

Comparative Analysis of Problems Associated with Indigenous and Modern Storage Techniques of Grains and Pulses among Farmers

¹E.C. Matthews Njoku and ²O.M. Adesope

¹Department of Agricultural Extension, Federal University of Technology, Owerri, Nigeria

²Department of Agricultural Economics and Extension,
University of Portharcourt, Nigeria

Abstract: The study focused on comparing the differences in identified problems associated with indigenous and modern storage techniques of grains and pulses among farmers in Ideato area of Imo State, Nigeria. Data were collected with the aid of interview schedule from 50 randomly selected farmers in the study area. It was found that most respondents used the indigenous storage techniques in preserving their grains and pulses and they encountered losses using this method. For those who used modern method very insignificant percentage of respondents experienced losses. It is therefore recommended that agro chemicals sales should be subsidized. Also, adequate incentives should be provided to farmers to enable them purchase chemicals for storage. Effective training by Extension agents should be ensured so that farmers can use them properly.

Key words: Indigenous and modern storage techniques, grains and pulses, farmers, chemicals

INTRODUCTION

Post-harvest food losses are one of the important sources of food insecurity in Africa and in Nigeria in particular. According to Amcost (2006), pre- and post-harvest food crop loss among African countries is estimated at about 10%, which is higher than the global average. Losses associated with these crops limit the potential income of the farmers and also their overall livelihood. It also threatens food security and exacerbates conditions of poverty among rural households, whose income stream depends on the ability to store excess farm produce for a later date (Ntiokwana, 1999; Thamaga-Chitja *et al.*, 2004).

Grains and pulses are stored for periods varying from several weeks to several years. Regardless of length of storage, pests can invade the stored products and affect the quantity and quality of the products. But if adequate storage methods are applied the products will still remain nutritive during storage (Donald *et al.*, 1980). Technically, agricultural products are kept in storage during the interval between harvest and consumption (Boxall, 1986). Studies have indicated that farmers store their produce for different reasons which include provision of planting materials, controlling supply for better prices; supply of food for later home consumption and produce quality improvement (Anyim, 1991). In an effort to conserve food, man has developed a considerable array of practices. Some of the practices are simple while others

are complex. But no matter the complexity or simplicity all storage aim at the same objective (Egba, 1997). Storage practice is made up of the following components: storage structure which is the container for stored produce; the produce and its storage state; treatment applied to the produce to reduce the influence of agents of damage (Anthonio and Olyida, 1963).

Grains and pulses are important food in Nigeria because of their high yield potentials and ability to grow well on soils. Storage is the most important post-harvest operation thus it is also the operation in which losses due to various factors are greatest. If grains and pulses are properly stored, it will be available almost throughout the year. This maximizes profit and reduces prices of commodities thereby improving the living standard of the rural populace. Inadequate storage facilities and lack of funds for the farmers to meet with their storage needs is a major problem hindering agricultural practices. Storage losses and damages which are caused by insects, rodents, mould, etc., should be prevented. Insect infestation and rodent attack have effect on quality of produce because they feed on products thereby reducing the nutritive value, contaminate the products with their fragments, faeces and urine. They also contribute to objectionable and repulsive condition of foodstuff on display for sale in the market. Moldiness spoils the flavour of stored grains and pulses. Some losses and damages are also encountered during processing of harvested products or even during harvesting. An understanding of the

improved storage techniques will go a long way in empowering farmers with useful information that will help them store their grains and pulses. The broad objective of this study was therefore to compare the problems associated with the use of indigenous storage techniques on the one hand, and modern storage techniques on the other hand, in preserving selected tropical grains and pulses in Ideato North local government area of Imo State, Nigeria. Specifically, the study determined post-harvest problems associated with grains and pulses; identify major 10:29AMindigenous and modern storage techniques used for storing grains and pulses;

MATERIALS AND METHODS

The study area is Ideato North local government area of Imo State, Nigeria. The people of this area are farmers but comine this with other businesses such as trading, teaching, etc. Simple random sampling technique was employed in this study. Firstly, ten communities were randomly selected out of the 13 autonomous communities identified in the study area. From each community, five respondents were then randomly selected from the list of farmers obtained from the State Agricultural Development Programme (ADP) provided by Village Extension Agents. The total number of respondents involved in the study was 50. Data collection was through an interview schedule. Data analysis was by the use of frequency and percentage.

RESULTS AND DISCUSSION

Table 1 shows that a relatively high proportion of the respondents involved in the study (34%) were between 40 and 50 years old. Also most respondents were into other non farming enterprise (64%). The level of education was high as most respondents had formal education up to tertiary level. Most respondents indicated that they were visited by Extension Agents, and they obtained information on storage from EAs. Respondents mainly store products for consumption and sale. This could be as a result of the low economic base of the people. To them, seed storage serves as a means of insurance and ultimately survival. This is not a healthy development as there will be nothing left to plant in the next season and the farmers would have to continue in a cycle of abject poverty.

