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Farmers' Perception of the Contributions of Radio to the Prevention of Post Harvest Losses of Agricultural Produce in Benue State, Nigeria

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Abstract:

This study investigated farmers' perception of the specific contributions of radio to the prevention of post-harvest losses of agricultural produce in Benue State, Nigeria. The research design adopted in the study was the survey with the questionnaire as the research instrument for data collection. Findings revealed that radio provides information on post-harvest losses prevention of agricultural produce influence farmers. This enables farmers to allow their agricultural produce to reach maturity stage before harvesting, properly handle their agricultural produce during harvesting to avoid losses, use appropriate and improved storage facilities, dry their agricultural produce harvested from the farm properly before storage, apply insecticides on agricultural produce before storage, engage in proper packaging of agricultural produce before evacuating them from farm to avoid losses, properly package their agricultural produce before transporting them to the market to avoid losses, and engage in the use of standardized and appropriate methods of processing their agricultural produce to avoid losses, but as well as the use of improved storage facilities. Owing to this great influence radio has on farmers as far prevention of post-harvest losses of agriculture produce is concerned, the study concluded that radio has, to a large extent contributed to the prevention of post-harvest losses of agricultural produce in Benue state. The study recommended that farmers in Benue State should continue to source information from the radio on the prevention of post-harvest losses of agricultural produce in so as to keep them adequately updated on current innovations and practices of preventing post-harvest losses in the state. It was also recommended that radio stations across Benue State should increase their contributions to the prevention of post-harvest losses of agricultural produce so that farmers are adequately exposed to all the relevant methods and techniques necessary for more effective prevention of losses experienced during post-harvest period. By doing so, farmers can adequately enjoy the value of their produce from the farm for more enhanced agricultural development in the state.

Keywords: Farmers, perception, radio, contributions, prevention, post-harvest, losses, agricultural produce

1. Introduction

Information is essential for farmers' knowledge of agricultural production. Van den Ban and Hawkins (1992) Olowu and Oyedokun, (2000), cited in Okwu, Kuku and Aba (2007) attest that farmers need to be informed and educated about improved agricultural practices to enable them increase their productivity and income. According to the Agriculture Promotion Policy document (2016 – 2020) of the Federal Ministry of Agriculture and Rural Development:

- In order to increase agricultural productivity and improve agribusiness, the right information is required at the right time for planning and decision-making. This is relevant to all stakeholders in the sector, including farmers, input suppliers, processors, traders, policy makers, development partners, and researchers. Appropriate information can sharpen opportunities, clarify market access, and enable participants to make choices regarding how to deploy scarce resources (FMARD).

The provision of relevant and timely information to relevant stakeholders in agricultural production is indeed essential for enhanced agricultural development. The provision of the right and timely information to farmers also requires the use of appropriate communication channel. As a result, several channels of communication such as extension agents, individuals, farmer-to-farmer contact, print media (newspapers, magazines, newsletters, leaflets, pamphlets, and posters) and electronic media (radio, television, film, slides and film strips) have been widely used to disseminate information to farmers. Among them, radio, according to Zaria and Omenesa (1992), Omenesa (1997), and Ekumankama (2000) in Ariyo, Ariyo, Okelola, Aasa, Awotide, Aaron and Oni (2013) is the most effective channel of agricultural information to farmers. Omenesa (1997), cited in Ariyo, (et al 2013) explains that:

- Radio programmes are usually timely and capable of extending messages to the audience no matter where they may be as long as they have a receiver with adequate supply of power. The absence of such facilities as road, light and water are no hindrance to radio. Similarly, such obstacles as difficult topography, distance, time and socio-political exigencies do not hinder the performance of radio. Illiteracy is no barrier to radio messages since such messages can be passed in the audience own language (p.20).

Another advantage of radio programme is that it can be done almost anywhere through the use of a tape recorder (Nwuzor, 2000). It is probably because of these advantages of radio that many governments accord high priority to it as a means of reaching farmers. Woodard (2012) explains that:

- Radio... is still the most commonly accessible communications medium for significant segments of the rural population, including farmers, in many African nations. In fact, in the majority of developing countries, more than 75 percent of households own a radio, and at least 95 percent of the globe has access to a radio signal. Moreover, effective radio programming has the capacity to present itself as an extension of the long and established practice of oral arts and spoken word in many traditional African cultures. The potential impact of radio is further heightened through the incorporation of interactive elements, which has been shown to lead to positive increases in listenership, recall of information, and adoption rates. We know that radio can be extremely effective when used appropriately—the key is making sure you are using radio in a way that connects to listeners (P vii).

As Woodward (2012) has clearly shown, when radio is harnessed properly, it can prove to be an effective medium for the provision of agricultural information to farmers.

1.1. Statement of the Problem

One of the areas that attract global attention at present is the post-harvest losses of agricultural produce. The global concern about this issue is due to the growing increase in post-harvest losses and the adverse effect on the income of farmers, food security and the environmental sustainability. Food loss and waste have many negative economic and environmental impacts. Economically, they represent a wasted investment that can reduce farmers' incomes and increase consumers' expenses. