

EFFECT OF DIFFERENT TRADITIONAL METHODS OF STORAGE ON PHYSICAL APPEARANCE OF COWPEA AND GROUNDNUT HAYS

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ABSTRACT

The research was conducted in Aliero and Jega local Government Areas of Kebbi State to access the effect of different traditional methods of storage on cowpea and groundnut hays. Simple random sampling technique was employed where ten (10) villages were selected for the study area which includes Sabiyal, Kashinzama, Jiga Birni, Aliero and Jiga from Aliero local government while Jega, Kimba, Alelu, Gindi and Nassarawa from Jega local government. Ten respondents were randomly selected from each village selected and a total of one hundred (100) respondents were obtained as sample size. The study was carried out with the aid of a structured questionnaire and was designed to obtain information on socio-economic characteristics of the respondents. The data obtained from the experiments were subjected to analysis of variance (ANOVA) using Completely Randomized Design (CRD). Where significant difference between the mean were indicated, Duncan's multiple range test (DMRT) was used to separate the means (Duncan, 1955). The results indicated that 43% of the respondents stored groundnut hay only, 24% stored cowpea hay and 33% stored both groundnut hay and cowpea hay. The results also indicated that 55% of the respondents store hays using Bag/sac method, 15% used Underground method, 15% used Store method, 5% used local Kitila, 5% store hays using rhumbus (Rihewa) method and 5% used Rumfa (under shade) method. It also indicated that 94% of the respondents store hays for 3 – 6 months, 6% store hays 2 – 3 months and none of the farmers store hays for one year.

Keywords: Cowpea and Groundnut Hays, Traditional Storage Methods.

INTRODUCTION

Groundnut hay and cowpea hay are dried legumes known for their nutritional value that are consumed by Animals. Literature has shown groundnut hay and cowpea hay (Anele *et al.*, 2012) are a good supplementary source of vitamins and minerals and enhance growth in Animals. However no or little study has compared the effectiveness of the different storage that is best for Animal consumption in this part of the country. The cowpea (*Vigna unguiculata* (L.) is an annual herbaceous legume cultivated for its edible seeds or for fodder. The cowpea is one of the most popular legume grains in Africa and is also cultivated in some parts of America and Asia. Cowpea is called the "hungry-season crop" because it is the first harvested crop, before the cereal crops. Its seeds, pods and leaves are commonly used as human food. Cowpea has great flexibility in use: farmers can choose to harvest it for grains or as forage for their livestock, depending on economic or climatic constraints (Gomez, 2004). Dual-purpose varieties have been developed to provide both grain and fodder while suiting the different cropping systems encountered in Africa (Tarawali *et al.*, 1997). Cowpeas are primarily valued as food, but they are occasionally used to feed livestock. Cowpea forage, both the vines and leaves, either fresh, or conserved as hay or silage, is often used for fodder. The haulms, which are the crop residues of seed production, contain about 45-65% stems and 35-50% leaves and sometimes roots (Anele *et al.*, 2012). Groundnut on the other hand, is an annual herbaceous plant growing up to 30 – 50cm tall. As a legume, it belongs to botanical family Fabaceae (Moretzsohn *et al.*, 2013).

The results from the study are expected to provide useful information by local farmers, and researchers in the study area, so that they can apply the most effective storage facility to maximize a growth performance of Animals as well as improved profit.

Objective of the Study

The main objective of this research is to assess the effect of different traditional methods of storage on cowpea hay and groundnut hay while the specific objectives were:

1. Find out the different local methods of storage of groundnut hay and cowpea hay adopted by the farmers in the area.

2. Determine the effect of different methods of storage on the physical appearance of the hays.

MATERIALS AND METHODS

Study Area

The research was conducted in Aliero and Jega local government areas of Kebbi State. Aliero is a town in the northern Nigeria located in the southeast of Kebbi State.

Sampling Procedure and Sampling Size

Simple random sampling technique was employed where ten (10) villages were selected for the study area which includes Sabiyal, Kashinzama, Jiga Birni, Aliero and Jiga from Aliero local government while Jega, Kimba, Alelu, Gindi and Nassarawa from Jega local government. Ten respondents were randomly selected from each village selected and a total of one hundred (100) respondents were obtained as sample size.

Data Collection

The study was carried out with the aid of a structured questionnaire. The questionnaire was designed to obtain information on socio-economic characteristics of the respondents.

Statistical Analysis

The data obtained from the experiments were subjected to analysis of variance (ANOVA) using Completely Randomized Design (CRD). Where significant difference between the mean were indicated, Duncan's multiple range test (DMRT) was used to separate the means (Duncan, 1955).

