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Original article

The use of poultry litter as a replacement of cotton seed cake used in feeding Yankasa sheep

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ABSTRACT

Twelve Yankasa sheep were fed three treatment diets for 56 days to study the effect of supplementation on their feed intake, water intake and weight changes before grazing. Before the commencement of the experiment the proximate composition of the experimental diet was determine which revealed that the composition of the diet is adequate for production. The supplement was poultry litter, while the other ingredient where molasses, cotton seed cake maize offal. Daily feed intakes and weight gain changes and level of water intake were examined. The result revealed that the daily weight gain feed intake, water intake of the supplemental group was highly ($P<0.05$) significant.

1. Introduction

Traditionally, farmers have been using cottonseed cake (CSC) as a source of vegetable protein in livestock feeding. Due to its limited supply, the cost of CSC has increased. Hence, there is a need for replacing CSC with some other local protein sources to release the pressure on this product. The productivity of livestock in terms of milk yield or the annual red meat off-take from an animal unit in Africa including Egypt is considerably low, when compared to other developed countries. Poor nutrition, both in quantity and quality and poor reproductive performances are recognized as major factors limiting animal production. There are specific practices that should

be undertaken in order to properly maintain litter and maximize the health and productivity of the flocks raised on it. Factors to be considered in a successful litter management includes time of the year, depth of the litter, floor space per bird, feeding practices, disease, kind of floor, ventilation, watering devices, litter amendments, and the potential fertilizer value of the litter after it is removed from the house. In addition cottonseed meal, which is the main source of protein concentrate feed mixtures in the country, is in short supply. Improved feeding systems based on supplementation of locally available feed resources will enhance milk and meat production at a considerably low cost and partially fill the gap in protein and energy Shortages.

The approach in the use of poultry waste as a constituent in ruminant rations was Motivated by the shift of the poultry industry from extensive to intensive system of Production. This lead to a significant increase in the production of poultry wastes (PW). The amount of collectable poultry waste was found to be 750 000 tons/year during the last five years. The poultry waste is rich in protein (about 25% protein equivalent), Total Digestible Nutrients (TDN) (about 50%) as well as minerals. Although poultry waste is mainly used as a fertilizer, it has been shown to be a potential source of both nitrogen and energy for ruminants in providing low-cost fee Component

Poultry litter has traditionally being used efficiently as a fertilizer; it is now also used as a cost saving livestock feed supplement for ruminants especially cattle, goats and sheep (Adegbola et. al; 2010). It is high in urea, a source of nitrogen, which improves the rumen environment making feed more efficiently utilized and the animal better nourished with whatever feed that is made available(Adegbola et. al.,2010).Uric acid which is a major content of poultry waste can be utilized by rumen microbes for protein production as it is not easily dissolved in the rumen fluid and the ammonia is only slowly released making it more efficiently utilized than other non- protein nitrogenous sources (Adel- Baset and Abbas, 2010). Poultry waste has been successfully used in ruminant rations in Egypt. The total bacterial count was considerably lower in sun dried poultry waste compared to the oven dried waste. Aflatoxins were not detectable in the concentrate mixtures containing poultry litter. The cost of using cotton seed as compared to poultry litter has been documented by several authors. Thus, agricultural products such as cotton have become expensive and scarce (Abubaker et al., 2010). It has therefore become vital to source for other unconventional nutrient- rich sources that could be used as alternate feed sources for small ruminants, of lesser cost and readily available.

2. Materials and methods

2.1. Study site

The experiment was conducted at the Adamawa State University, Teaching and Research livestock farm as described in (Adebayo, 2004).

2.2. Experimental diet

The experimental diets are maize offal, cotton seed cake, molasses, poultry litter.

2.3. Chemical analysis

Proximate composition of the diet was determined, as described by the Standard method of the Association of Official Analytical Chemists (AOAC, 2004).

2.4. Data collection

Data on feed intake, water intake and weight gain was taken.

