Growth Performance and Carcass Characteristics of Growing Rabbits Fed Diets Containing Sweet Potato Tubermeal Supplemented with *Centrosema Pubenscens* Leaves

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Received:- 10 March 2025/ Revised:- 17 March 2025/ Accepted:- 24 March 2025/ Published: 31-03-2025

Abstract— *The study was carried out to determine the growth performance and carcass characteristics of growing rabbits fed diets containing waste sweet potato tuber meal supplemented with Centrosema pubenscens leaves. Sun-dried sweet potato waste tuber meal supplemented with Centrosema pubenscens leaves were used at various levels of 0%, 15%, 20% and 25% to determine the best replacement that would give optimum performance of growing rabbits. 16 growing rabbits of 3 months (12 weeks) of age were used for this experiment. They were divided into four treatment groups of 4 rabbits each. Each treatment was subdivided into two replicates of two rabbits each. Each replicate was housed in a cage. Each group was randomly assigned to experimental diet in a completely randomized design (CRD). Parameters measured were initial body weight, final body weight, body weight gain, feed intake, Feed conversion ratio (FCR), daily body weight gain, cost of production, internal organ weight, cut parts weight, dressed weight and percent dressed weight. Data collected were analyzed using one way Analysis of variance (ANOVA). In terms of daily feed intake, TMT 4 had the highest feed intake of 91.66g while TMT 3 had the lowest feed intake of (64.66g). The growing rabbits on TMT 4 (25% PWM) recorded significantly (P< 0.05) higher body weight gain than the other TMT groups while those in TMT 2 and TMT 3 recorded significantly low body weight gain. The growing rabbit in TMT 4 recorded the best feed conversion ratio of 4.45 which was significantly (P<0.05) better than the control TMT 2 and TMT 3 respectively. The significantly better feed conversion ratio for the rabbits in TMT 4 may be attributed to higher feed intake and high body weight gain of the rabbits. The values obtained for visceral organs (internal organs) varied (P < 0.05) with sweet potato waste meal supplemented with Centrosema pubenscens leaves inclusion in their diets. TMT 2 and TMT 1 (control) have the highest percent liver which was significantly (P <0.05) higher than other TMT groups. TMT 4 recorded the lowest kidney percent. However, heart, lungs and spleen of the growing rabbits did not show any significant difference (P > 0.05). The results of cut parts and organs obtained did not follow a definite pattern that can be attributed to treatment effects. This showed that the supplementation of sweet potato waste meal with Centrosema pubenscens leaves did not affect the development of certain body organs. The result of the carcass characteristics showed that the evaluated were significantly (P<0.05) influenced by dietary treatments. The live weights and eviscerated weight were highest in rabbits fed with 25% sweet potato waste meal supplemented with Centrosema pubenscens leaves. The cost/kg diet showed that the cheapest diet was diet 4 (₦212.48) while the costliest was the control diet (Diet 1). In terms of cost of production, the lowest cost was TMT 4 (25%SPTM) (₦886.04) while the costliest was TMT 1 (control) (₦3,471.44). The result of the study showed that sweet potato waste meal supplemented with Centrosema pubenscens leaves could be used up to 25% in the diets of growing rabbits without affecting body weight gain, feed intake and feed conversion ratio.*

Keywords— Growth performance, carcass characteristics, rabbits, sweet potato, centrosema leaves.

I. INTRODUCTION

Rabbits (*Oryctolagus cuniculus*) descended from wild rabbits found in the Mediterranean Countries and was introduced into England in the late Eleventh to early Twelfth Century. The Nigerian wild hares which are mostly grayish brown in colour are still very common.

The prolific nature of rabbits coupled with its short gestation period and generation interval, makes it the animal of choice for multiplication and a short way of increasing animal protein intake (Uchewa, Orogwu, & Nwakpu, 2014). Domestic rabbits are ubiquitous, providing protein, fibre, research models, and companionship.

Rabbit production presents a promising avenue for food security and income generation in developing countries, particularly due to its low capital requirement, rapid reproduction, and efficient feed conversion. However, feed cost often contributes significantly to rabbit production expenses, especially when relying on conventional commercial feed. Exploring readily available and cheaper alternative feed sources is crucial for sustainable and profitable rabbit farming (Akinmutimi, & Osuagwu, 2008).

The utilization of alternative feed resources for livestock production has gained significant attention due to the increasing demand for animal products and the need for sustainable agricultural practices. In rabbit husbandry, the quest for cost-effective and nutritionally balanced feed sources has led to the exploration of unconventional ingredients such as waste potato tuber meal supplemented with plant materials like *Centrocema pubens*.

II. MATERIALS AND METHODS

2.1 Experimental site:

This research was conducted at the Rabbitry unit of the Teaching and Research farm of Michael Okpara University of Agriculture, Umudike located on latitude 05°29'N and longitude 07°33'E. Umudike is on an elevation of 122 m above sea level and located in tropical rain-forest zone of Nigeria, which is characterized by annual rainfall of about 2177 mm; monthly ambient temperature ranges of 22-33°C and relative humidity of 50-95 **%** depending on the season.

2.2 Experimental animal and management:

A total of fourteen (14) Rabbit were purchased from reputable Rabbit Farms. Two weeks to the arrival of the Rabbit, the Rabbit Hutches were cleaned, disinfected and allowed to dry. On arrival, anti-stress preparations were administered to enable the rabbits recover from transportation stress. The Rabbits were isolated for a week before separating into Research treatments and replications. After Isolation, the rabbits were randomly assigned to Five (5) treatment with Two (2) replicates of two rabbit each and one (1) control. Antibiotics drugs were administered in water at relevant periods as a prophylactic measure. The experiment lasted for 9 weeks.

2.3 Procurement and processing of potato waste meal *Centrosema pubenscens* LEAVES AND other feed ingredients

The sweet potato wastes were collected from potato dealers at Ahia-eke market in Abia State. They were dried under the sun for one week before it was milled to sweet potato waste meal and bagged for use and also *C. pubescens* leaves were harvested from the school environment and wilted under room temperature. Other feed ingredients like palm kernel meal, maize, wheat offal, premix, salt, methionine, soybean meal, lysine, fish meal; bone meal were procured from Jocan livestock service, Umuahia.

2.4 Anti-Nutrition Determinations:

The test materials fresh and dried potato waste meal waste meal and *C. pubescens* leaves were analyzed for the anti-nutritional contents such as tannin, oxalate, phytic acid, saponins, alkaloids and flavonoids. Total oxalate was determined according to Association of Official Analytical Chemist (AOAC, 2005). Phytic acid was determined according to Maga (1982). Saponin was determined according to Brunner (1984). Tannin was determined using the spectrometric method of AOAC (2005). Alkaloids was determined according to Henry (1993) and Allen (1992) method. Flavonoids was determined according to spectrophotometric methods of Allen (1979). Phytates was estimated as phytic acid using Maga method (1982).

The anti-nutritional factors were analyzed for the presence of flavonoid, tannic acid, saponin and alkaloid with value ranging from 0.65 to 6.48%. Other anti-nutrients determined were cyanide, polyphenols, phytate and oxalate in *C. pubescens* leaves.

2.5 Chemical analysis of feed ingredients:

All the processed feed ingredients; sweet potato waste meal, palm kernel cake, wheat offals, soybean meal, fishmeal, *C. pubescens* leaves were subjected to proximate analysis according to (AOAC 1995) to determine their nutrient composition and gross energy. All analysis was based on 100% dry matter. This was done to use the value obtained to determine the nutrients

composition of experimental diets that were formulated from them. The components that were determined include dry matter (DM), crude protein (CP), Ether extracts (EE) and nitrogen free extract (NFE).

2.6 Experimental growing rabbit diets:

For growing rabbit, a control (Diet 1) based on maize as the major source of energy was formulated. Three other diets were formulated such that diet 2, 3 and 4 contained 15%, 20% and 25% of waste sweet potato tuber meal in the control diet (Table 1). The other dietary ingredients were varied in order to provide the required protein and energy for the growing rabbits. The following diets were produced and tested in the feeding trial.

TABLE 1
EXPERIMENTAL DIETS FOR GROWING RABBITS CONTAINING SWEET POTATO WASTE TUBER MEAL

Ingredients (%)	Diet 1 (Control)	Diet 2 15% (SPTM)	Diet 3 20% (SPTM)	Diet 4 25% (SPTM)
Maize	40	34	32	30
Waste potato tuber meal	0	6	8	10
Soybean meal	5	5	5	5
Palm kernel cake	13	13	13	13
Fish meal	3	3	3	3
Wheat offal	35	35	35	35
Bone meal	3	3	3	3
Premix	0.25	0.25	0.25	0.25
Lysine	0.25	0.25	0.25	0.25
Methionine	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25
Centrosema pubenscens	0	0	0	0
Total	**100**	**100**	**100**	**100**
Nutrient composition of the rabbit diets				
Crude protein (%)	16.95	16.67	16.57	16.48
Crude fibre (%)	5.27	5.25	5.25	5.2
Ether extract (%)	8.65	8.3	7.92	7.55
Ash (%)	2.28	2.29	2.3	2.25
Phosphorus (%)	1.63	1.6	1.57	1.54
Calcium (%)	1.65	1.64	1.64	1.64
ME Kcal/kg	3132.39	3113.54	3094.65	3079.23

Premix supplied per type kg diet: Vit. A, 10,000 IU; Vit. D 2,000,000 IU; Vit. E, 2,300 mg; Vit. K3 2,000 mg; Vit. B, 3,000 mg; Vit. B2, 6,000 mg; Niacin, 5,000 mg; Calcium, 800 mg; Panthotenate, 10,000 mg; Vit. B6, 5,000 mg; Vit B12, 250 mg; Folic acid, 100 mg; Biotin, 50 mg; Choline chloride, 40,000 mg; Selenium, 120 mg and Anti oxidant, 12,000 mg

2.7 Data collection:

Data was collected at both starter and finisher stages. The following parameters were measured on each strain:

2.7.1 Growth performance parameters :

The parameters measured are as follows:

Initial weight of the growing rabbit was taken at the beginning of the feeding trial and mean weight was taken on weekly basis. Feed intake was taken daily.

Daily feed intake = Feed offered – leftover

$$\text{Daily weight gain} = \frac{\text{Body weight change}}{\text{Number of days of feeding trial}}$$

$$\text{Feed conversion} = \frac{\text{Average daily feed intake}}{\text{Average daily weight gain}}$$

2.8 Carcass Analysis:

At the end of feeding trial, 2 rabbits per replicate was randomly selected, weighed and then starved overnight (24 hours) but water was provided. The fasted weight was recorded in the morning before slaughter. They were then slaughtered, dressed and weighed individually. Carcass analysis was carried out as described by (Blasco, et al, 1993). The animals were thoroughly bled by hanging head down through the hind legs on nail. Furs were removed by roasting to get the dressed weight. Then the carcass was dissected and the internal organs evacuated (to get the eviscerated weight). The carcass was then dissembled into wholesale cuts as described by (Akinmutimi and Anakebe, 2008) and each primal part (thighs, ribs, neck, forelimbs, hind limbs and back and loin) was weighed using a digital scale. The organ weights (lungs, stomach, heart, kidney, liver and intestine) were also taken. The cut-up parts and organs weight recorded were expressed as percentage of the dressed weight.

2.8.1 Organs and other visceral components:

The organs and other visceral components such as lungs, liver, kidneys, heart, intestine, caecum, and abdominal fat were removed from individual carcasses in all the treatment groups and weighed using electronic sensitive scale and were expressed as percentage (%) of the live weight.

