

EVALUATION OF PROXIMATE AND MINERAL COMPOSITIONS OF THE DUNGS OF SHEEP, RABBIT AND GOAT FOR THE POSSIBLE USES IN LIVESTOCK INDUSTRIES.

¹Ajayi, M. A. ²Uche Nwachi M.N., ³P. N. Okonkwo and Item, N.T.

¹Department of Agricultural Technology, Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State, Nigeria

²Department of Agricultural Technology, Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State, Nigeria

³Department of Agricultural Technology, Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State, Nigeria

⁴Department of Animal Health and Production Technology, Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State, Nigeria
morenikejifaa@gmail.com

ABSTRACT

This study was conducted to evaluate the proximate and mineral compositions of sheep, rabbit and goat dungs. samples were collected from different locations within Afikpo, Ebonyi State while the rabbits sample was gotten from rabbit section of the Agricultural Technology Departmental farms in Unwana. North LGA Ebonyi State. These samples were air-dried and sent to laboratory for their proximate and mineral analysis. The results of the study revealed that there were no significant differences ($P > 0.05$) in the proximate and mineral compositions of the sheep, rabbit and goat dungs observed in this study. This is an indication that the sheep, rabbit and goat dungs used in this study had similar characteristics which could be attributed to the fact that the sheep, rabbit and goat from which the dungs were obtained were majorly fed with forages. The findings of the study further indicated that the chemical composition of dungs is dependent on the nature of feeds given and the type of the digestive system of the animals in question.

Key words: dungs, goat, rabbits, sheep, proximate.

INTRODUCTION

Although food availability has increased along with the growing human population over the world. There are still many people suffering from malnutrition. This problem is not only the result of insufficient food production and inadequate distribution, but also the financial inability of the poor to purchase food of reasonable quality and in adequate quantities to satisfy their needs (FAO, 2010). The current high cost of feeding animal due to high costs of feed has brought about the discouragement to livestock farmers. Hence, backing out of production. It is therefore necessary to channel research efforts towards exploring avenue for alternative source of income other than the main product (Itodo, 2000).

The discouraging sales price cum high cost of producing animal in Nigeria because of the economy meltdown has made many farmers to back out from animal production especially monogastric. They end up spending a lot in animal feeds and medications and at the end of the production when the products must have reached the marketable size, the buyer will not want to buy beyond certain bench mark and if not sold, the animals keep consuming more feed and this challenge makes the farmer to sell the animal on auction prices and at the end may not recover what was invested in production let alone making profits. This scenario has made many former to back out from the business. Hence, the need for alternative source of income from the waste generated by these animals and also effective ways to manage livestock wastes which pose a great threat to humans and constitute environmental problem (Smith, 2011).

This recent development tries a fundamental question. (What can be done to earn more profit in animal production and also to make farmers that dropped animal rearing because of little or more profits to come back for the animal rearing?). If animal dung (rabbit, sheep and goat) should be found appropriate to be used as feed supplements, it will definitely reduce the cost of feeding which will eventually lead to making more profit from production and reduce environmental pollution as well. In severall countries across the world, the surging demand for livestock products is largely met by large scale livestock production and associated food chains. Nonetheless, hundreds of millions of small scale producers and pastoralists depend on livestock for their livelihood (FAO 2022). Beyond food production, farm animal

play other important economic, cultural and social roles and provide multiple functions and services. They are an essential part of agro ecosystem.

FAO works to enhance livestock contribution to the Sustainable Development Goals (SDGs) by supporting the transformation of animal production systems (FAO 2022). Small and large in ways that are economically, socially and environmentally sustainable.

MATERIALS AND METHODS

Dungs of sheep and goat used for this study were sorted from different locations in Afikpo, Ebonyi State while the rabbit dungs were collected from Agricultural Technology Departmental Research and demonstration Farm, Akanu Ibiam Federal Polytechnic, Unwana. These samples were air-dried and sent to laboratory for its proximate and mineral analysis.

Measurements and Data collection

The Samples from the goat, sheep and rabbit were analyzed for their proximate composition using standard procedures described by Association of Official Analytical Chemists (Association of Official Analytical Chemists (AOAC), 2000). While the method described by Association of Official Analytical Chemists (AOAC) (2005) was used for mineral analysis.

