

PERFORMANCE CHARACTERISTICS OF AFRICAN DWARF GOAT FED POULTRY FEACES AND WATER FROM FISH POND

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Abstract

An experiment was performed at the Agricultural garden of Kwara State Polytechnic, Ilorin by feeding African dwarf goat with poultry feaces (guano) In order to reduce the cost of feeding and then reduce the scarcity of feed (fodder) during the dry season. About forty-five (45) West African Dwarf goat (WAD) was used for this experiment. Each treatment contains five WAD goat with three females and two male and was replicated three times, they were fed grasses in the morning, poultry feaces in the evening took waste fish pond water T1, while the second treatment with five WAD replicated three times were fed only with poultry feaces and fish pond waste water all through T2 while the third group with five WAD and replicated three times were fed with only grasses and ordinary water all throughout the experiment T0. The experiment lasted six months (24 weeks). The health status of the WAD was monitored while data on their feed intake, weight gain and feed to weight gain was taken for onward analysis. Data collected was analyzed and it was found that the those that were fed mixture of grasses and poultry feaces T1 had no significant difference ($P>0.05$) between their weight gain and feed to weight gain when compared with T2 but T2 consumed more than T1 ($P<0.05$) and but the WAD of T2 was diagnosed with bloat throughout the experiment making them not active. The feed intake, weight gain and feed to weight gain of the control T0 was nothing to compared to those of T1 and T2. Therefore, it was concluded that the mixture of feeding grasses in the morning and feeding with poultry feaces in the evening T1 is recommended as the grasses fed in the morning will neutralize the effect likelihood of bloat

Introduction

Goats are the most important domesticated small ruminants with a population of about 53.8 million in Nigeria (FAOSTAT, 2009). The flock size is small and the main breeds are the West African Dwarf (WAD) goat, Red Sokoto (RS) or Maradi and the Sahel. These breeds are mainly meat producers and are well adapted to humid tropical zone of West Africa with inherent trait of being trypano-tolerant. With the increasing awareness of the nutritional, health and therapeutic benefits of goat milk (Ribeiro and Ribeiro, 2010), the demand for goat milk and its products is yet to be met in developing countries like Nigeria. The potentials and values of Nigerian indigenous breeds, especially WAD dams, for milk production has begun to be investigated (James et al., 2009; James et al., 2010). For optimal milk llection, kids are weaned early, at about 2 weeks of age (Shittu et al., 2011), or separated from their dams for some period of time (Egbowon et al., 2007). This demand keeps increasing as a result of continuous increase in human population and WAD is one of the livestock that was expected to supply the necessary animal protein after broiler chicken Lawal et al (2023).

The major problem faced by farmers is not only the supply of fooder during the dry season Adijaya et al 2009but also production and consumption of concentrate to supply the necessary substance that will support the growth of WAD, in this manner consumption of grasses and concentrate will help better development of the animals as compared to those fed only grasses. The concentrate can also be fed when dissolved in water like the waste water of the fish pond, the fish pond water contain some feed dissolved in it because not all the feed given to the fishes is completely consumed, the more the feed stays before consumption the more they tend to dissolve in the water as fish

pond waste water, this could be used to feed WAD or plant vegetable instead of making it to constitute nuisance in the environment, it could even be tried on broiler bird Lawal et. al., (2023).

Poultry is the foremost developing segment of the agricultural sector in India. Globally, India ranked 3rd in egg production (66.45 billions) and 5th in chicken production (3.6 Mt) in the year 2011-12. This increase in poultry production has enhanced the per capital availability to 55 eggs and 2.4 kg poultry meat per annum (Economic Survey, 2012-13). In spite of having huge potential for backyard poultry production, however, this research work is designed to investigate the effect of fish pond waste water on WAD. The problem of low animal protein consumption in Nigeria has been channeled down to the insufficiency in livestock production in the tropics. This constraint is responsible for the existing high price of animal products which make them out of reach to the average Nigerian. One of the ways forward with this challenge is by directing efforts at promoting and encouraging ruminant livestock production. Goat production has been considered as a valuable small ruminant enterprise with the potential of meeting world's increasing demand for animal protein in less developed countries (Okunade ., 2014). However, goat production in Nigeria suffers from serious shortage of feeds particularly during the dry season where the quantities available are limited. The quality of pasture is poor and their nutrients are not enough to cover maintenance and productive requirement of goats (Onyeonagu ., 2011). This situation is further aggravated by overgrazing in most areas where pastures are feedstuffs. Hence, goat farmers in Nigeria have faced a lot of challenges in generating income from their stock, due to slow growth rate and unstable weight gain related to seasonal imbalance of feeds (Okoruwa and Bamigboye, 2015). The dearth of adequate forage supply to meet the nutrient requirement of goats particularly during the dry season coupled with the high cost of feedstuffs have led to the search for shrubs and tree foliages which could be used as cheaper available alternative supplements to grasses (Okoruwa ., 2016). and are common to forest areas with high potential for the production of browse for ruminants (Ikhimioya and Imasuen, 2007).

Ruminant production remains a significant sector contributing greatly to the animal protein sources in the diets of humans. However, the productivity of West African Dwarf (WAD) goats, which are a vital source of meat and milk for smallholder farmers in West Africa, is constrained by limited quality and quantity of feed (Ofori and Hagan, 2021), particularly during the dry season when pasture supply is scanty, resulting in poor nutrition and reduced optimal performance (Omotoso et al 2023). Crop residues after crop harvest are cheap, readily available throughout the year and therefore can be considered as alternative feed material in ruminants' nutrition to ease off feed scarcity and inadequate nutrition commonly observed during the dry season and can be used as a substitute for expensive concentrate/convectional feedstuff (Okoli, 2020a). Cassava peel has been widely used as a feed ingredient with higher energy but low protein concentration (Okoli, 2020b). Cowpea haulms are postharvest residues regarded as nuisance/waste by crop farmers after dehulling and are burnt off on the farmland contributing significantly to global warming and environmental pollution. Meanwhile, these cowpea haulms are protein-rich feed material, being a leguminous plant and could easily be complement energy-rich feed material, even without subjecting to further process like ensiling, for improved small ruminant production by peasant farmers. Due to the nature of their stomach, ruminants show improved performance when energy and protein-rich diets are strategically integrated for feeding (Omotoso et al 2023). By harnessing these resources, the productivity of WAD goats can be improved, contributing to the rise in animal protein supply and enhancing food security, especially in the sub-Saharan Africa. Therefore, this study was conducted to evaluate the dietary effect of substituting cassava peel with cowpea haulms on nutrient intake and growth performance of West African Dwarf (WAD) goats.

Justification

- i-Fish pond waste water causes nuisance to the environment, but if put in use it will reduce or completely eradicate the nuisance
- ii-The waste water is readily available

Objectives of the study

- i-Feed Fish pond waste water to WAD
- ii-Investigate the effect of fish pond waste water on WAD by taking date on performance characteristics of WAD.

Material and Methods

The experiment was carried out in the teaching and research farm of the Kwara State Polytechnic in Ilorin. About forty five (45) West African Dwarf goat (WAD) was used for this experiment. Each treatment contains five WAD goat with three females and two male and was replicated three times, they were fed grasses in the morning, poultry faeces in the evening took waste fish pond water T1, while the second treatment with five WAD replicated three times were fed only with poultry faeces and fish pond waste water all through T2 while the third group with five WAD and replicated three times were fed with only grasses and ordinary water all throughout the experiment T0. The experiment lasted six month (24 weeks). The health status of the WAD was monitored while data on their feed intake, weight gain and feed to weight gain was taken for onward analysis. Data collected was analyzed. Data collected was analyzed using SAS 2012 version.

Result and Discussion

Table 1 shows the performance characteristics of West African dwarf goat (WAD) fed poultry faeces and fish pond water waste, the fish pond water contains dissolved fish feed which the WAD can make use of to improve their performance while the poultry faeces contains ammonia that can be processed into protein in the rumen. After 6 month of intensive feeding in the experiment, it was found that the those that were fed mixture of grasses and poultry faeces T1 had no significant difference ($P>0.05$) in their feed intake and feed to weight gain when compared with T2 but the weight gain of T2 is better than that T1 ($P<0.05$) and the WAD of T2 was diagnosed with bloat throughout the experiment making the not active. The feed intake, weight gain and feed to weight gain of the control T0 was nothing to compared to those of T1 and T2. Therefore, it was concluded that the mixture of feeding grasses in the morning and feeding with poultry faeces in the evening is recommended as the grasses fed in the morning will neutralize the effect likelihood of bloat

Table 1: Performance of West African Dwarf goa fed poultry faeces waste and fish pond water

Parameter	Diet		
	T ₀	T ₁	T ₂
Feed intake	11.84 ^b	15.11 ^a	15.37 ^a
Faecal nitrogen	5.69 ^b	6.99 ^a	7.77 ^a
Urinary nitrogen	0.78 ^a	0.6 ^b	0.66 ^a
Nitrogen balance	5.37 ^b	7.02 ^a	7.14 ^a
Initial weight	13.85	13.81	13.85
Final weight	14.50 ^c	17.61 ^a	18.75 ^a
Daily weight gain	42.06 ^b	62.00 ^a	61.90 ^a
Feed/gain ratio	10.77 ^a	8.11 ^b	8.52 ^b

abc = means on the same column with different superscripts are significantly varied ($P < 0.05$)

Conclusion and Recommendations

Conclusion

- i Poultry faeces is not poisonous to WAD
- ii Fish pond wastewater is not poisonous to WAD
- ii Feeding ruminant animals with poultry faeces will reduce the cost of feeding them
- iii The ammonia contained in poultry faeces is used in production of protein by microorganism in the rumen, the protein assists the ruminant animals to grow

Recommendations

Poultry faeces and fish pond water contains a significant amount of useful nutrients that can be processed and made use of again in Agriculture apart from using it to plant vegetables and feeding it to ruminant animals

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