2.8.2 Laboratory analysis:

The proximate analysis of the experimental diets was carried out at the Animal Science Department Laboratory to determine the dry matter, crude protein, nitrogen free extract, ether extract, and crude fibre using the procedure of AOAC (1995).

2.8.3 Statistical analysis:

The data collected was subjected to Analysis of Variance (ANOVA) in a Completely Randomized Design (CRD) as described by Steel and Torrie using Statistical Package for the Social Sciences (SPSS, 2003) version 23.0. Significantly different means was separated using Duncan's New Multiple Range Test (Duncan, 1955).

2.9 Experimental design

The experimental design was completely randomized design (CRD). The design model was:

$$Y_{ij} = \mu + T_i + e_{ij}$$

Where:

Y_{ij} = observation

μ = mean

T_i = effects of treatment

e_{ij} = error means

III. RESULTS AND DISCUSSION

3.1 Anti-nutrient composition of fresh (raw) and sun dried sweet potato waste tuber meal:

The result of the anti-nutrients of fresh and sun dried sweet potato waste tuber meal were shown in (Table 1a).

TABLE 1 (a)

ANTI-NUTRIENT COMPOSITION OF FRESH (RAW) AND SUNDRIED WASTE SWEET POTATO TUBERMEAL

Parameters	Fresh (Raw) Waste sweet potato tuber meal	Sundried waste sweet potato tuber meal
Tannin (mg/g)	1.62	1.6
Saponin (mg/g)	0.05	0.05
Alkaloids (mg/g)	4.86	4.75
Oxalate (mg/g)	0.45	0.45
Phytate (mg/g)	0.07	0.07
Flavonoid (mg/g)	1.06	1

The values of tannins (1.62 mg/g), saponin (0.05 mg/g), alkaloid (4.86 mg/g), oxalate (0.45 mg/g), phytate (0.07 mg/g) and flavonoid (1.06 mg/g) recorded in this study fall within the range reported by Akinmutimi (2004), Ameh (2010). Sun drying of sweet potato waste tuber meal helped to reduce the tannin, alkaloids and flavonoid as stated in (Table 1a). Sun drying of sweet potato waste meal was not effective for reducing saponin, oxalate and phytate content as stated in (Table 1a).

TABLE 1 (b)

PROXIMATE COMPOSITION OF FRESH (RAW) AND SUNDRIED SWEET POTATO WASTE TUBER MEAL

Parameters	Fresh (Raw) sweet potato waste tuber meal	Sundried sweet potato waste tuber meal
Dry matter (%)	61.25	88.75
Moisture (%)	38.75	11.25
Ash/Mineral (%)	4.6	6.26
Crude protein (%)	3.28	4.95
Ether extract (%)	0.6	0.82
Crude fibre (%)	1.17	2.64
Nitrogen Free Extract (%)	51.6	74.06
Metabolizable Energy (Kcal/kg)	2068.6	3013.59

The proximate composition of fresh and sundried sweet potato waste tuber meal is presented in (Table 1b). All the values obtained for crude protein, crude fat, moisture content, ash, nitrogen free extract and metabolizable energy fall within the range reported by Aduku (1993), Oyenuga (1968), Osuagwu (2006), Akinmutimi and Anakebe (2008), Ameh (2010), Solomon et al (2015), AOAC (2005), Ola and Oba (2004) and Anyegbu et al., (2021). Sun drying of the sweet potato waste tuber meal was effective for increasing the dry mater, ash/mineral, crude protein, ether extract, crude fibre, nitrogen free extract and metabolizable energy (Kcal/Kg) content of the test ingredients (Table 1b).

TABLE 1 (c)

PROXIMATE COMPOSITION OF FRESH *CENTROSEMA PUBENSCENS* LEAVES

Parameters	Fresh (*Centrosema pubenscens*)
Dry matter (%)	84.26
Moisture (%)	15.74
Ash/Mineral (%)	3.39
Crude protein (%)	23.08
Ether extract (%)	0.35
Crude fibre (%)	25.6
Nitrogen free extract (%)	31.84
Metabolizable energy (Kcal/kg)	3181.88

The proximate composition of ***Centrosema pubenscens*** leaves is shown in (Table 1c). The values obtained for crude protein, crude fibre, moisture content, ash and metabolizable energy fall within the ranges obtained by Aduku (1993), Obua et al (2012), Osakwe and Ekwe (2007), Adebayo et al (2019), Bamigboye and Oluwarinde (2017), Mecha and Adegbola (1980), Ikhimieya and Olaguiju (1996).

