



Response of Growing Red Sokoto Bucks to Diets Containing Treated or Untreated Rice Milling Waste on Growth Performance, Nutrient Digestibility and Blood Indices

^{*1}Yerima, J., ¹Abdulazeez, H., ²Jaafar, A. M., ³Abdullahi, A. M. and ⁴Yusuf, A.

¹Department of Animal Science, University of Maiduguri, PMB 1069 Maiduguri, Borno State Nigeria

²Department of Animal Science, Bauchi state University Gadau, Bauchi state, Nigeria

³Veterinary Teaching Hospital, University of Maiduguri, Borno State, Nigeria.

⁴Department of Animal Science, Federal University Dutsin-ma, Katsina state, Nigeria

* jibuni80@unimaid.edu.ng; +2348086608860

Abstract

The experiment was conducted to evaluate growth performance of growing Red Sokoto bucks fed diets with treated and untreated rice milling waste. Five complete diets with 16% CP were prepared for the experiment containing untreated and treated rice milling waste and designated as diets 1, 2, 3, 4, and 5, respectively. Fifteen (15) bucks with averaged weighed of 14.33kg were used for the experiment and randomly allocated to five (5) dietary treatment groups of three (3) animals each in a completely randomized designed (CRD) and the experiment lasted for 70 days. Data collected were subjected to analysis of variance. The results revealed significant ($P>0.05$) difference in average daily weight gain and nutrient digestibility. Bucks fed diet 5 had the highest ADG of 81.86 g/day while those fed diet 1 with the least 38.14 g/day. Better feed utilization (6.98) was recorded in animals fed diet 5 with significantly higher digestibility in all the nutrients. Red blood cells and blood urea were significant ($P<0.05$) across the dietary treatments. Bucks fed diet 5 had the lowest cost (₦ 943.57) per kg live-weight gain while animals on diet 1 had the highest (₦ 1801.00). Higher feed cost savings of ₦ 857.47 was recorded in animals fed diet 5, while those on diet 1 had no savings. Conclusively, all diets had no harmful effect on growth performance and haematological parameters of bucks. It is therefore recommended to use diet 5 which contained rice milling waste treated with 5% poultry dropping in feeding bucks.

Keywords: Rice, milling waste, red Sokoto, bucks

Introduction

Goats are important livestock species reared for various purposes not limited only for provision of protein and other by product but also as source of ready income for farmers. They are among the animals that can be managed easily with limited capital and feed resources and also characterized by their short gestation length as compared to cattle. Rice milling waste as a crop by product is readily available in the area of study and has been used to feed ruminants along with other ingredients during feed scarcity due to its low cost. As analyzed for its nutritive value, rice bran as rice milling waste was found to contain crude protein, energy and minerals such as calcium and phosphorus that is required for animal growth (Abubakar, 2003).

Conventional energy feed resources such as wheat and maize bran are becoming too expensive for feeding ruminants, therefore there is the needs to look at available waste materials that can undergo little enhancement to improve their palatability and nutritive content that can be utilized by ruminants. This study was designed with the objectives to determine the growth performance, nutrients intake, digestibility as well as cost benefit analysis and blood profile of Red Sokoto bucks fed diets containing treated or untreated rice milling waste (RMW).

Materials and Methods

Description of the study area

The research was conducted at the

Ruminant Unit of the Livestock Teaching and Research Farm, Department of Animal Science, University of Maiduguri, Borno State. Maiduguri lies between Latitude 11°51' and 12°N and longitude 13°05' and 14°E. It falls within the Sahel savannah zone of West Africa, which is characterized by 4-5 month of rainfall with an average of 500-600mm. The ambient temperature ranges between 27-45°C, while the relative humidity varies between 19 to 78% and remains at 45% during the wet season (Mayomi and Mohammed, 2014).