RESULTS

Mineral composition of sheep, Rabbit and goat dung

Table 1 presents the Mineral compositions of the sheep, Rabbit and goat dungs

Table 1: sheep, Rabbit and goat dungs

Dung	N	P	K	ORGANIC C	Mg	S	COPPER	Pb	Z
Sheep	1.71	40.0	39.00	15.08	5.4	0.5	0.99	0.9	13.06
Rabbit	1.71	39.6	37.89	16.00	5.2	0.7	0.88	0.13	13.15
Goat	1.70	41.9	38.02	15.90	5.6	0.9	0.97	0.9	13.17

The results of the mineral compositions of sheep, rabbit and goat dungs in Table 1 shows that sheep, rabbit and goat dungs are rich in minerals such as, Nitrogen content; 1.71, 1.71 and 1.70, Phosphorus; 40.0, 39.6 and 41.91, potassium; 39.0, 37.89 and 38.02, calcium; 15.08, 16.0 and 15.90 magnesium; 5.40, 5.20 and 5.60, sulphur; 0.5, 0.70 and 0.90, copper; 0.99, 0.88 and 0.97, Lead; 0.90, 0.13 and 0.90, Zinc; 13.06, 13.15 and 13.17 respectively. No significant differences were observed among all the treatments for the parameters considered.

proximate composition of sheep, Rabbit and goat dungs.

Table 2: The proximate composition of sheep, Rabbit and goat dungs

dung	MC	CP	CF	EE	CHA	DM	TA
Sheep	8.2	11.44	34.70	5.30	13.47	90.99	34.6
Rabbit	8.1	11.43	34.80	5.31	13.56	91.90	34.8
Goat	8.2	11.30	34.65	5.23	13.40	91.80	33.9

The results of the presents the proximate compositions of the sheep, Rabbit and goat dungs in Table shows that sheep, Rabbit and goat dungs are rich in nutrients such as, moisture content; 8.2, 8.1 and 8.2, Crude protein; 11.44, 11.43 and 11.30, Fibre; 34.70, 34.80 and 34.65, ether extract; 5.30, 5.31 and 5.23, Chaborhydrate; 13.47, 13.56 and 13.40, Dry matter; 90.99, 91.90 and 91.91.80, Total Ash; 34.6, 34.80 and 33.90 respectively. No significant differences were observed among all the treatments for the parameters considered.

DISCUSSION

The proximate compositions of the Sheep dungs and slurry

As shown in tables 1 and 2, there were no significant differences in the proximate and mineral compositions of the sheep, rabbit and goat dungs observed in this study. This is an indication that the sheep, rabbit and goat dungs used in this study had the same characteristics which could be attributed to the fact that the sheep, rabbit and goat from which the dungs were obtained were majorly fed with various forages. The proximate composition of the test materials. The values of dry matter, crude protein, crude fibre, ether extract, nitrogen free extract obtained in this study are within the range reported for energy

sources of animal feeds by Udedibie and Emanalom (2006), Pariza and cook (2010), Adamu and Ribadu (2003) and Olorunnisomo *et al.* (2006). The slight difference in the value obtained in this study and those from other researchers could be due to variations in the moisture content of the raw materials before dry matter determination. The value of crude protein obtained from this study was similar to those obtained by Abdulmalik (1997) and Adama *et al.* (2007). The high Crude fibre found in the experimental materials contradicts that of Ojewola and Oyim (2006) ; Sripriya *et al.* (2007) and Adamu *et al.* (2013) who obtained 2.8 and 4.3% crude fibre respectively for pearl and finger millets. The ash value obtained was within in the range of values reported by Babatunde *et al.* (1975), Abdulmalik (1997) and Olomu (1998) for different energy. However lower than the values reported by Udedibie and Emanalom (1993) and Adama *et al.* (2007).