TABLE 2
PROXIMATE COMPOSITION OF THE EXPERIMENTAL GROWING RABBIT DIETS

Parameters	T_1 Control	T_2 15% SPTM	T_3 20% SPTM	T_4 25% SPTM	SEM
Dry matter (%)	91.86	91.79	91.76	91.71	0.03
Moisture (%)	8.14	8.21	8.24	8.29	0.03
Ash/Mineral (%)	6.24	7.85	8.56	9.51	0.68
Crude protein (%)	15.95	15.5	15.3	15	0.19
Ether extract (%)	4.05	3.86	3.82	3.75	0.64
Crude fibre (%)	8.28	8.94	9.65	10.39	0.45
Nitrogen Free Extract (%)	57.34	55.64	54.43	53.06	0.9
Metabolizable Energy (Kcal/kg)	2843.78	27843.78	2761.35	2728.43	2366.5

TABLE 3
PERFORMANCE OF THE GROWING RABBITS FED DIETS CONTAINING WASTE SWEET POTATO TUBER MEAL SUPPLEMENTED WITH *CENTROSEMA* LEAVES

Parameters	T_1 Control	T_2 15% SPTM	T_3 20% SPTM	T_4 25% SPTM	SEM
Initial body weight (kg)	0.7	0.6	0.87	0.55	0.07
Final Body weight (kg)	1.55^b	1.33^c	1.40^c	1.70^a	0.08
Body weight gain (kg)	0.85^b	0.73^b	0.53^c	1.15^a	0.12
Daily body weight gain (kg)	15.18^b	13.0^b	9.46^c	20.5^a	2.31
Daily feed intake (g)	83.58^b	72.00^c	64.66^c	91.66^a	5.99
Feed Conversion Ratio (FCR)	5.48^b	5.52^b	6.83^a	4.45^c	0.48

^{abc} ***means on the same row with different superscripts are significantly (P < 0.05) different***

The performance of growing rabbits fed sweet potato waste meal supplemented with ***Centrosema pubenscens*** leaves in their diets is shown in (Table 3).

3.2 Feed intake:

The daily feed intake of the experimental growing rabbit were 83.58g, 72.00g, 64.66g and 91.66g for treatment 1 (control), TMT 2, TMT 3 and TMT 4 respectively. Significant differences ($P < 0.05$) existed among the various TMT groups. Increasing the dietary inclusion of sweet potato waste tuber meal supplemented with ***Centrosema pubenscens*** from 15% to 25% did not significantly ($P > 0.05$) increase the body weight gain though the rabbits, from treatment 4 had consumed significantly ($P < 0.05$) more feed than those in the control treatment TMT 2 and TMT 3. Daily feed intake did not differ among the treatments, however TMT 4 had the highest daily feed intake of 91.66g and TMT 3 had lowest feed intake of (64.66g), this may be as a result of palatability of the experimental diet at 25% inclusion.

3.3 Body weight gain:

The body weight gain of the growing rabbits fed sweet potato waste tuber meal supplemented with ***Centrosema pubenscens*** leaves were 0.85g, 0.73g, 0.53g and 1.15g for TMT 1 (Control), TMT 2, TMT 3, and TMT 4 respectively. Significant differences ($P < 0.05$) existed among the various TMT groups in their body weight gain. The growing rabbits in TMT 4 (25%) was fed with sweet potato waste tuber meal supplemented with ***Centrosema*** leaves recorded significantly ($P < 0.05$) higher body weight gain more than those on the control diet, TMT 2 and TMT 3. The growing rabbits in TMT 2 and those in TMT 3 recorded significantly ($P < 0.05$) low body weight gain.