Collection and preparation of experimental feed materials

Rice milling waste (RMW) was acquired from nearby rice mills in the Maiduguri Metropolis. Urea and molasses were sourced from the Gamboru market in Maiduguri, while battery cage poultry droppings were gathered and treated from the Poultry Unit at the Livestock Teaching and Research Farm of the Department of Animal Science, University of Maiduguri. Additionally, various feed components like sorghum panicles, maize offal, groundnut haulms, cottonseed cake, cowpea shells, bone meal, and salt were procured from Kasuwan Shanu in Maiduguri.

Ensilage procedure of rice milling waste

After rice milling waste was obtained, it underwent a preparation process which involved removal of foreign materials like debris and metals, as well as other undesired substances. Subsequently, the waste was weighed for the ensilation process. The treatment of the rice milling waste was done using different solutions, as outlined below:

- i. Water alone
- ii. 4% Urea solution, where 4 kg of urea graded fertilizer was dissolved in 100 litres of water.
- iii. 5% Poultry droppings solution, with 5 kg of poultry droppings dissolved in 100 litres of water.
- iv. A molasses solution, containing 3 kg of molasses dissolved in 100 litres of

water.

100 kg of rice milling waste was treated with 50 litres each of water alone, 4% urea solution, poultry dropping solution and molasses solution. Fifty (50) litres of mentioned solutions was sprinkled over 100 kg of rice milling waste. The rice milling waste was mixed thoroughly and compressed before it was packaged into an air tight polythene bag. The fermentation of rice milling waste was done using a polythene bag of dimensions 112 cm by 76 cm and ensiled for three weeks. After this period, the ensiled material was opened and air dried under shade for 3 days. Continuous raking of the material was carried out for uniform drying and to minimize the risk of mould formation.

Experimental diets formulation

Complete diets containing 16% crude protein (CP) were formulated for the experiment. Five (5) separate experimental diets were devised with both untreated and ensiled rice milling waste along with various other feed ingredients as presented in Table 1.

Experimental animals, design and their management

Twenty (20) growing Red Sokoto bucks were used for the experiment. The animals were purchased from Kasuwan Shanu at Maiduguri with an average weight of 14.33 kg. The animals were quarantined for 14 days during which they were tagged, vaccinated against *pestes despetit ruminant*, dewormed with Albendazole at 12.5mg/kg1 body weight for internal parasites and injected intramuscularly with antibiotic i.e Oxytetracycline L.A (Alfasan®) 20%, at 1ml per 10kg body weight. During this period the animals were fed with groundnut haulms and maize offal for adaptation. The animals were divided randomly into five dietary groups of four animals each in a completely randomized design and allocated to their respective diets. All the animals were housed in well-ventilated pens (2 m × 2 m) pens. Healthy

surroundings and proper cleanliness during the experimental period were maintained.

Table 1: Ingredients and Chemical Compositions of Experimental Diets

Ingredients	Diets				
	1	2	3	4	5
Rice husk	37.94	38.52	38.92	38.56	38.23
Cotton seed cake	22.56	21.98	21.58	21.94	22.27
Maize offal	20.00	20.00	20.00	20.00	20.00
Groundnut haulms	12.00	12.00	12.00	12.00	12.00
Cowpea shell	5.00	5.00	5.00	5.00	5.00
Bone meal	2.00	2.00	2.00	2.00	2.00
Salt	0.50	0.50	0.50	0.50	0.50
Total	100.00	100.00	100.00	100.00	100.00
Parameters (%)					
Dry Matter	89.13	88.75	88.7	88.63	88.14
Ash	8.25	8.16	8.14	7.34	7.18
Organic matter	80.88	80.59	80.56	81.29	80.96
Crude protein	15.91	15.9	15.89	15.96	16.01
Neutral Detergent Fiber	43.75	43.98	43.97	44.36	44.72
Acid Detergent Fiber	34.21	34.83	34.81	33.21	35.52
Hemicellulose	9.54	9.15	9.16	11.15	9.20

T1= Diet with untreated rice milling waste, T2= Diet with water treated rice milling waste, T3= Diet with urea treated rice milling waste, T4= Diet with molasses treated rice milling waste, T5= Diet with poultry dropping treated rice milling waste.

Feeding trial

During the feeding trial, animals were offered weighed quantities of respective complete diets. The diets were offered at 7.00 and 14.00 hours daily throughout the experimental period (Yerima *et al.*, 2023). Residues, if any, were weighed on the next day morning before offering of feed in order to calculate daily feed intake of animals. Fresh clean drinking water was provided to the animals and daily water intake, recorded.

Growth performance measurements

The initial body weight of each animal was assessed at the beginning of the experiment. Initial body weight, weekly weights and final body weights of the animals were measured in order to ascertain the growth performance. Weekly changes in weight were measured every week in the morning at around 7:00 am, before providing feed to the animals in the experiment. Feed conversion ratio (FCR) was calculated from dry matter intake and the average daily weight change. The experimental period

lasted for 84 days (including 14 days adaptation period)

Digestibility trial

At the end of growth trial, three (3) animals per treatment were used for the digestibility studies. Experimental animals were shifted to improvised metabolic cages and allowed to feed on their respective diets. The animals were fed their respective diets and served with fresh clean water daily. Animals were acclimatized to improvised metabolic cages for 5 days prior to collection period. During the 7 days' collection period, the amounts of feed offered and individual refusals and faeces were weighed daily. Faeces were bulked for the 7 days and a pooled representative sample was collected for laboratory analysis after thoroughly mixing the faeces from each animal.

Haematological and Biochemical Indices

Blood samples were collected via jugular veins of the experimental bucks during the last week of all the experiments. Three animals were sampled from each treatment

for haematological and biochemical analyses. For haematological study, blood was collected in sample bottles with Ethylene Diamine Tetra Acetic Acid (EDTA). Packed cell volume (PCV) was determined by the method described by Sirios (1995) while, haemoglobin (Hb) concentrations, white blood cells (WBC) and red blood cells (RBC) by that of Jelalu (2014). Mean corpuscular volume (MCV), mean corpuscular haemoglobin concentration (MCHC), mean haemoglobin concentration (MHC) were calculated as described by Jain (1993).

Economics of production

Cost of diet/kg in each treatment, total cost of feed intake in naira and cost of feed per kg weight gain were calculated based on the prevailing market price of feed ingredients in the study (Yerima *et al.*, 2023).

Chemical analysis

Feed and faeces samples were ground through a 1 mm mesh sieve and analyzed for dry matter (DM) (55°C for 24 h), Nitrogen (or CP) content was determined by the automated Kjeldahl method (AOAC, 2000, ID No 945.01), neutral detergent fiber (NDF) and acid detergent fiber (ADF) by procedure of Van Soest *et al.* (1991) without amylase, sodium sulfite, or correction for residual ash.

Statistical analysis

Data generated were subjected to analysis of variance (ANOVA) using SPSS (21) package. Significant treatment means were separated using Duncan's multiple range test (DMRT).

Results and Discussion

Feed and nutrient intake of goats fed diets with treated and untreated rice milling waste

Feed and nutrient intake of goats fed diets containing treated and untreated rice milling waste were presented in Table 2. The result reveals no significant ($P>0.05$) difference in the average daily feed intake,

dry matter intake (DMI), organic matter intake (OMI), crude protein intake (CPI) and neutral detergent fibre intake (NDFI) and Acid Detergent fibre intake (ADFI) across the dietary treatments. The values of average daily feed intake of goats fed different experimental diets ranged from 564.79 to 640.56 g/day for animals on diets 2 and 4 containing water treated rice milling waste and molasses treated rice milling waste which was not in variance with 817.00 g/day reported by Adebayo *et al.* (2022). The DMI ranged from 501.25 to 564.59 g/day for goats on diets 2 and 4. Goats fed diets 1, 3 and 5 recorded DMI of 510.92, 549.89 and 564.59 g/day. Fajemisin *et al.* (2019) reported DMI of 559.46 g/day when fed West African Dwarf goat of similar weight with diet containing urea - molasses treated rice husks diets which fell within the range in this study. The OMI ranged from 88.14 in goats fed diet 5 to 88.75 g/day in those fed diet 2. The CPI values ranged 79.70 g/day for animals fed diet 2 to 90.39 g/day for those on diet 5 which was higher than the ranged (44.93 to 78.78 g/day) reported by (Fajemisin, 2019). The NDFI ranged from 220.45 to 252.49 g/day for animals fed diets 2 and 5 was comparable to 191.14 to 271.02 g/day reported by Fajemisin (2019) and so also ADFI values ranged from 174.59 to 200.54g/day and corresponded with 193.85 g/day reported by same mentioned author. Improved NDF and ADF intake could be attributed to the improved crude protein quality of diets in the experiment which was more than critical 7% CP required by ruminants (Norton, 2003).

Growth Performance and Feed Conversion Ratio of Goats Fed Diets with Treated and Untreated Rice Milling Waste

The growth performance and feed conversion ratio of bucks fed diets with treated or untreated rice milling waste was illustrated in Table 3. No significant ($P>0.05$) differences were observed in final body weight (FBW) of goats fed

experimental diets. The final body weight (FBW) ranged from 16.00 to 20.33kg. Significant ($P<0.05$) difference was recorded in total weight gain (TWG). Animals fed diet 5 recorded the highest weight of 5.66kg while those fed diet 1 recorded the least value of 2.67kg. Bello *et al.* (2019) reported TWG of 3.50 kg when Red Sokoto bucks was fed with diet containing rice offal at 30% level of

inclusion which fell within the range reported in this study. Average daily weight gain (ADG) was significantly ($P<0.05$) different across the diets. Higher daily weight gain of 81.00 g/day was recorded for animals fed diet 5 and the least 38.14 d/day in those fed diet 1, respectively. Animals fed diet 2, 3 and 4 had ADG values of 52.43, 66.71 and 66.71 g/day. Bello *et al.* (2019)

Table 2. Feed and nutrient intake of Red Sokoto bucks fed diets containing untreated and treated rice milling waste

Parameters	Diets					SEM
	1	2	3	4	5	
Average daily feed intake(g)	573.23	564.79	619.95	629.74	640.56	12.40 ^{NS}
Dry Matter intake (g/day)	510.92	501.25	549.89	558.14	564.59	10.74 ^{NS}
Organic matter intake (g/day)	413.23	403.96	442.99	453.71	457.09	8.81 ^{NS}
Crude protein intake (g/day)	81.29	79.70	87.38	89.08	90.39	1.74 ^{NS}
Neutral detergent intake(g/day)	223.53	220.45	241.79	247.59	252.48	5.01 ^{NS}
Acid detergent intake (g/day)	174.79	174.59	191.42	185.36	200.54	3.92 ^{NS}

SEM=standard error mean, NS= not significant, T1= diet with untreated rice milling waste, T2= diet with water treated rice milling waste, T3= diet with urea treated rice milling waste, T4= diet with molasses treated rice milling waste, T5= diet with poultry dropping treated rice milling waste.

reported ADG of 38.89 g/day which fell within the range recorded where. The highest ADG recorded was within the range of 56.78 to 81.66 g/day reported by Adebayo *et al.* (2022). The ADG recorded was higher than 32.68 to 58.15 g/day according to Ibrahim *et al.* (2013) when Red Sokoto bucks were fed diet with rice milling waste incorporated at 10%. The

variation with this work may be attributed to the difference in constituent of the diet. The values of feed conversion ratio (FCR) indicate significant ($P<0.05$) difference across the diets. Better feed utilization of 6.97 was recorded in animals fed diets 5 and least 13.41 in those fed diet 1. The FCR in this study was contrary to 7.06 reported by Bello *et al.* (2019)

