

PERFORMANCE OF WEST AFRICAN DWARF RAMS FED *Panicum maximum* AND *Tridax procumbens* SUPPLEMENTED WITH *Cajanus cajan* LEAVES

Adebisi I. A., Adams T. O., Ajibike A. B.*, Amusa H. O., Oladepo O., Mustapha T. B.

Department of Animal Health and Production, Oyo State College of Agriculture and Technology, P. M. B 10, Igboora, Oyo State, Nigeria

*beeholla3003@yahoo.com; +234-803-040-5964

Abstract

An experiment was carried out to investigate the performance of West African Dwarf growing rams fed mixture of *Panicum maximum* and *Tridax procumbens* supplemented with *Cajanus cajan* leaves for 56 days feeding trial at the Teaching and Research Farm, Oyo State College of Agriculture and Technology, Igbo-ora, Nigeria. A total of twelve (12) WAD rams were randomly allocated to three treatments with four animals per treatment while two animals served as replicate. The experimental diet was fed at 3% body weight of individual animals while *Cajanus cajan* leaves supplemented at varied inclusion levels. The results revealed that animals fed T₁ recorded the least weight gain (36.96g/day) while the highest weight gain (56.42g/day) was recorded for T₃. The daily weight gain of animals was significantly different across all treatments ($P < 0.05$). The highest DMI (18.30kg) was recorded on the T₁, and the least value of DMI (17.40kg) was recorded in T₃. The highest feed efficiency ratio (0.18) and the lowest value (0.11) were observed in animals fed T₁ and T₃ diet respectively. It can be concluded that *Cajanus cajan* leaves has a good nutrient profile which can be supplemented with mixture of *Tridax procumbens* and *Panicum maximum* for feeding small ruminant animals.

Keywords: *Panicum maximum*, *Tridax procumbens*, *Cajanus cajan* leaves, WAD Rams, Performance characteristics.

Introduction

Ruminant animals rely on pasture for their nutrition than any other feed resources (Aderinola *et al.*, 2008), and plays significant role in provision of food especially meat which is about 35% of the national meat consumption in Nigeria. Over the years, there has been a great increase in the production of sheep in Nigeria in order to meet the demand of the teeming population with the indigenous breeds of sheep kept for meat production in Nigeria. West African Dwarf (WAD) sheep is the most prominent sheep breed throughout the Nigerian ecological zones particularly tropics, humid, guinea and sudan savannah vegetation belts. Sheep is a group of animal called ruminant Animal due to their stomach structure i.e. Compartmentalized stomach, which is made up of rumen; reticulum, omasum, abomasums and they regurgitate grazing (Akinyosoye and Mason 1991). Pigeon pea (*Cajanus cajan*) plays an important role in food security, balanced diet and alleviation of poverty because it can be used in diverse ways as a source of food, Feed, fodder. *Panicum maximum* (Guinea grass, common guinea, local panic) a perennial, tufted or bunch and tall (1.0-4.5m) grass spreads by short rhizomes or rootstocks from which tillers emerge freely. The leaves are long and broad with varying degrees of hairiness. The inflorescence is along panicle on which seeds ripen unevenly and excessive seed loss often occurs due to Seed shedding and bird damage (Aganga and

Tshwenyane, 2004). The grass is leafy and palatable to grazing Livestock. *Panicum maximum* is abundantly in the tropics and sub-tropics and best where temperatures are high and rainfall low (FAO, 2003). The dry matter and crude protein yields are high and largely depend on the level of nitrogen fertilizer applied. However, *Panicum maximum* is drought resistant and adapts to annual rainfall ranging from 600-1780mm. It tolerant a wide variety of soils from deep sands to heavy, cracking clays *Tridax procumbens* is known for several potential therapeutic activities like anti-viral, anti-oxidant, antibiotic efficacies, wound healing, insecticidal and inflammatory activity.

Materials and Methods

Experimental Site and animals

The experiment was carried out at the Sheep and Goat Unit, Teaching and Research Farm, Oyo State College of Agriculture and Technology, Igboora. Twelve (12) weaner West African Dwarf rams weighing between 7.00 - 10.00kg were used. The animals were acclimatized for two weeks and treated against ectoparasites and endoparasites prior to the commencement of the experiment.

Experimental layout, Design and feeding method

The animals were allocated by weight into three treatments of four rams per treatment and two animals as a replicate in a completely randomized

design (CRD). The experimental diets were: T₁ (100% *Cajanus cajan* leaves), T₂ (40% *Panicum maximum* and 60% *Cajanus cajan* leaves with no *Tridax procumbens*) and T₃ (40% *Tridax procumbens*, and 60% *Cajanus cajan* leaves with no *Panicum maximum*). Each group of animals was assigned to an experimental diet, and were fed *ad libitum* while fresh water was made available.

Data Collection and Analysis

Adjustment period of one week was allowed

before data collection commenced. Dry Matter Intake (DMI), the mean initial body weight, weekly body weight, feed intake, feed efficiency and conversion ratio were calculated. Data obtained were subjected to one-way analysis of variance (SAS, 1999). Mean value variance showing significant ($p < 0.05$) difference were separated using Duncan's Multiple Range Test (Duncan, 1955).

Table 1: Experimental Diet Composition (%)

Forage	T ₁	T ₂	T ₃
<i>Cajanus cajan</i>	100.00	60.00	60.00
<i>Tridax procumbens</i>	0.00	40.00	0.00
<i>Panicum maximum</i>	0.00	0.00	40.00
Total	100.00	100.00	100.00

Table 2: Chemical composition of *Cajanus cajan* leaves, *Tridax procumbens* and *Panicum maximum* (%)

Parameters	<i>Cajanus cajan</i> leaves	<i>Tridax procumbens</i>	<i>Panicum maximum</i>
Dry matter	86.60	9.95	32.80
Crude protein	19.00	3.44	5.30
Ether extract	1.70	0.92	2.90
Crude fiber	9.80	0.60	22.20
Ash	3.90	0.20	3.30
Nitrogen free extract	51.20	84.89	66.00
Gross Energy (Kcal/kg)	3252.34	336.83	4223.06

Results and Discussion

The performance summary of weaner West African Dwarf rams fed *Panicum maximum* and *Tridax procumbens* supplemented with *Cajanus cajan* leaves were shown in Table 3. The highest average weight gain of 3.16kg was recorded in T₃, while the lowest value (2.07kg) was observed in T₁. The highest daily weight gain (56.42g/d) and feed efficiency ratio (0.18) was observed in T₃, this might be attributed to the high palatability, dry matter and protein intake that improve the digestibility of the diet while the lowest value of daily weight gain (36.96g/d) and feed efficiency ratio (0.11) was observed in T₁. This observation might be due to the dependent of weight gain on

dry matter, protein intake and digestibility of the nutrients fed to the animal.

The analysis showed that there was statistical differences in the dry matter intake (DMI) and Feed conversion ratio (FCR) of the three diets ($p < 0.05$) with T₁ having the highest dry matter intake (18.30kg) and feed conversion ratio (8.84) which could be to the protein quality of the *Cajanus cajan* leaves supplement which tends to enhanced the DMI intake (Babayemi and Bamikole, 2006) as well as the stimulating effect associated with supplementation of green feed (Taiwo *et al.*, 1995) while the lowest DMI value (17.40kg) and FCR (5.51) was observed in T₃. The highest DMI with T₁ was an evidence of high palatability and acceptability of it to the experimental animal.

Table 3: Performance of weaner West African dwarf rams fed *Panicum maximum* and *Tridax procumbens* supplemented with *Cajanus cajan* leaves

Parameters	T ₁	T ₂	T ₃	SEM
Average initial weight (kg)	12.20 ^a	12.20 ^a	12.18 ^b	0.02
Average final weight (kg)	14.27 ^c	14.92 ^b	15.34 ^a	0.20
Average weight gain (kg)	2.07 ^c	2.68 ^b	3.16 ^a	0.20
Daily weight gain (g/day)	36.96 ^c	47.85 ^b	56.42 ^a	3.56
Dry matter intake	18.30 ^a	17.60 ^b	17.40 ^c	0.17
Feed conversion ratio	8.84 ^a	6.56 ^b	5.51 ^c	0.62
Feed efficiency ratio	0.11 ^c	0.15 ^b	0.18 ^a	0.01

^{a b c} Means on the same row with different superscript are significantly different ($P < 0.05$).

Conclusion

Findings in this study revealed that *Cajanus cajan* leaves has a good nutrient profile which can be supplemented with mixture of *Tridax procumbens* and *Panicum maximum* for feeding small ruminant animals. The results also showed that *Cajanus cajan* leaves are palatable and acceptable to (WAD) sheep when fed as supplement to *Tridax procumbens* and *Panicum maximum* can further enhanced their dry matter intake and higher growth rate. Hence, it could be incorporated into diets of WAD sheep to solve the problems of inadequate nutrients due to shortage of feed during the prolong dry season faced by small ruminant farmers.

Recommendation

Based on the result of this research, it could be recommended that *Cajanus cajan* leaves, *Tridax procumbens* and *Panicum maximum* could be incorporated into the diet of WAD sheep at 60% *Cajanus cajan* leaves, 40% *Panicum maximum* and 0% *Tridax procumbens* in terms of feed utilization as supplement and basal diets for WAD sheep particularly during the period of scarcity. To alleviate the body weight loses that are usually experienced during the dry period.

References

Aderinola, O. A., Akinlade, J. A., Rafiu, T. A. and Fajimi, T. 2008. Feed intake, digestibility and nitrogen balance of West African Dwarf Sheep and Goat fed

Vetiveria nigritana grass. Proceeding of the 32nd annual conference of the Nigeria society for Animal Production, Calabar. March 21. Pg: 310-312

Akinyosoye, V. O. 1998. Tropical Agriculture. Macmillan Publisher Limited.

Aganga, A. A. and Tshwenyane. 2004. Potentials of guinea grass (*Panicum maximum*) as forage crop in livestock production. *Pakistan Journal of Nutrition* 3(1): 1-4

Babayemi, O. J. and Bamikole M. A 2006. Supplementary values of *tephrosia bracteolate*, *tephrosia candida*, *leucocena leucocephala* and *gliricidia sepium* for wad goats kept on *panicum maximum*. *Journal of Central European Agriculture* 2:32

Duncan, D. B. 1955. Multiple ranges and multiple F-test. *Biometrics* 11: 1-420

F A O . 2 0 0 3 .
<http://www.fao.org/ag/agap/frg/AFRIS/DATA/188.hmt>. Assessed on 21st July, 2015

SAS. 1999. SAS/STAT User Guide version 8 for Windows. SAS Institute, Cary, North Carolina, USA

Taiwo, A. A., Adebawale, E. A., Akinsoyinu, A. O. and Green haulgh, J. F. D. 1995. Comparative Study on the use of four protein supplements by West African Dwarf (WAD) Sheep. *Nig. J. of Anim. Prod.* 22 (1/2): 68-75