ASSESSMENT OF TRONA (*KANWA*) UTILIZATION BY LIVESTOCK FARMERS IN SELECTED LOCAL GOVERNMENT AREAS OF YOBE STATE

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ABSTRACT
The study (survey) was conducted in selected local government areas of Yobe state to assess the utilization of trona (*kanwa*) by livestock farmers. Two LGAs were selected from in each Three ADP zones, to assess Kanwa utilization by livestock farmers in Yobe State. A questionnaire was used to target livestock keepers that are using trona as a source of mineral supplement, Purposive sampling method was used to select six (6) local government areas (LGAs) with two LGA from each of the three agricultural development programme (ADP) zones. From the result of the survey the quantity of *Kanwa* offered by the animal is largely determined by number of the animals reared by the respondents. Majority of the respondents are rearing 1-10 animals with known quantity of trona (*kanwa*) were offered on daily basis, this translates that 0.5 – 1.0 kg of the *kanwa* is offered per group of animal.

Keywords: Kanwa, Farmers, Livestock

INTRODUCTION
In Nigeria, *kanwa* deposits are found in some locations around North eastern part of Nigeria particularly at Baga and Manga in Borno State, Gashua, Machina, Nguru and Yunusari in Yobe State, Zuno Song, Mayo-Balwa in Taraba State, and Alkaleri, Gamawa, Kirfi in Bauchi State, extending to neighboring countries of Chad and Niger (Omajali and Sanni, 2010). The deposits in the basins are found in many forms as hard beds at the middle and bottoms of the old lakes or disseminated through the sand in the upper part. Also it is found as an efflorescence crust on the surface of the soil, and present in brine water at some basins (Abdelaati *et al.*, 2014). *Kanwa* is the Hausa name for dry lake salt (Helga *et al*., 2017), also erroneously called potash, even though it has low concentration of potassium as compared to sodium. The salts have advantages both in improving texture of food and in health (Nasiru *et al*., 2011; Danbauchi *et al*., 2014; Okoye *et al*., 2016).
Kanwa is a multipurpose and a major food supplement in most rural and urban home and food industries in Nigeria, as well as medicine (Omajali and Sanni, 2010). Some home uses *kanwa* as food supplement or as medicine in human and animals. It is significant for its use as medicines, culinary purposes, tanning of leather, and other uses (Paul, 2011). It has been taken as a medicine in humans for many ailments long time ago in Northern Nigeria, such as gastrointestinal disorders, skin infections, respiratory problems, reproductive problem, endocrine in balances, etc (Alawa *et al.,* 2000. The deposits of *kanwa* are used as salt licks for animals and the salt earth could be marketed for animal's nutrient supplements. It is mostly taken orally by nursing mothers in pap to boost breast milk (Ekanem, 1977). Traditionally, *kanwa* is used by therapeutic behavioral service (TBS) as an aid in childbirth, postnatal care and employed in the treatment of menstrual disorders (Alawa *et al.*, 2000).

MATERIALS AND METHODS
Study Area
The study (survey) was conducted in selected local government areas of Yobe state. Two LGAs were selected each from Three ADP zones. The local Government areas selected were Potiskum, Nangere, Jakusko, Bade, Damaturu and Tarmuwa. 20 respondents were selected from each local government making 120 respondents. The respondents were chosen purposely based on the utilization of trona by livestock farmers. Yobe state is situated between latitudes 12^0 00' and 13^0 28' N and longitudes 9^0 45'

and 12^0 30'E, the mean annual rainfall of the area is put at 450 mm with an average onset and cessation dates in June and September respectively (Umar, 2015). The area experiences uniform weather conditions with rainfall attaining its peak in August; though there seems to be a shift of this to July in recent times (Umar, 2015). One of the distinguishing characteristics of the area is its low rainfall that lasts for only three to four months. The mean minimum temperature is about 25^0C while, mean maximum temperature for the hotter months goes as high as 40^0C especially in the months of April, May and June (Olagunju, and Temidayo 2015). The average relative humidity for the months of December and January is about 30% (driest period) and goes as high as to an average of 70% in wettest months (August and September). Yobe has a tropical climate characterized by distinct wet and dry seasons. The dry season is associated with the prevalence of dry continental air mass of the North East Trade Wind (NETW), which originates from Sahara desert. The wet season is associated with the moist maritime southerly air mass which originates from the Atlantic Ocean.

Sampling

A questionnaire was used to target livestock keepers that are using trona as a source of mineral supplement.Purposive sampling method was used to select six (6) local government areas (LGAs) with two LGA from each of the three agricultural development programme (ADP) zones. The local Government areas selected were Potiskum, Nangere, Jakusko, Bade, Damaturu and Tarmuwa. Twenty (20) respondents were selected from each local Government making the total of one hundred and twenty (120).

