CHEMICAL COMPOSITION OF MILLET PANICLE WASTE ENSILED WITH POULTRY MANURE AT GRADED LEVELS

N. Kadi[2], Muftau,M. A[1]
Department of animal science, KSUSTA, Kebbi State

ABSTRACT
Millet panicle waste was ensiled with poultry dropping at graded levels; 90:10, 80:20, 70:30, 60:40 (millet panicle waste/poultry dropping) representing B, C, D and E respectively, and 100:00 (control) treatment A. The material ensiled were put in polythene bags replicated three times, the sample were sealed and allow fermentation to take place for a period of 21 days. The resultant silage was analyzed for pH, Crude protein (CP), Crude fiber (CF), Either Extract (EE), ash and Nitrogen Free Extract (NFE). There were significant differences ($p<0.05$) in all the parameters measured except that of Dry matter (DM). Ensiling millet panicle waste increased pH, CP, ash, EE, and NFE, but reduced CF with increased proportion of poultry dropping. Treatment C has the highest CP (4.38) and DM (93.50), with lower CF (1652) compared with control treatment with (33.73). The result suggested that ensiling millet panicle waste with poultry dropping improve its feeding value.

INTRODUCTION
Proper nutrition is necessary for optimum livestock production; unfortunately, there is shortage of forage supply during dry season for ruminant animal especially in the northern part of Nigeria. (Ruthender, 1980). There are many agricultural crop residues with great potential for ruminant feeding. One of such is millet by product known as millet panicle waste.
Presently, the consumption of millet is becoming more pronounced in the most of the northern region especially in villages and semi urban areas where there is availability of millet panicle waste especially during dry season in northern part of Nigeria when people engage in processing of millet. The panicle waste are thrown everywhere during this period of processing. Millet panicle waste is obtainable from processing of millet which is not use for any purpose. The waste are dumped in the water ways causing environmental havoc by blocking drainages or burnt by local people which causes additional environmental pollution by increasing the global warming effect.

Silage making is considered as a technology that increase livestock productivity and minimizes resource degradation and viable option for conserving succulent feeds (Muhammad et *al.,* 2008).

In view of this, the utilization of millet panicle waste as feed for ruminants will drastically reduce the above mentioned problems as well as solving the problem of feed scarcity especially in the dry season. The aim of this study is to find out the chemical composition of millet panicle waste ensiled with poultry droppings at different graded levels

MATERIALS AND METHODS
The experiment was conducted within the Animal Science laboratory of Kebbi State University of science and Technology,

COLLECTION AND PREPARATION OF EXPERIMENTAL MATERIALS

Millet panicle waste was collected from processing points identified within and around Aliero LGA. All foreign materials (stones, irons, polythene) were removed. Poultry manure was obtained from Labana poultry farm Aliero. The collected millet panicle waste and poultry manure were sun dried to a constant weight by spreading on a concrete floor.

ENSILING PROCEDURE

The dried millet panicle waste used for silage was packed in a polythene bags to make compaction easier. (Ogunlolu *et al*; (2010). Millet panicle waste was ensiled with poultry manure in proportions, 100:00, 90:10, 80:20, 70:30 and 60:40, representing treatment A, C, D, and E respectively. Fifteen Polythene bags were used as laboratory silos (Ogunlolu *et al*; 2010). The samples were ensiled for 21 days in triplicates; masking tape was used to further seal the polythene bags after filling with weighed materials and compressed.

At the expiration of the ensiling period, the polythene bags were opened and top most materials was scooped off to avoid contamination with partially ensiled materials. The samples were taken using forceps from each ensiled polythene bag for pH determination and chemical analysis.

EXPERIMENTAL DESIGN AND DATA ANALYSIS

A complete Randomized design (CRD) was used as outlined by Steel and Torrie (1980). There were five treatments designated as A, B, C, D and E with three replicates each.

PROXIMATE ANALYSIS

Crude protein (CP) where measured using kjeldhl method (Nx6.25) while other proximate constituents, Either extract (EE), Ash, Crude fiber (CF) and Nitrogen Free Extract (NFE) were measured according to procedure described by AOAC (2005).