Table 4. Growth Performance of Animals fed the Experimental Diets

Parameters	Diets					SEM
	1	2	3	4	5	
Initial weight (kg)	13.33	14.67	15.33	14.33	14.67	0.52 ^{NS}
Final weight (kg)	16.00	18.33	20.00	19.00	20.33	0.64 ^{NS}
Total weight gain (kg)	2.67 ^c	3.66 ^{bc}	4.67 ^{ab}	4.67 ^{ab}	5.66 ^a	0.33*
Average Daily weight gain(g)	38.14 ^c	52.29 ^{bc}	66.71 ^{ab}	66.71 ^a	80.86 ^a	4.72*
Dry Matter intake (g/day)	510.92	501.25	549.89	558.41	564.59	10.74 ^{NS}
Feed conversion ratio	13.41 ^c	9.59 ^d	8.24 ^c	8.37 ^b	6.98 ^a	0.88*

^{a,b,c}Means within each row with different superscripts are significantly different* ($P<0.05$), T1=Diet with untreated rice milling waste, T2= Diet with water treated rice milling waste, T3= Diet with urea treated rice milling waste, T4= Diet with molasses treated rice milling waste, T5= Diet with poultry droppings treated rice milling waste, DMI=dry matter intake, SEM= standard error mean, NS= Not significant.

Nutrient digestibility of bucks Fed diets with differently processed rice milling waste

Table 5 shows the nutrient digestibility of

bucks fed diets with differently processed rice milling waste. Dry matter digestibility (DMD), organic matter digestibility (OMD), crude protein digestibility (CPD),

neutral detergent fibre digestibility (NDFD) and acid detergent fibre digestibility (ADFD) were all significant ($P<0.05$) across the diets. The DMD values was higher 84.91% in animals fed diet 5 and the least 70.72% in those fed diet 1. Higher values of 82.18% OMD in animals fed diet 5 and the least 65.65% in those fed diet 1. Crude protein digestibility values were higher 87.50% in animals fed diet 5 while the least 75.54% in those fed diet 1. The NDFD values were higher 80.71% in animals fed diet 5 and the least 66.48% in

those fed diet 1. Acid detergent fibre digestibility were higher 80.32% in animals fed 80.32% in those fed diet 5 and the least 66.18% in those fed diet 1. According to Okoruwa *et al.* (2012) and Yashim *et al.* (2016) nutrient digestibility in animals is the classical and direct method for estimating feed digestion by ruminants; hence studies on digestibility of ruminant feeds are very important as they allow for the estimation of nutrients actually available for ruminant nutrition.

Table 5: Nutrient digestibility of bucks fed diets with differently processed rice milling waste

Parameters (%)	Diets					SEM
	1	2	3	4	5	
Dry matter digestibility	70.72 ^c	71.79 ^c	75.82 ^{bc}	79.69 ^b	84.91 ^a	1.46 [*]
Organic matter digestibility	65.65 ^c	66.59 ^c	71.35 ^{bc}	76.14 ^b	82.18 ^a	1.72 [*]
Crude protein digestibility	75.34 ^c	77.13 ^c	80.39 ^b	82.39 ^b	87.50 ^a	1.19 [*]
Neutral detergent fibre digestibility	66.48 ^c	65.80 ^c	70.66 ^b	75.05 ^b	80.71 ^a	1.57 [*]
Acid detergent fibre digestibility	66.18 ^c	65.73 ^c	70.59 ^b	72.87 ^b	80.32 ^a	1.51 [*]

^{a,b,c}Means within each row with different superscripts are significantly different* ($P<0.05$), T1=Diet with untreated rice milling waste, T2= Diet with water treated rice milling waste, T3= Diet with urea treated rice milling waste, T4= Diet with molasses treated rice milling waste, T5= Diet with poultry droppings treated rice milling waste, SEM= standard error mean