Statistical analysis

The data collected from were subjected to descriptive statistics using frequency and percentage distribution. Microsoft Excel (2013) was used in the analysis

RESULTS AND DISCUSSION

The results of the survey conducted are presented in Table 1 and 2. The result of utilization, source and benefit of *kanwa* by Livestock herders in Yobe state is presented in Table 1. From the result out of the 120 respondents 1.7% didn't use *kanwa* for their livestock because the questionnaire target them. The study also indicates that majority (56.10%) of the respondents used *maifatsi* while 0.85% used *jan-kanwa* for their animals. Results indicate that supplementing animal with *kanwa* enhances feed intake and its availability all year round, from the result it can be seen indicated that a relatively high number of the respondents (98.3%) used *kanwa* for their animals, this may indicate that kanwa is acceptable in the area for fattening. All the respondents (100%) testify that *kanwa* is always available in the market especially during the dry season. Relatively all the livestock keepers (100%) observed that *kanwa* is always available especially during the dry season. Majority 55.93% of the respondents were sheep and goat farmers only. This was attributed to the fact that the *kanwa* is used for fattening yearling Uda rams and it is a well-known fact that farmers in the study area are engaged in fattening animals (Omajali and Sanni, 2010). In addition, trona (*kanwa*) is readily available in the market at cheaper rate and no further processing is required as they are already processed.

Table1: Utilization of *kanwa* by livestock herders in Yobe State

Parameter	Frequency	Percentage
Usage of *kanwa*		
Yes	118	98.3
No	02	1.7
Types of *kanwa* used		
yarzankuwa	52	44.06
Maifatsi	65	56.10
Jankanwa	1	0.85
Source of *kanwa*		
Market	118	100
Choice of *kanwa* base on some attribute of *kanwa* by the respondents	48	40.68
Availability	13	11.02
Powdery form	10	8.47

Hardness	24	20.34
Acceptability by the animal		
Benefit of *kanwa* in your flock/herd		
Increase live weight	32	27.12
Increase feed and water consumption	37	31.36
it cure stomach and skin problems	12	10.17
all of the above	34	28.81
No benefit	3	2.54
Species of animal receiving *kanwa* as supplement		
Cattle	11	9.32
Sheep	41	34.75
Cattle and sheep	66	55.93
Category of animals receiving supplementation		
Adult(male)	6	5.08
Pregnant	1	0.85
Lactating	1	0.85
All of the above	110	93.22
Frequency of supplementation of *kanwa* by the respondents		
Daily	71	60.17
Weekly	47	39.83

Source: Field survey, (2018), Total respondents = 120

The results further showed that 31.36% of the respondents reported *kanwa* to increase feed and water intake and 28.81% of the respondents used *kanwa* for curing stomach and skin problems and 39.83% of the respondents used *kanwa* for both purposes. The result also showed that 60.17% of the respondents administered *kanwa* supplementation on daily basis while 39.83% weekly.

The results (Table 2) showed that mode of supplementation of *kanwa* by the respondents in the study area used *kanwa* solely (63.56%) while (24.58%) and (11.8%) offered it in water and feed respectively, this was also reported by Ikwuegbe *et al*. (1985) that for optimum growth, reproduction and other physiological functions, adequate amounts of sodium need to be supplied through feeds, drinking water and other sources. From the results of the survey, 96.61% of the respondents indicated that there was no seasonal effect on *kanwa* supplementation. Results showed that 94.07% of the respondents had no problem with *Kanwa* supplementation. This could be attributed to the fact that trona (*kanwa)* contains the essential elements required by the animal for optimal growth and development and no cadmium and chromium in it which if high are toxic to the animal health. While 42.86% of the respondents provide alternative source of mineral supplementation to reduce nutritional problems and enhance the animal productivity, trona is used in combination with other feed ingredients such as cowpea hay and husk, wheat offal, maize husk and rice bran and husk in order to improve performance. Majority (59%) of the respondents encourage the use of *kanwa* as mineral supplement.

Table 1: Mode of supplementation and problems encountered with *kanwa* supplementation

Parameter	Frequency	Percentage
Mode of supplementation		
In feed	14	11.8
In water	29	24.58
Solely or directly	75	63.56
Seasonal effect of *kanwa* supplementation		
Has effect (Yes)	4	3.39
Does not have effect (No)	114	96.61
Effect seen		
Reduced feed intake in hot season	4	100
Problem encountered as a result of *kanwa* supplementation?		

Problems encountered	7	5.93
Problem not encountered	111	94.07
Type of problem encountered (7 respondents)		
Diarrhoea	5	71.43
Weakness	2	28.57
Mitigating measures taken to solve problems		
Stop giving *kanwa*	1	14.29
Giving antibiotic	3	42.86
Giving baobab(*kuka*)	3	42.86
Efficacy of the measures taken		
Effective	7	100
What advice do you have to other livestock farmers on *kanwa* supplement?		
Farmers should engage in using *kanwa* as it improves livestock production	32	27.12
Its depends on the farmer either to use it or not	27	22.88
Farmers encourage the use of *kanwa* as mineral supplement	59	59.00

Source: Field survey (2018), Total respondents = 118

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