Table 2 shows that most of the farmers cultivate maize than any other crop. It was also revealed that maize, groundnut, and soya bean are more combined than maize, rice and groundnut. Soya bean and groundnut are the least cultivated alone. The importance of legumes to soil

Table 1: Socio-economic characteristics of respondents (n – 50)

Characteristics	Frequency	(%)
Age		
20-40	15	30
41-60	30	60
above 60	5	10
Occupation		
Farming	18	36
Others	32	64
Education		
No education	6	12
Primary	10	20
Secondary	12	24
Tertiary	22	44
Do you get visits from extension agents		
Yes	30	60
No	20	40
Do you obtain information on storage from extension agents		
Yes	29	58
No	21	42
Purpose of storage*		
Seed planting	30	25
Consumption	48	40
Sale	42	35

*Multiple response

Table 2: Crop combination among farmers

Crop combination	Frequency	(%)
Maize/groundnut/soybean	8	16
Maize/rice/groundnut	4	8
Maize	15	30
Maize/rice	3	6
Maize/rice/soybean	5	10
Maize/rice/soybean/groundnut	4	8
Rice	2	4
Soybean	1	2
Groundnut	1	2
Maize/soybean	6	12
Rice/groundnut	1	2

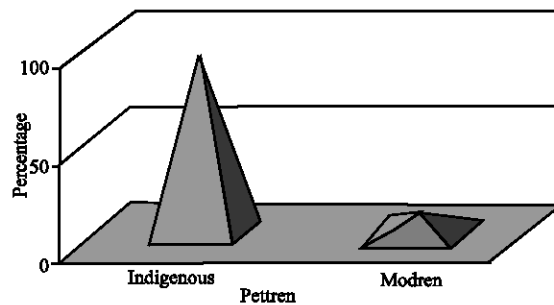


Fig. 1: Pattern of storage technique

fertility cannot be overstated. The cultivation of pulses by respondents obviously suggest that adequate nutrients are added to the soil in the process.

Generally, the grains cultivated y respondents include rice and maize, while the pulses cultivated were soybean and groundnut.

Figure 1 shows that 90% of the farmers use indigenous storage techniques while 10% of the farmers use modern storage techniques. Figure 2 shows that 36%

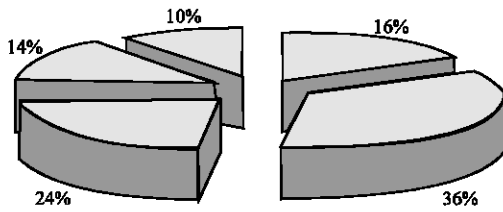


Fig. 2: Storage structures used

Table 3: Percentage storage losses experienced by farmers

Quantity stored (bags)	Percentage loss using indigenous method	Percentage loss using modern method
100-199	12	0
200-299	16	0
300-399	30	0
400-499	40	2

Table 4: Identified differences between indigenous and modern storage techniques

Indigenous	Modern
Storage material not desirable	Storage material durable
Quality stored low	Quality stored high
High rate of loss	Low loss
Not mechanized	Mechanized
Difficult to monitor	Easy to monitor
Low capital intensive	Capital intensive
Low technology	High technology
No skills in management	Requires skills in management

of the farmers store their products in metal drum, and bags/cans; 24% store in earthen pots and plastic containers; 16% store in calabash, basket and cooking fire; 14% store in underground pits whereas 10% store in silo and crib. Findings show that more farmers use metal drum, plastic cans and fertilizer bags in their storage. It was found that 36% of respondents indicated that stored products are lost through weevils; 20% stated that products are lost through mould; 40% stated that stored products are lost through rodents attack and 4% indicated that products are lost through other methods such as theft etc.

Findings from Table 3 shows that 98% of respondents who store grains and pulses using indigenous method encounter losses in their products while only 2% of the farmers encounter loss using modern methods. The implication of this finding is that modern storage technique is more efficient than the indigenous method of storage.

Identified differences between indigenous and modern storage techniques: From Table 4, respondents indicated that the indigenous storage materials are not durable, most of them are fragile and can be damaged by rodents,

termite etc. but the modern storage materials are durable and can last for years. The quality of product stored using the indigenous storage techniques is low while the quality stored using modern method is high. There is high rate of loss in the indigenous storage techniques and low rate of loss in the modern storage techniques.

Respondents indicated that indigenous storage technique is not mechanized while the modern storage technique is mechanized. It was also indicated that indigenous storage technique is difficult in monitoring in the sense that the whole products will have to be poured out of the containers for check, while in the modern storage the monitoring could be done easily. Respondents perceived that indigenous storage material is not capital intensive because they are made with the available materials while the modern storage technique is capital intensive. It was reported that indigenous storage material has low technology in the sense that it is indigenous knowledge system based material available to the farmers; while the modern storage requires high technology for its operation and maintenance. Furthermore, respondents indicated that indigenous storage material does not require much skill in management while the modern storage requires more skills in management.

CONCLUSION

The findings of this study revealed that majority of the respondents used the indigenous storage techniques. A great proportion of the respondents encountered losses using indigenous techniques, while very few encountered losses with modern techniques. It is therefore recommended that agro chemicals sales should be subsidized. Also, adequate incentives should be provided to farmers to enable them purchase chemicals for storage. Effective training by Extension agents should be ensured so that farmers can use them properly.

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