Haematological and Serum Biochemical Indices of Red Sokoto Bucks Fed Diets Containing Treated or Untreated Rice Milling Waste

Haematological and serum biochemical indices of Red Sokoto bucks fed diets containing treated or untreated rice milling waste was shown in Table 5. Pack cell volume did not differ ($P>0.05$) significantly across the treatments. The values range from 28.50% for animals fed treatment 1 and 3 to 31.00% for those in treatments 2 which were higher than 18-27.50 and 5.98-9.22 g/dl as reported by Bamidele and Adejumo (2012). Haemoglobin values did not differ ($P>0.05$) significantly across the treatment. The Haemoglobin values ranged from 9.45 g/dl for animals in treatments 1, 3 and 5 to 10.30g/dl for those in treatments 2. White Blood Cell were not significantly ($P>0.05$) across the treatments and the values ranged from $6.85 \times 10^3/l$ for animal in treatment 3 and $8.25 \times 10^3/l$ in treatment 4

the values were lower than $6.8-20.1 \times 10^3$ as reported by Opara *et al.* (2010). Red Blood Cell differed significantly ($P<0.05$) across the treatments. Higher values 9.80 and $10.50 \times 10^6/l$ were recorded in treatments 2 and 5, followed by $9.70 \times 10^6/l$ and $9.70 \times 10^6/l$ in those fed treatments 3 and 4 while the least $9.30 \times 10^6/l$ in those fed treatment 1. No significant ($P>0.05$) differences were recorded in total protein 0 hours (before feeding) and 5 hours (after feeding) across the treatments. The values of total protein before feeding ranged from 62.00g/L in animals fed treatment 1 to 66.00g/L for those fed treatment 3 while the values of total protein after feeding ranged from 61.50g/L in animals fed treatment 1 to 64.00 for those fed treatment 3. No significant ($P>0.05$) difference were recorded in glucose 0 hours (before feeding) and 5 hours (after feeding) across the treatment. The values of glucose before feeding ranged from 2.80mmol/L in animals

fed treatment 2 and 5 to 3.70 mmol/L for those fed treatment 4 while the values of glucose after feeding ranged from 3.20mmol/L in animals fed treatment 2 and 3 to 3.50 for those fed treatment 1. Blood urea 0 hours (before feeding) differed significantly ($P<0.05$) across the diets.

Higher values 7.00mmol/l was recorded in animals fed treatment 2 and the least value 4.90mmol/l for those on treatment 1. No indication of significant ($P>0.05$) difference in blood urea 5hours (after feeding). The mean values ranged 5.20 to 7.85 mmol/l for animals on treatments 1 and 4.

Table 5. Haematological and Serum Biochemical Indices Parameters of Red Sokoto Bucks Fed Diets Containing Treated or Untreated Rice Milling Waste

Parameters	Treatments					SEM
	T1	T2	T3	T4	T5	
Haematological						
Pack cell volume (%)	28.50	31.00	28.50	29.50	29.20	0.87 ^{NS}
Haemoglobin(g/d)	9.45	10.30	9.45	9.80	9.45	0.29 ^{NS}
White blood cell (X10 ³ cells/L)	6.90	7.90	6.85	8.25	7.40	0.44 ^{NS}
Red blood cell (X10 ⁶ cells/L)	9.30 ^b	9.80 ^{ab}	9.70 ^{ab}	9.70 ^{ab}	10.50 ^{ab}	0.15 [*]
Biochemical						
Total protein (g/L) Before	62.00	63.50	66.00	64.00	64.00	1.20 ^{NS}
Total protein (g/L) After	61.50	62.50	64.00	63.50	63.50	1.14 ^{NS}
Glucose (mmol/L) Before	2.85	2.80	3.50	3.70	2.80	0.15 ^{NS}
Glucose (mmol/L) After	3.50	3.20	3.20	3.35	3.35	0.08 ^{NS}
Urea (mmol/L) Before	4.90 ^b	7.00 ^a	5.65 ^{ab}	6.50 ^{ab}	5.40 ^{ab}	0.95 [*]
Urea (mmol/L) After	5.20	7.15	6.95	7.85	7.25	0.39 ^{NS}