2.5. Experimental design

The experimental design was a completely randomized design (CRD) with three treatments and four replicates.

2.6. Statistical analysis

The data collected was subjected to analysis of variance (ANOVA) using the general linear model (GLM) procedure as outlined by (Steel and Torrie, 1990). Significant differences among means were separated using the Duncan's multiple Range test (DMRT).

2.7. Treatment of poultry litter

the poultry litter was simply sundried to reduce moisture content in the poultry litter making it healthy for consumption.

2.8. Source

The poultry litter was gotten from broiler under intensive system of production where by the bird are kept in battery cage this allows easy dropping of the feces on the bedding material.

Table1
Composition of the experimental diet.

Ingredient	T1	T2	T3
Maize offal	65%	65%	65%
Cotton seed cake	25%	10%	5%
Poultry litter	-	15%	20%
Molasses	10%	10%	10%
Total %	100%	100%	100%

3. Results and discussion

3.1. Chemical composition of the experimental

The chemical composition of poultry litter diet is presented in Table 2. The result revealed that the dry matter (DM) content of 93.00%, crude protein of 18.90%, Ether Extract of 1.50%, crude fibre of 13.00% Ash of 31.00% N.FE 40.5%

Table 2
Proximate composition of poultry litter.

Parameter	composition
DM %	93.00
Ash %	31.00
CP %	18.90
CF %	13.00
N.FE %	40.5
EE %	1.50

3.2. Weight gain of Yankasa sheep

The weight gain of yankasa sheep supplemented with poultry litter is presented in Table 3.

Table 3
Average weekly weight gain/kg.

Treatment	Initials	1	2	3	4	5	6	7	8
T_1	13	13.2	13.9	14.5	14.8	15.2	15.5	15.8	15.9
T_2	12.5	12.9	13.6	13.8	14.2	14.4	14.6	14.7	14.8
T_3	13.2	13.8	14.1	14.7	15.1	15.4	15.6	15.7	15.9

The treatment mean for daily weight gain of yankasa sheep were 14.850/day, 14.125g/day, and 15.088g/day for treatment 1, 2, and 3 respectively. There is significant difference ($P<0.05$) between treatment one T_1 and T_2, this might be due to the increase in level of supplementation. The mean daily weight gain (DWG) of animals in the study 14.850g/day, 14.125g/day and 15.088g /day for treatment 1, 2 and 3 respectively means that all the animals gained weight, with the highest value obtained in treatment 3. This shows that the intake of protein and energy was well above maintenances requirement. Supplementation with the mixture of poultry litter, maize offal, cottonseed cake and molasses indicate significant influence ($P<0.05$) on the daily weight of animals. The result of

daily weight gain obtained in this study is in line with the report of Flachowsky (1985), on the other hand the weight gain of ewes receiving 30% was lower than the other animals. This is in contrast with the present study where 15% of dried poultry litter in the mixture increase weight gain which is associated with increase in the percentage of the supplemented feed compared with the animals fed at different treatment.

3.3. Feed intake of Yankasa sheep

The feed intake of yankasa sheep supplemented with the mixture of poultry litter maize offal and cottonseed cake molasses is presented in Table 4.

Table 4
Average feed intake of yankasa sheep supplemented with poultry litter.

Days	1	2	3	4	5	6	7	8
T_1	0.2	0.25	0.22	0.21	0.25	0.25	0.23	0.24
T_2	0.21	0.26	0.25	0.31	0.30	0.31	0.32	0.33
T_3	0.26	0.26	0.32	0.33	0.34	0.37	0.34	0.35

The result revealed that there were significant difference ($P<0.05$) effect of concentrate supplementation on feed intake. Treatment ttree (T_3) having the feed intake of 0.3200g/day was significantly higher than those on treatment one (T_1) and treatment three (T_2) with 0.2312g/day and 0.2863g/day and respectively. Meanwhile the result shows that feed intake increases with medium level of supplementation with (T_3) having the highest feed intake of 0.3200g at 5% supplementation, followed by treatment one with 0.2312g and treatment two with 0.2863g. The result is not in line with the finding of Flackowky et al., (1985) who reported that feed intake were significantly ($P<0.05$) higher with increase in feed supplement.