3.4 Feed Conversion Ratio (FCR):

The feed conversion ratio of the experimental growing rabbits were 5.48, 5.52, 6.83, 4.45 for the control (TMT 1), TMT 2, TMT 3, and TMT 4 respectively. Significant difference ($P < 0.05$) existed among the various TMT groups. The growing rabbits in TMT 4 recorded the best feed conversion ratio of 4.45, which was significantly ($P < 0.05$) better than the control TMT 2 and TMT 3 respectively. The significantly better feed conversion ratio for the rabbit in TMT 4 may be attributed to higher feed intake and higher weight gain of the rabbits.

3.5 Percentage of cut parts weights of growing rabbits fed sweet potato waste tuber meal supplemented with *Centrosema pubenscens* leaves in their diets

TABLE 4
PERCENTAGE OF CUT PARTS WEIGHTS OF THE GROWING RABBITS FED EXPERIMENTAL DIETS CONTAINING SWEET POTATO WASTE TUBER MEAL SUPPLEMENTED WITH *CENTROCEMA PUBENSCENS* LEAVES

Parameters	T_1 Control	T_2 15% SPTM	T_3 20% SPTM	T_4 25% SPTM	SEM
Live weight (kg)	1.65^{c}	1.05^{b}	0.90^{ab}	1.62^{b}	0.19
Dead weight (%)	97^{b}	95.2^{a}	94.4^{ab}	95.7^{c}	0.54
Defurred weight (%)	90.9^{c}	90.5^{b}	88.9^{a}	74.1^{ab}	4.02
Fur (%)	1.45^{a}	1.24^{c}	1.56^{ab}	1.54^{a}	0.07
Head (%)	9.7^{a}	10.9^{b}	9.67^{ab}	9.38^{b}	0.33
Drum Stick (%)	3.2^{a}	8.57^{b}	3.11^{a}	2.41^{b}	1.42
Thigh (%)	9.69	3.05	10.2	9.32	1.68
Hind (Fore) (%)	188^{b}	1.43^{ab}	1.67^{a}	1.4^{b}	46.62
Ribs (%)	9.1^{a}	7.14^{c}	9.8^{a}	8.5^{c}	0.56
Back cut (%)	18.1^{ab}	1.64^{c}	14^{c}	16.2^{a}	3.71
Shoulder (%)	6.24^{a}	5.90^{a}	5.8^{a}	7.5^{c}	0.39
Hind (Leg) (%)	1.45^{a}	1.62^{b}	1.8^{c}	1.3^{c}	0.1

^{abc} means on the same row with different superscripts are significantly ($P < 0.05$) different

The results of the effect of the graded levels of sweet potato waste tuber meal supplemented with *Centrocema pubenscens* leaves on the carcass characteristics, major cuts and organs of the growing rabbits were shown in Table 4. The results showed that carcass characteristics evaluated were significantly ($P < 0.05$) influenced by dietary treatments. The live weight was highest in rabbits fed diet with 25% SPWM supplemented with *Centrocema pubenscens* leaves in their diets. This result was not unexpected since the average daily weight gain of rabbits in this treatment was comparatively higher than those in other dietary groups.

The cut parts (fore limbs, hind limbs, thigh and head) varied ($P < 0.05$) across treatments (Table 4). There were significant differences ($P < 0.05$) on head and thigh weights of rabbits, however, the highest head (10.9%) and thigh (10.2%) was recorded for rabbits in (TMT 2 and TMT 3) respectively. The highest fore limb (188%), back cut (18.1%) was recorded on TMT 1 (control).