^{a,b,c} Means within each row with different superscripts are significantly different* ($P<0.05$), T1=Diet with untreated rice milling waste, T2=Diet with water treated rice milling waste, T3= Diet with urea treated rice milling waste, T4= Diet with molasses treated rice milling waste, T5= Diet with poultry droppings treated rice milling waste, SEM= standard error mean, NS= Not significant.

Cost Benefit Analysis of Feeding Red Sokoto Bucks with Diets Containing Untreated and Treated Rice Milling Waste

Table 5 shows the cost benefit analysis of Red Sokoto bucks fed diets containing differently processed rice milling waste. The highest feed cost ₦ 119.83 per kg in this study was lower than ₦132.55 reported by Taiwo and Aye, (2013) for West African Dwarf goat fed *Moringa oleifera* and cotton seed cake as protein supplement. Aruwayo and Muhammad (2018) reported highest cost of feed/kg of ₦130.86 per kg for growth performance and economics of production of feeding Red Sokoto goats fed untreated and urea treated rice milling waste, which is higher than the cost reported in this study. It was also lower than 179.35 (₦/kg) reported by Abbas *et al.* (2008) who evaluated the economics of goat production with varying levels of groundnut haulm. The highest total feed

cost of ₦5340.60 recorded in this study was higher than ₦3256.37 to 3515.26 obtained by Aruwayo and Muhammad (2008). It was also higher than the value of ₦2584.3 to 3959.2 reported by Uguru and Ngalori (2019) for goat fed varying levels of cotton seed cake as replacement for groundnut cake. Lowest feed cost per kg gain of ₦ 943.57 per kg live weight gain in this study was lower than ₦1033.63 and ₦ 1123.63 reported by Sani *et al.* (2025). The highest feed cost per kg gain (₦1801.04) in this study was lower than ₦1942.40 reported by Aruwayo and Muhammad (2008) for growth performance and economics of production of feeding Red Sokoto goats fed untreated and urea treated rice milling waste. Beigh *et al.* (2017) observed that complete feeding system improves nutrient utilization that supports higher growth performance and reduces the cost/ kg live weight gain, thus is economical in comparison to conventional feeding system.

Deneji *et al.* (2010) reported higher total weight gain (TWG) and lower cost per kg gain in goat fed complete pellet.

Table 5. Cost Benefit Analysis of Feeding Red Sokoto Bucks with Diet Containing Differently Processed Rice Milling Waste

Parameters	Diets				
	1	2	3	4	5
Total feed consumed (kg)	40.13	39.54	43.39	44.08	44.83
Cost of feed (₦/kg)	119.83	118.43	117.46	118.33	119.13
Total feed cost (₦)	4808.78	4682.72	5096.59	5215.99	5340.60
Weight gain (kg)	2.67	3.66	4.67	4.67	5.66
Feed Cost/kg gain (₦)	1801.04	1279.43	1091.35	1116.91	943.57
Feed Cost Savings (₦)	-	521.61	709.69	684.13	857.47

T1=Diet with untreated rice milling waste, T2= Diet with water treated rice milling waste, T3= Diet with urea treated rice milling waste, T4= Diet with molasses treated rice milling waste, T5= Diet with poultry droppings treated rice milling waste

Conclusions and Recommendations

It is therefore concluded from the results of this study that growing Red Sokoto bucks fed diets with unprocessed and differently processed rice milling waste has no harmful effects on the feed intake, utilization, growth performance and haemato-biochemical parameters. It is therefore recommended to use treatment 5 which contain processed rice milling waste with 5% poultry dropping in feeding bucks.

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