3.4. Water intake of Yankasa sheep

The treatment mean for daily water intake of yankasa sheep were 1233.3 ml/day, 1570.0 ml/day, and 1751.0ml/day for treatment 1, 2, and 3 respectively. With significant difference ($P<0.01$) between treatment one T_1 and treatment two T_2 and also between treatment 2 and 3. This might be due to the increase in level of supplementation. Significant difference between T_1 and T_3 and significant difference between T_3 and T_2.The mean water intake (WI) of animals in the study were 1233.3 ml /day, 1570.0 ml l/day, and 1751.0 ml /day for treatment 1, 2 and 3 respectively means that all the animals took much of water in respect to the percentage level of feed intake at T_3. This shows that the Supplementation with the mixture of poultry litter, maize offal, cottonseed cake and molasses indicate significant influence ($P<0.01$) on the daily water intake of animals.

Table 5
Average water intake of Yankasa sheep fed with the supplement litters. of poultry

Days	1	2	3	4	5	6	7	8
T_1	1150	1110	1111	1120	1156	1500	1600	1125
T_2	1500	1150	1560	1750	1250	1750	1750	1850
T_3	1800	1601	1600	1801	1800	1740	1833	1833

3.5. Mortality

There was no mortality recorded among the experimental animals throughout the experimental period. The zero mortality recorded was an indication that feed supplementation (poultry litter) has no deleterious effect on the Yankasa sheep fed beside good husbandry practices.

4. Conclusion

It was concluded that the experimental diet had high crude protein that can serve both maintenance and production purposes. Similarly feed intake and Daily weight gain, water intake were significant ($P<0.05$) for the supplemented group of sheep. These result suggested that supplementation of the diet improved the performance

of Yankasa sheep. Based on the findings in this present study it can be concluded that dried poultry litter is a very valuable feed resource which is cheap, easy to get and its incorporated into the diets of ruminant animals will reduce feeding cost and qualities of concentrate feed that have to be imported.

References

A.O.A.C., 2004. Association of official analytical chemists. Official method of analysis. 18th edition, Washington DC 275-293.

Abdel-Baset, N.S., Abbas, S.F., 2010. Study on the use of dried poultry litter in the camel's ration. Vet. Res. For., 2(1), 65-71.

Adebayo, A.A., 2004. Mubi region geographical synthesis. Paraclete Publishers.

Adegbola, A.A., Smith, O.B., Okeudo, N.J., 2010. Response of West African dwarf sheep fed cassava peel and poultry manure based diets, FAO Corporate document repository produced by ILRI. 1-8.

Adegbola, T.A., 2002. Nutrient intake, digestibility and rumen metabolites in bulls fed rice straw with or without supplements. Niger. J. Anim. Prod., 29(1), 40-46.

Adegbola, T.A., 2002. Nutrient intake, digestibility and rumen metabolites in bull Fed rice straw with or without supplementation. Niger. J. Anim. Prod., 29(1), 40-46.

Flachowsky, G., Ayalew, T., Negesse, T., Bajaw, K., 1985. feeding poultry litter to grazing Boran Zebu.

McDonald, P., Edwards, R.A., Greenhalgh, J.E.D., Morgan, C.A., Sindairs, L.A., Wilkinson, R.G., 2011. Animal production (7th edn). Pearson Education Ltd. England. 551-552.

Steel, R.G.D., Torrie, A., 1980. Principles and practice of statistics in biological research. 2nd Edition. W.H. Freeman and Co., San Francisco. 859P.

Vansoest, P.J., 1988. Nutritional ecology of the rumen oregon U.S.: O and B. Books inc. 70-264.

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