

New Agricultural Development Agenda : Focus on Adoption of Storage Interval of Cowpea in Mashegu Local Government Area of Niger State.
Nigeria.

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ABSTRACT

The Study examined the adoption of Storage interval of cowpea in Mashegu Local Government Area of Niger State. To achieve the study objectives, 70 Cowpea farmers were randomly selected from seven villages. Data collected from the respondents were analysed using descriptive statistics and chi-square test. Findings of the study revealed that 28.57% of the respondents were in active age range of 21-30 years, while majority of the respondents (34. 28%) acquired primary education most of whom were married (81.43 %).The most widely used storage chemical in the area was phostoxin with 62. 86% respondents; this was followed by actellic with 38.57% response. The finding indicated that most respondents did not adhere to the recommended storage intervals for actellic and decis chemicals. Agro – allied retailers ranked first (37.14%) as the major sources of information for cowpea storage chemicals while extension agents ranked least with 7.15% response. Chi – square analyses showed significant relationship at 5% between adoption of storage interval and education level, marital status and farming experience. Based on the findings, the study suggests the need for more farmer education that will increase awareness about the use of chemicals. To enhance adherence to recommended interval, farmers should be encourage to store their cowpea in community stores under the supervision of village extension agents.

INTRODUCTION

Cowpea plays significant role in the economics and diets of Nigerians. It is found in most house hold diets because of its affordable prices and protein contents. Further, the importance of cowpea goes beyond source of food and income. In marginal lands and where rainfall is scanty, cowpea provides support to sustainable agriculture (Sigh *et al*, 1997). However, despite the value of cowpea, it maximum contribution to food security has not been fully realized. Pests have been identified as major constraints to increased cowpea production and storage. According to Jackal *et al*. (1985) cowpea production can only be successful venture by protecting it from pests through the use of chemicals. It is as a result of this that farmers use pesticide to stores cowpea.

But for some times now, the problem of pesticide residues in food, especially in cereals, fruits and vegetables has necessitated the formulation and implementation of certain policy measures to minimize this problem. Atu and Okere (1988) defined pesticides as economic poisonous substances used by farmers to control and eliminate pest to enhance growth and yield. Pesticides are also used to preserve produce in the stores. It is well recognized that if pesticide is applied too close to harvesting or consumption date, toxic substances are probably retained in consumer food. This situation can be prevented by adhering to the recommended intervals. The

interval of days require depend on the toxicity of the pesticide, highly toxic pesticide have longer intervals and less toxic ones have shorter intervals.

In Nigeria National Food Drug and Administration Control (NAFDAC) prohibits the harvesting or selling of any food crop treated with pesticide until the prescribed interval is employed. The recommended intervals are stated on the label of the pesticide bottle or containers. To know how the interval is practically applied in cowpea storage, a study was carried out in Mashegu Local Government Area of Niger State. The specific objectives were to:

1. examine the socio – economic characteristics of the respondents;
2. determine the type of storage chemical used in the area;
3. assess the adoption of cowpea storage interval in the area; and
4. ascertain sources of information for cowpea storage chemicals.

METHODOLOGY

The study was conducted in Mashegu Local Government Area of Niger State. The area is located in the Guinea Savanna Ecological Zone of Nigeria within Latitudes 8° - 10° North and Longitudes 3° – 8° East. Annual rainfall ranges between 1100mm – 1600mm with average monthly temperature of between 23° C to 29° C. Soils are predominantly light and well drained. Crop and livestock farming is the major occupation of the peoples, major crops cultivated in the area include cowpea, sorghum, millet, ground nut and maize while animals reared include goat, sheep, cattle donkey and camel (Niger State Government Diary {NGSG}, 2003). To achieve the study objectives, random sampling techniques was used in selecting seven villages from the sampling frame of fifteen villages that are directly involved in cowpea production in the area. The selected villages are Baban – rami, Kaboji, Karamin – rami, Sahon – rami, Mashegu, Makera and Mulo. In each village 10 farmers were randomly selected from the sampling frame obtained from the village heads. In all, 70 cowpea farmers were randomly chosen for the study. Data collected were analyzed using descriptive statistic (frequencies, percentage and means) and inferential statistics (Chi – Square test).

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

The mean age of the respondents in Table 1 was 38 years. The age of the farmer is important in traditional agriculture in terms of productivity and rate of adoption of innovation. A large proportion of the respondents (34.28%) acquired primary education, 32.86% of the respondent had no formal education. Only 4.28% had tertiary education. Table 1 reveals that majority of the respondents (30.00%) level of annual income was between ₦21,000 - ₦30,000 while 28.57% of

the respondent's annual income was between ₦31,000 – ₦40,000 and 11.43% annual income was below ₦11,000. It could be said therefore that the estimated annual income of the respondents in the area is relatively low. As shown in Table 1, majority of the respondents (81.43%) were married, while 7.14% were single and 4.29% were widowed. This indicates that married cowpea farmers predominate in the study area. Also, the table shows that over 70% of the cowpea farmers have between 5 – 10 years of cowpea storage experience. This indicates that a good number of the respondents have long cowpea storage experience.

Types of Agro-chemical Used

Table 2 shows the distribution of the respondents according to the types of storage chemicals used. The result reveals that phostoxin is the most commonly used storage chemical (62.86%) for storing cowpea by the respondents in the area. This is followed by actellic dust (38.57%), Decis (31.43 %) and sniper (24.29%). The farmers preference for phostoxin is attributed to its tablet form and ease of application which does not require any technicality. Further, investigation revealed that sniper chemical is used to control mosquitoes which mostly occur during raining seasons. However, it was not clear whether sniper application in living rooms have health implications.

Adoption of Storage Interval

The results in Table 3 showed that respondents did not adhere to the storage interval (days are calculated as averages for farmers who used a particular storage chemical). For actellic and decis, a period of three months interval is recommended, but most farmers fetch their cowpea for consumption or sell just 71 and 72 days after chemical application for decis and actellic respectively as revealed by the mean days. The major reason advanced by most of the respondents for early disposal of cowpea was urgent need for money to solve family problems and to cushion the effect of the hardship of the dry season. The study also reveals that hand gloves are usually not used during chemical application or mixing while some of the empty containers of chemical are retained for domestic uses in households instead of disposing them.

Sources of Information

The findings of the study indicate that majority of the respondents (37.14%) got information about storage chemicals through Agro – allied shops. Similarly 31.43% of the respondents knew about storage chemicals through neighbours. While friend, radio, and extension agents were the sources of information accounting for 15.71%, 8.57% and 7.15% respectively (Table 4). This implies that Agro – chemical sales representatives had maximum contact with farmers while the extension agents were the least source of information for cowpea storage chemicals in the area.

The Chi – Square result in Table 5 indicates that there is no relationship between age and adoption of storage interval by the respondents. Many studies revealed that old farmers often tend to be more conservative and afraid of taking risk, which the adoption of new technology entails (Olomola, 1988). Similarly, Igben (1988) stressed that younger farmers are more dynamic and more willing to take such risk connected with the adoption of new innovations. A Chi–Square figure of (($X^2 = 10.864$, $df=4$, $P<0.05$) infers a statistical significant relationship between educational level and adoption of storage interval by the respondents. The level of literacy among cowpea farmers could mean that the farmers have acquired a minimum level of knowledge and skill to adopt storage chemical effectively. The Chi–Square result also confirmed a significant relationship between farming experience and adoption of storage interval ($X^2 = 11.214$, $df =4$, $P<0.05$). This is expected because increase in farmers experience could increase their level of acceptance of new ideas as a means to overcome their production constraints. Moreso, marital status had significant relationship with adoption of storage interval. In a related study, Onu (2003) stated that marital status has advantage for increased productivity and innovativeness since married people tend to be committed to task.

