P<0.05$) feed with increasing levels of *Ficus sycomorus* leaf meal , could be due to the fact that roughages of low quality tend to be eaten more by the animals in order to satisfy their needs for energy and other nutrients (Mc Donald *et al.*, 2001). Variation in feed intake between treatment A and D could be as a result of individual animal differences among the experimental animals. One possible explanation for this is that the animals were obtained from different source with possible differences in management system. This could have led to individual animals differences as regards their adaptation to the feeding conditions, even though measures were taken to eliminate these differences at the beginning of the experiment. Payne (2005) and Lynch *et al.* (2007) had earlier reported that individual variation affected the rate of feed intake in sheep and other ruminants.

Conclusion

In Conclusion, the study indicated that *Ficus sycomorus* leaf meal (FSLM) at 15% level in the diets of growing yankasa Rams gave the highest Final body weight gain of 46.37kg, Average daily gain (0.31g) and best Feed Conversion Ratio (6.49) Compared to other

treatments without significantly affecting performance. It is therefore recommended that (FSLM) at 15% inclusion in the diets of growing sheep should be adhered.

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