DATA ANALYSIS

Data were analyzed using the general linear model procedures of the (SPSS 2007), and mean separation was done using Duncan multiple range test (DMRT) at 5% probability level.

RESULTS AND DISCUSSION

Table 1: pH properties of ensiled millet panicle waste

Treatments		**pH**
A	100:00	5.45^{c}
B	90:10	5.71^{c}
C	80:20	6.11^{bc}
D	70:30	7.69^{ab}
E	60:40	8.45^{a}
SEM		9.39

abc: means on the same row with different super scripts are significantly ($p<0.05$) different

Table 1: present the pH reading of the silage. Significant differences ($p<0.05$) were observed among the treatments. The highest pH was recorded in treatment E(8.45) with the least in treatment in treatment A. (4.45). This is in accordance with the findings of Rasool *et el*. (1998) Who reported an increase in initial and subsequent pH in sudax grass ensiled with 30% broiler litter and 9%molasses.

Table 2: Proximate analysis millet panicle waste

	Treatments					
Parameters	A (0%)	B (10 %)	C (20 %)	D (30%)	E (40%)	SEM
DM	94.00	92.50	93.50	92.00	91.75	12.27
CP	3.15^{d}	3.68^{c}	4.38^{a}	3.99^{b}	3.98^{b}	0.069
CF	33.73^{d}	22.46^{c}	19.30^{b}	21.06^{bc}	16.52^{a}	7.89
EE	4.25^{ab}	4.05^{ab}	4.95^{ab}	3.25^{c}	5.51^{a}	7.89
ASH	4.25^{d}	6.75c	8.25^{b}	12.25a	11.75a	8.74
NFE	20.47^{d}	75.32^{b}	77.63^{a}	972.02^{c}	72.77^{c}	10.39

abcd: means on the same row with different superscripts are significant ($p<0.05$) different.

Table 2: shows the proximate composition of millet panicle waste. There is no significant ($p<0.05$) difference in the dry matter among the treatments. However, the highest value was obtained in treatment A (94:00) and the least was recorded in treatment E (91.75). This contradicts with Al Rokayan *et al*. (1998) who reported an increase in the dry matter when broiler litter was ensiled with sorghum forage in the proportions of 0:100, 25:75, 35:65, and 45:55.

The values of CP of the resultant silage was observed to have increased ($p<0.05$) with increase proportion of poultry droppings. The CP was highest in treatment C (4.38) than B, D, and E although the increase was not steady across the treatments. This is in line with Ngele *et al*. (2006) who reported an increase in the CP when rice straw was treated with broiler litter at different ratios.

There was significant difference ($p<0.05$) in CF composition of the silage among the treatments. CF of all treatments is lower than the control, the CF was observed to decrease with increased proportion of poultry dropping from (22.46) in treatment B to (16.52) in treatment E. This is in accordance with the findings of Rasool *et al,* (1998) who observed decreased in CF when sudax grass was with broiler litter and molasses.

The EE components of the treatments were significantly ($p<0.05$) affected, the highest EE was recorded in treatment E (5.51) and the least was recorded in treatment D (3.25). The result of this study agreed with that of Mthiyan *et al*. (2001) who observed an increase in EE composition of sugar cane top ensiled with broiler litter and that of Ngele *et al* (2006).

Ensiling millet panicle waste with poultry dropping increases ($p<0.05$) ash content of the resultant silage. Treatment D has highest value (12.25) compared with treatment E, C, B and the control which has least value of (4.25). This is in agreement with the findings of Al Rokayan *et al*. (1998) and that of flachowsky and Hennig (1990) who observed a linear increase in ash content with increased proportion of broiler litter.

Nitrogen Free Extract of the millet panicle waste ensiled with poultry dropping increases ($p<0.05$) with the increase in the level of poultry dropping with treatment C having the highest value (77.63)

and the least was recorded in treatment A (20.47). This observation agreed with the findings of Baba *et al*. (2010).

CONCLUSION

Poultry dropping improved the nutritive value by increasing the CP and lowering the CF of the waste.

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