CONCLUSION

The findings of the study revealed that majority of the respondents were between the ages of 21 – 30 years who are fairly educated to primary level. Estimated annual income for most of the respondents ranges from ₦21, 000 – ₦30, 000, while majority of the respondents are married with long years of experience. Phostoxin is the most preferred cowpea storage chemical in the area. Most of the respondents that used Decis and actellic storage chemicals did not adhere to the recommended interval. Major source of information was Agro allied shops. Educational level, marital status and farming experience had significant relationship with adoption of storage interval.

RECOMMENDATIONS

This study highlights the need for more farmers’ educational programme that will raise awareness about the use of chemicals. Increased awareness on this could reduce unnecessary application of storage chemicals. To reduce the hardship of dry season reported by the respondents, farmers should be empowered to do off farm activities. This could come in form of loans given in kind. To improve adherence to the recommended interval, farmers should be encouraged to store their cowpea collectively in community stores, under the supervision of the extension agents, to facilitate this, farmers should be encouraged to form cooperative societies through which the storage could be made. Similarly, extension efforts should be made to

enlighten farmers on how to dispose containers after chemical usage. The result of the study shows that most of the respondents got their information from agro-allied retailers who are mostly quacks. Thus, there is the need to improve on the effectiveness of extension services in order to assuage the problem. Extension agents with the right knowledge and training should be made to handle the task of Agricultural information dissemination on storage chemicals in the area.

Table 1: Socio – economic characteristics of the respondents

Variables	Frequency	Percentage
Age (years) :		
20 and below	13	18.57
21 – 30	20	28.57
31 – 40	16	22.86
41 – 59	12	17.15
50 and above	9	12.85
Total	70	100.00
Mean 38		
Educational Level:		
No formal Education	23	32.86
Quranic Education	10	14.29
Primary Education	24	34.28
Secondary Education	9	12.85
Tertiary Education	4	5.72
Total	70	100.00
Income:		
₦ 10, 000 and below	8	11.43
₦ 11, 000 – ₦ 20,000	14	20.00
₦ 21, 000 – ₦ 30,000	21	30.00
₦ 31, 000 – ₦ 40,000	20	28.57
Above ₦ 40,000	7	10.00
Total	70	100.00
Marital Status:		
Married	57	81.43
Single	5	7.14
Widowed	3	4.29
Widower	2	2.85
Divorce	3	4.29
Total	70	100.00
Farming Experience:		
1 – 2 years	8	11.42
3 – 4 years	12	17.15
5 – 6 years	15	21.43
7 – 8 years	21	30.00
9 – 10 years	14	20.00
Total	70	100.00

Source: field survey, 2010

Table 2: Type of storage chemicals used by the respondents

Chemicals	Frequency	Percentages
Photoxin	44	62.86
Decis	22	31.43

Actellic	27	38.57
Sniper	19	24.29

Source: field survey, 2010

* Multiple responses

Table 3: Adoption of storage interval by the respondents in the area

Chemical	Mean days (Interval)
Photoxin	45
Decis	71
Actellic	72
Sniper	49

Source: field survey, 2010.

Table 4; Distribution of respondents according to their sources of information.

Sources	Frequency	Percentage
Extension agents	5	7.15 ⁵
Friends	11	15.71 ³
Radio	6	8.57 ⁴
Neighbours	22	31.43 ²
Agro – allied shops	26	37.14 ¹
Total	70	100.00

Source; field survey, 2010

Note: Superscripts 1 – 5 are rankings of sources of information

Table 5: Chi – square result of the relationship between socio – economic characteristics and adoption of storage interval by the respondents.

Variables	X ² cal	X ² tab	DF	Sig.Level	Remark
Age	1.769	9.488	4	0.05	Not Significant
Educational level	10.864	9.488	4	0.05	Significant
Marital status	10.157	9.488	4	0.05	Significant
Income	1.852	9.488	4	0.05	Not Significant
Farming experience	11.214	9.488	4	0.05	Significant

Computed from field survey data, 2010.

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