The differences in the values of ether extract from various researches can be due to the variations in cereal grains used, the method and degree of accuracy of laboratory techniques used for the analyses. When maize grit is used, the germ containing most of the fat is removed. Sorghum grain on the other hand according to Udedibie and Emanalom (1993) was used without removing the testa and germ containing fat. The process of fermentation reduced the carbohydrate component while the fat content was increased. The nitrogen free extract obtained was similar to the values of Yunis and Cahaner (1999) and Adama *et al.* (2007).

CONCLUSION AND RECOMMENDATION

The study was conducted to evaluate the proximate and mineral compositions of sheep, Rabbit and Goat dungs. Sheep, Rabbit and Goat Dungs were used for this study; sheep and goat samples were collected from different locations within Afikpo, Ebonyi State while the rabbits sample was gotten from rabbitary section of the Agricultural Technology Departmental farms in Unwana. Afikpo North LGA Ebonyi State. These samples were air-dried and sent to laboratory for their proximate and mineral analysis. The results of the present study showed that sheep, Rabbit and goat dungs have similar appreciable nutrients which can be processed and reuse in agricultural sector especially animal production as feed supplement in monogastric feeding. However, rabbit dungs should be minimized when in use as feed supplements because of the higher level of lead observed in this study which could be poisonous to monogastric animals.

REFERENCES

- A.O.A.C. (2005). Association of Official and Analytical Chemists. 15th Edition William Press, Richard Virginia, U.S.A.
- Abdulmalik, M. E. (1997). Evaluation of Brewers Sorghum Residue for growth and production in rabbits. M.Sc Thesis submitted to the Department of Animal Science Ahmadu Bello University, Zaria. Pp.75.
- Adama, T. Z., Ogunbajo, S.A. and Mambo, M. (2007). Feed intake, growth performance and nutrient digestibility of broiler chicks fed diets containing varying levels of sorghum dried brewers' grains. *International Journal of Poultry Science*, 6 (8): 592- 598.
- Adamu, M.S. and Ribadu, W.D. (2003). Replacement value of yellow sorghum (*Sorghum bicolor*) for maize in broiler diets. *Global Journal of Agricultural Science*, 5(2): 151-154.
- Babatunde, B.B. and Hamzat, R. A. (2005). Effects of feeding graded levels of kolanut husk meal on the performance of cockerels. *Nigerian Journal of Animal Production*, 32:61-62.
- Classen, H. L. and Cooper, R. (1998). Improving animal feed through enzyme use. Feed note publications. Vol. 1 issue 3. Prairie Feed Resource Centre.
- F.A.O. (2010). FAO Production Year Book Volume 58. Food and Agricultural Organisation of the United Nation. Rome, Italy.
- Itodo, J.N. Awulu J. O and Philip, TIA (2000). Comparative analysis of biogas yield from poultry cattle and piggery wastes, 2(1): 52-60.
- Olomu, J. M. and Offiong S. A. (1998). The effects of different protein and energy levels on intake of broiler chickens changed from starter to finisher ration on the performance of broiler chickens in the tropics. *Journal of Poultry Science*, 59: 828- 835.

- Olorunnisomo, O. A., Adewunmi, M. K. and Babayemi, O. J. (2006). Effects of nitrogen level on the utilization of maize offal and sorghum brewers grain in sheep diets. *Livestock Research for Rural development*. 18 (1) <http://www.cipav.org/irrd18/1/olor/18010.htm>
- Pariza, M.W. and Cook, M. (2010). Determining the safety of enzymes used in animal feed. *Toxicology and Pharmacology*. 56:332–342.
- Smith, J.U. Austin G, a very, L and Balana, B (2011). The potential of small scale biogas digester to alternate poverty and improve long term sustainability of ecosystem services in sub Saharan Africa in *Interdisciplinary expert work shop*. Pp 45-50
- Udedibie, A. B. I. and Emenalom, O. O. (1993). Preliminary observations on the use of maize-sorghum based brewers grains fortified with palm oil for finishing broilers. *Nigerian Journal of Animal Production*, 20 (1 and 2):104-110
- Yunis, R. and Cahaner, A. (1999). Brewers dried grain as feed ingredients for livestock diets. A review in the *Journal of Animal Production*, 10: 64- 73.