COMPARATIVE ANALYSIS OF NUTRITIONAL AND CHEMICAL COMPOSITION OF FEACES FROM FIVE DIFERENT FARM ANIMALS FOR FARM USE

Abstract

A research is conducted to study the comparative analysis of both the nutritional and chemicalcomposition of farm animals droppings to know which dropping is good for a particular plant as a result of the chemical content and the nutrients they contains if it could be processed and be included in animal feed, dropping of five farm animals were collected and prepared for laboratory by sun drying to a constant weight and then labelled, both plant nutrients and food nutrients were then analyzed using AOACA method of analysis and it was discovered that. It was discovered that chicken, Cow and Rabbit contained all the plant nutrient and some of the food nutrients under investigations in an appreciable quantity, it is therefore concluded that apart from using it to grow specific crop because of the specific plant nutrient and then processed to remove the harmful organism and then include in animal feed, to reduce the nuisance its continuous accumulations of the droppings.

Keywords:- Dung, Guano, Dropping, nutrients and chemical content

Introduction

The continue increase in human population dictates that more food has to be produced to really cater for the increase in human population, this will not only avoid the common nutritional diseases but will assure food security (Lawal et, al. 2023). This is whyproduction of food in a saver manner is necessary, crop produce with manure is better as the residue caused by inorganic fertilizer is avoided when manure is used, since most of our soil have been in use for long and they lost significant amount of their nutrients, so they need to be boosted

Application of animal manure on farm land to improve crop performance is a common practice and it is very old practice even when fertilizer production has not begun (Bernier et al., 2014; Lawal et al.,2015), this application is found to be of both a lower cost nutrient application alternative to commercial fertilizer, and a means to dispose of animal waste and recycle the waste constituents back into the soil-plant system.

Thia application serve two purposes, one is addition of organic matter back to the soil which in turn add the resident soil organic matter, which serves to store and recycle nutrients and water, essential elements for future plant growth and longevity; and second, to return nutrient elements such as P and N back to the soil where they may be utilized again by plants in future seasons (Campbell et al., 1984; Miller et al., 2006; Sommerfeldt et al., 1988).

It has been described that the application of animal manure, particularly solid cattle manure, aids not only in supplying nutrients to plants, but has indirect effects on plant root growth by

increasing soil aeration and porosity (Schoenau and Davis, 2006), so manure management is required,because animal manure should not be left in the open air as most farmers do, it may lose most of its potassium and some of its phosphorus but much of its nitrogen and varying amounts of other nutrients are lost through volatilization and leaching (Kwakye 1980; Matsumoto et al 1997). Thus, effective manure management is required to reduce nutrient losses from manure.

About 335 million tons of manure are produced on a dry basis and almost two billion tons of manure is produced per year if liquid portion of manure is included (Main, 2015). Animal agriculture should be viewed as a chain of cyclic nutrient transfers from the soil to the crops, then to humans or animals and from humans' and animals' waste to the soil again (Schroder, 2005).

Therefore, this research work intends to look at both the proximate and chemical composition of five common farm animals, so that the possibility of using it both for crop production and also for feeding farm animals after processing especially poultry and ruminant animal.

Material and Methods

The experiment was carried out in the Agricultural garden of Kwara state Polytechnic, 5kg each of fresh feaces of cow, rabbit, goat, poultry and pig were collected in a separate container and then sundry until constant weigh is achieved,they are then prepared for laboratory analysis. The samples are then put in a nylon and labelled for laboratory purpose for the proximate and mineral analysis using AOACA

Result and Discussions

Table 1 below shows the proximate composition of the five (5) farm animals under investigation, it was observed that the crude protein of the chicken the poultry birds is higher and significantly different ($P<0.05$) when compared to other farm animals, this is immediately followed by rabbit and the least in crude protein is that of goat. The crude fibre is significantly higher in rabbit and least in chicken ($P<0.05$), ether extract is highest in Pig and least in goat while the ash content of the Pig feaces is highest and least in rabbit. The energy content of the chicken feaces is highest out of all the farm animals under investigations ($P<0.05$). With all these nutritional qualities, it indicates that feaces could be process and feed to farm animals so as to reduce the cost of feeding farm animals aside planting of crops that it is already been used for, this will only make the demand of farm animal feaces to be in higher demand and thereby reducing the nuisance that it may likely constitute when it is not in use at all, this will go a long way especially the poultry production that about 65-80% of cost of raising poultry birds goes for feeding alone.

Nitrogen, phophorus and potassium are very important for majority of the plantsespecially for Nigerian soil, it will therefore be noted that nitrogen is higher in cow and poultry feaces ($P<0.05$) while little or no traces is noticed I goat and pig, phosphorus is highest in goat and chicken an least in cow, all the farm animals under investigation have their feaces containing

pottssium, it is higher in goat and least in rabbit. The chicken feaces contain almost all the minerals followed by rabbit and pig then cow, goat feaces contain the least amount of the minerals considered for investigation, this now indicate the reasons why farmers preferred the chicken feaces for planting their crops, and then others. Feaces from all farm animals are good for planting but for specific crops not just any crop. With further research, farm animal feaces could be processed for feeding animals, while their use for planting crops should be further be encouraged so as to further reduce the nuisance they may cause.

Table 1: Proximate composition of 5 farm animals (%)

	COW	PIG	CHICKEN	RABBIT	GOAT	SME
Crude protein	11.70^{d}	13.96^{c}	20.20^{a}	15.50^{b}	8.18^{e}	0.90
Crude fibre	22.40^{b}	24.55^{b}	10.40c	32.44^{a}	--	0.51
Ether extract	2.80^{b}	8.82^{a}	2.20^{b}	2.04^{b}	1.91^{b}	0.09
Ash	14.00^{c}	23.00^{a}	18.50^{b}	10.37^{c}	--	0.85
Energy (Kcal/kg)	16.9^{b}	--	621.4^{a}	17.85^{b}	--	0.77
NFE	--	--	--	--	61.90	0.00

a-e on the same row with different superscript are significantly different ($P<0.05$)

Table 2: CHEMICAL COMPOSITION OF 5 FARM ANIMALS (%)

	COW	PIG	CHICKEN	RABBIT	GOAT	SME
Nitrogen	4.57a	--	4.4a	2.4 b	--	0.02
Phosphorus	0.21^{d}	2.60^{c}	4.50^{b}	1.40^{c}	9.52^{a}	0.21
Pottasium	1.80^{c}	8.82^{b}	2.05^{c}	0.6^{d}	10.75^{a}	1.12
Sodium	--	0.01	0.01	0.05	--	0.00
Magnisium	--	0.01	0.48	0.18	--	
Zinc	--	12.6^{a}	--	2.4^{b}	--	0.90
Iron	3.15^{a}	--	1.38^{b}	--	0.00	
Calcium	--	0.04	0.04	--	--	0.00
Carbon	43.1	--	--	--	--	0.00
Sulphur	0.31	--	--	--	--	0.00

a-e on the same row with different superscript are significantly different (P<0.05)

Conclusion and recommendations

Conclusions

i-All farm animals contain both nutrients for plants and farm animal

ii-The contents of each feaces should be noited so that farmers can know what crop they can use it for

iii-Farm animal feaces could be processed into animal feed to reduce the cost of feeding animals

Recommendation

i-Further research could be carried out to other farm animals to study their content and what they could be used for

ii-Research should be carried out to know what type of treatment that could be given to feaces before including it into animal feed

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