

INTRODUCING THE PROCESS OF MAKING A MULTI-NUTRIENT SALT LICK USING LOCALLY AVAILABLE INGREDIENTS TO FARMERS FOR CATTLE PRODUCTION IN BATAGARAWA LOCAL GOVERNMENT AREA, KATSINA STATE

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ABSTRACT

Multi-nutrient Salt Lick Block (MNSLB) was introduced in Dabaibayawa Village, Batagarawa Local Government Area, Katsina State, Nigeria. This was based on need assessment carried out in the study area. The main objective of the project was to teach farmers on how to prepare Multi-nutrient salt block using locally available materials. The ingredients used for the preparation of MNSLB include: Potash, Wood ash, African bean pulp, egg shell and salt. MNSLB that could serve as supplement to cattle is costly and herders lack of technical know-how on the appropriate proportion of each ingredient to be used incapacitate them in preparing it for their cattle. Herders mostly feed their cattle with poor quality roughages and crop residues which do not contain minerals for the animal growth and productivity. It is therefore based on this, that cattle need to be supplemented with MNSLB to provide the required minerals. With this project, herders were able to learn how to use locally available materials to prepare MNSLB. Farmers were grouped into three namely: Pastoralists, cattle fatteners and cattle traders. Farmers gladly accepted the technology as it only required ₦110 to prepare salt lick of 2.5kg. Considering the importance of this technology, it is therefore recommended that more extension workers should be engaged to convey this technology to the nook and cranny of Batagarawa Local Government Area.

Key words: Multi-nutrient Salt Lick Block, African pulp, Wood ash, Egg shell and Salt.

INTRODUCTION

Multi-mineral blocks are hard, stone-like blocks scattered around the animal farm for animals to lick which contain a range of mineral elements to supplement the basic mineral need of the animals. The blocks usually contain salts (sodium chloride), but can also contain calcium, iodine, copper, cobalt, iron, selenium and zinc. Since most developing countries are characterized by poor quality roughages which constitute the major portion of rations fed to ruminants (Hadjipanayiotou *et al.*, 1993) and such poor quality roughages and crop residues are the major sources of feed used for feeding ruminant for most part of the year especially during dry season in the semi-arid region, it becomes necessary to supplement these poor quality feeds using multi-mineral blocks. Multi-nutrient block has been used for improving the nutritional status of animals (Hadjipanayiotou *et al.*, 1993). Many classes of livestock, including swine, poultry, feed lot cattle and dairy cows, mineral supplements are incorporated into concentrate diets, which generally ensure that animals are receiving required minerals (McDowell, 1996). For the proper functioning of animal body, in addition to protein, fats and carbohydrate, minerals and vitamins are also required in relatively small amounts to prevent the deficiency diseases in the animal (Ranjihan, 1980). Because diets of grazing livestock are mainly based on these low quality feed resources, mineral supplementation is necessary. Self-feeding of free-choice mineral supplements is widely used for grazing livestock (McDowell, 2003). In order to develop affordable and sustainable supplementation packages to improve the productivity of small scale holder farm, the use of Multi Nutrient Block (MNB) has been recommended (Kayouli, 1994). The crude protein content of the grasses drops below 4% during the dry season (Crowler and Chleda, 1979), and are very low in phosphorus and energy (Norman, 1966). The natural grasses, crop residues, animal wastes and to a lesser extent agro-industrial by-products are most widely available low cost feed ingredients for ruminant in Nigeria (Alhassan *et al.*, 1985). -nutrient blocks (MNB) are a commonly used supplement for ruminant (Leng 1992). They provide supplemental energy,

non-protein nitrogen usually from urea, essential minerals and occasionally vitamin – mineral block for rabbit have been made in the past (Perez, 1986). Cattle feed in the study area is based on fibrous feeds mainly mature pasture and crop-residues. These feeds are imbalanced and particularly deficient in energy, protein, minerals and vitamins. They are highly lignified and have low digestibility which leads to low intake and productivity of the livestock. Multi nutrient block that could serve as supplement to cattle is costly and herders cannot prepare it by themselves due lack of knowledge of the basic ingredients and lack of technical know-how on the appropriate proportion of each ingredient to be used. Herders mostly feed their cattle with poor quality roughages and crop residue which does not contain required minerals for the animal growth and productivity. It therefore based on this that cattle need to be supplemented with multi-nutrient block to provide the required minerals. The broad objective of the study was to train farmers on how to prepare multi-nutrient salt block using locally available raw ingredients while the specific objectives were to uplift farmers level of income when the multi-nutrient salt blocks are sold, to supplement cattle feeds with minerals especially during the dry season of the year when pasture grasses are of poor quality, and deficient in these minerals and to improve the productivity and minimizes abnormalities related to mineral deficiency in cattle production.

MATERIALS AND METHODS

Study Area

The study was conducted at Dabaibayawa village, Batagarawa Local Government Area. It is located a few kilometers from Umaru Musa Yardua University on Katsina-Dutsinma road Katsina State. Katsina state covers an area of 24,192 Km² out of which about 2.8m Ha is devoted to cultivation of crops. The state lies entirely within the tropics (Latitude 11° 00'N to 13° 25'N and Longitude 6° 45'E to 9° 05'E) with distinct rainy season between May and October, and dry season between November and April (KTARDA, 2001).

Data Collection

Pastoralists, cattle fatteners and cattle traders were purposely selected. Stratified sampling techniques were used to draw the sample size for the study. Livestock farmers were grouped into thirty. Ten groups were drawn from each of pastoralists, cattle fatteners and cattle traders respectively with each group having a 7-10 members.

Collection and Processing of the Test Ingredients

Potash, Salt, Locust bean pulp (Dorowa), Wood ash, and egg shell were the main five locally available ingredients used in the formulation of multi-mineral blocks. All ingredients were purchased from Dabaibayawa local market, with the exception egg shell and ashes which were obtained from local tea sellers known as “Mai shayi” and Meat sellers known as “Maisuya” respectively. Some of the ingredients need to be processed before formulating the multi-nutrient salt lick. Sieve was used to remove the impurities from wood ash, potash and locust bean pulp. Egg shells are sundried after which Mortar and pestle was used to crush it into finer particles. Mixing of the ingredients was done by hand in a small metal bucket. 2.5 kg of the ingredients were mixed in order to get a homogenous mixture. Potash was placed in the metal bucket first followed by wood ash, eggshell, salt and locust bean pulp (Dorowa) was added as a binder and the mixture was made homogeneous using strong stick (Kellou, 2005). Each of the ingredient was introduced one after the other till the homogeneity of all the ingredients was achieved. The mixture of the ingredients containing 2.5kg was done repeatedly 3 times thereby making the whole mixture to be 7.5kg during the training. Formulated multi-nutrient salt lick blocks are kept under shade. Drying process got completed within 24 to 26 days after formulation and this corroborated what Dzidiya *et al.* (2015) reported. Advisably, after drying, the blocks should be packaged separately, wrapped in polythene bags and stored in moisture free area with proper temperature and adequate ventilation (Dzidiya *et al.*, 2015).

Table 1: Multi- Nutrient Salt Blocks Formulation (2.5kg)

S/N	Ingredient	Quantity(Kg)	Local measurement
1	Potash	1.25	Half tiya
2	Wood ash	0.25	one and half tin milk
3	Egg shell	0.3125	Two tin milk
4	Salt	0.3125	Two tin milk
5	Local Bean Pulp (Dorowa)	0.375	Two and half tin milk
	Total	2.5	One tiya
	Water	750 (ML)	One medium bottle of faro water

RESULTS AND DISCUSSIONS

NEED ASSESSMENT EXERCISE

A need assessment exercise was carried out to interact with farmers in the study area with aim of knowing their problems as far Livestock production. Various problems were stated such as disease infection, Hair plucking, inadequate minerals supplement etc. Pair wise ranking was used to determine the most pressing problems farmers were facing. After pair wise ranking, inadequate mineral supplement became the most pressing problem and as such, Multi-nutrient salt lick was introduced to solve the problem. Table 2 below shows pair wise ranking

Table 2: Pair Wise Ranking

S/N		1	2	3	4	5	Score	Rank
1	IMSL	X	1	3	1	1	5	1 st
2	DI		X	2	2	3	2	2 nd
3	HP			X	1	1	2	2 nd
4	SLPD				X	4	1	4 th
5	PM					X	0	5 th

IMSL = Inadequate mineral salt lick, DI = Disease infection, HP = Hair plucking, SLPD = Sudden Local Poultry Death and PM = Poor Market.

Cost of Producing Multi-Nutrient Salt Lick Block

The cost of preparing 2.5kg of multi-nutrient salt lick is relatively cheap compared to the one sold at the market centers. This is based on the fact that only three out of the five ingredients are purchased in the market. While African bean pulp, potash and salt ingredient were purchased from Market, the remaining two ingredients; egg shell and wood ash were obtained from tea sellers (Mai shayi) and meat sellers (Mai suya) respectively and free of charge. It takes only N110 to prepare 2.5kg of Multi-nutrient salt lick which is similar to N113 reported by Yerima (2020) for preparing urea-molasses multivitamin block, but cheaper than the market type which was about N250-N300. Farmers were delighted on the preparation of salt lick could be prepared with ease and at a cheaper price. Three weeks after the training, some farmers have already started the innovation with aim of using it for their animal and at the same time sell it to their neighboring farmers. The table below shows the cost analysis of the ingredients for the preparation of 2.5kg of Multi-nutrient salt lick.

Table 3: Cost of Producing Piece of Multi-nutrient Block

S/N	Ingredients	Quantity(Kg)	Price(N)
1.	Potash	1.25	50
2.	African bean pulp	0.375	20
3.	Salt	0.3125	40
4.	Egg shell	0.3125	-

5.	Ash	0.25	-
TOTAL		2.5	110

CONCLUSION

Base on the result obtained from study, it became clear that formulation of multi-nutrient salt lick block is very simple and straight forward. Farmers can easily prepare it with ease as all ingredients needed are accessible and affordable to them. It also profitable to prepare this salt lick block and sell it as you only need N110 to prepare 2.5kg which may be up to N300 in the market. There is need for more research to be carried out with regard cattle production in order to make it more attractive and profitable to the farmers.

RECOMMENDATIONS

More extension workers need to be recruited in order to deliver this important technology to farmer, deliberate effort should be made to ensure that farmers sustain what they learned during this SEP, farmers should be encouraged to form cooperatives for easy accessibility to government and other non-governmental organization for assistance.

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