3.6 Percentage of internal organs of experimental rabbits fed sweet potato waste tuber meal supplemented with *Centrosema pubenscens* leaves in their diets

TABLE 5
INTERNAL ORGAN WEIGHTS OF THE GROWING RABBITS FED EXPERIMENTAL DIETS CONTAINING SWEET POTATO WASTE TUBER MEAL SUPPLEMENTED WITH *CENTROSEMA PUBENSCENS* LEAVES

Parameters	T_1 Control	T_2 15% SPTM	T_3 20% SPTM	T_4 25% SPTM	SEM
Dressed weight (kg)	1.00^{a}	0.53^{b}	0.80^{a}	1.20^{b}	0.14
Heart (%)	0.3^{a}	0.6^{b}	0.25^{b}	0.42^{ab}	0.07
Liver (%)	4^{a}	4.7^{b}	2.1^{b}	3.7^{c}	0.54
Spleen (%)	0.1^{a}	0.2^{b}	0.1^{ab}	0.1^{a}	0.02
Lung (%)	1.1^{b}	1.32^{ab}	1.5^{c}	1.3^{a}	0.81
Kidney (%)	1.2^{c}	1.5^{a}	0.9^{ab}	0.8^{b}	0.15
Bile (%)	0.1^{a}	0.2^{b}	0.3^{c}	0.1^{b}	0.04
Abdominal fat (%)	0.2^{a}	0.2^{c}	0.3^{b}	0.8^{ab}	0.14
Large intestine (%)	9.9^{a}	22.1^{c}	4.1^{b}	1.1^{ab}	4.64
Small intestine (%)	20.2^{a}	21.1^{c}	9.8^{b}	14.5^{b}	2.64

^{abc} means within the same row with different superscripts are significantly (P < 0.05) different.
SEM = Standard Error Mean

The values obtained for visceral organs (internal organs) in Table 5 varied ($P < 0.05$) with sweet potato waste tuber meal supplemented with *Centrocema pubenscens* inclusion in their diets. TMT 1 (Control) and TMT 2 had the highest percentage on liver significantly ($P < 0.05$) higher than other TMT groups. TMT 4 recorded the lowest kidney percent (0.8%). However, heart, lungs and spleen of the growing rabbits did not show any significant differences ($P > 0.05$). The results of cut parts and organs obtained did not follow a definite pattern that can be attributed to treatment effect. This shows that the supplementation of sweet potato waste meal with *Centrocema pubenscens* leaves did not affect the development of certain body organs

3.7 Cost Benefit Analysis of Experimental Growing Rabbits

TABLE 6
COST BENEFIT ANALYSIS OF EXPERIMENTAL GROWING RABBITS FED WITH SWEET POTATO WASTE TUBER MEAL LEAF MEAL DIET CONTAINING *CENTROCEMA PUBENSCENS* LEAVES

Parameters	T_1 Control	T_2 15% SPTM	T_3 20% SPTM	T_4 25% SPTM
Cost/kg diet (₦)	370.88	327.68	356.48	212.48
Cost of feed consumed (₦)	4,636	4,096.00	4,456.00	2,656.00
Cost/kg weight gain (₦)	26,491.43	11,702.86	11,882.67	4,283.87
Cost of production (₦)	3,471.44	2907.74	1,226.26	886.04

The economics of production of the experimental diets was shown in (Table 6). The cost/kg diet were ₦370.88, ₦327.68, ₦356.48, ₦212.48 for the control diet, diet 2, diet 3 and diet 4 respectively. The cheapest diet was diet 4, while the costliest was the control diet. In term of the cost of production, the cost of production ₦/growing rabbit was lowest for those on diet 4 (25% SPTM) (₦886.04) while those on diet 1 (control) (₦3,471.44) was the costliest.

IV. CONCLUSION

The result of the study showed that sun-drying of sweet potato waste tuber meal (*Ipomea batatas*) was not effective for removing the anti-nutrients in the dried samples. Sundried potato waste meal supplemented with *Centrosema pubenscens* leaves could be used up to 25% in the diet of growing rabbits without affecting body weight gain, feed intake and feed

conversion ratio. Based on the result of the study it was therefore recommended that sundried potato waste tuber meal supplemented with *Centrocema pubenscens* leaf meal could be used up to 25% in the diet of growing rabbits for optimum performance.

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