RESULTS AND DISCUSSION

Table 1: Distribution of the respondents based on types of hays, methods of storage, duration and sources of hays

Type of Hays	Frequency	Percentage (%)
Cowpea	24	24
Groundnut	43	43
Both	33	33
Total	100	100
Methods/Structures	Frequency	Percentage (%)
Rhumbu (Rihewa)	5	5
Stores	15	15
Underground Dry	15	15
Bagging (Sacks)	55	55
Kitila	5	5
Rumfa	5	5
Total	100	100
Month Ranges	Frequency	Percentage (%)
2 – 3	6	6
3 – 6	94	94
1 year	00	00
Total	100	100
Source of Hays	Frequency	Percentage (%)
Farm	73	73
Purchase	20	20
Both	7	7
Total	100	100

Results in table 1 indicated that 43% of the respondents stored groundnut hay only, 24% stored cowpea hay and 33% stored both groundnut hay and cowpea hay. The results also indicated that 55% of the respondents store hays using Bag/sac method, 15% used Underground method, 15% used Store method, 5% used local Kitila, 5% store hays using rhumbus (Rihewa) method and 5% used Rumfa (under shade) method. It also indicated that 94% of the respondents store hays for 3 – 6 months, 6% store hays 2 – 3 months and none of the farmers store hays for one year. It also indicated that 73% of the respondents sourced hays from their farms after harvesting, 20% sourced hays through purchase and 7% sourced through both farms and purchase. This is in line with what was

reported by (Suttie *et al.*, 2000) that hay storage is a profitable venture in Nigeria for the purpose of maintaining regular supply throughout the year.

Table 2: Distribution of the Respondents Based on Number of Bales Stored, Color before Storage, Color after Storage, Parasite Infestation before and after Storage and Purpose of Storage

Number of bales	Frequency	Percentage (%)
1 – 50	25	25
50 – 100	59	59
100 and above	16	16
Total	100	100
Color before storage	Frequency	Percentage (%)
Green	100	100
Yellow	00	00
Brown	00	00
Black	00	00
Total	100	100
Color after storage	Frequency	Percentage (%)
Green	99	99
Yellow	01	01
Brown	00	00
Black	00	00
Total	100	100
Presence of Parasite	Frequency	Percentage (%)
Before	92	92
After	08	08
Total	100	100
Purpose of Storage	Frequency	Percentage (%)
Personal use	53	53
Commercial	27	27
Both	20	20
Total	100	100

Results in table 2 indicated that 59% of the respondents stored 50 – 100 bales of hay, 25% stored 1 – 50 bales of hay and 16% stored 100 and above bales of hay. The results further indicated that only eight respondents (8%) expressed that they experienced parasite infestation on hays after storage while 92% expressed that hays remain parasite free after storage. The result further indicated that 53% of respondents stored their hays for personal use only, 27% stored their hays for commercial purpose only, 20% expressed that they stored their hays for both personal and commercial purposes. This is an indication that farmers in the area have excellent traditional methods of storing hays.

CONCLUSION AND RECOMMENDATION

From the result it could be concluded that, most of the farmers in the study area stored hays using sacks traditional storage methods as a result of predominant cultivation of groundnut and cowpea. There is the need to know the cost of each traditional storage method as from the findings of this research it is recommended that the store method of storage is the best method, although it is the most expensive especially on subsistence farmers.

REFERENCES

- Anele, U.Y. Sudekum, K.H. Arigbede, O.M. Luttgenau, H. Oni, A.O. Bolaji, O.J. Galyean, M. I. (2012). Chemical Composition, Rumen Degradability and Crude protein fractionation of some commercial and improved cowpea haulm varieties. *Grass Forage Science* 67(2): 210-218.
- Duncan, D.B. (1955). Multiple range and multiple F-test. *Biometrics*, 11: 1-42.
- Moretzsohn, M. C, Gouvea, E. G, Inglis, P.W. Soraya, C.M. Jose, F.M and Bertioli, D.J (2013). A study of the relationships of cultivated peanut and its most closely related wild species using Jatron sequences and microsatellite markers. *Annals of Botany* III (1):113-126.

- Suttie, J.M. (2000). Hay and Straw conservation for small-scale farming and pastoral conditions. FAO Plant production and protection series No. 29, FAO, Rome.
- Tarawali, S.A., Singh, B.B. Peters, M. Blade, S.F. (1997). Cowpea haulms as fodder. In: Singh.B.B. Advances in cowpea research, IITA.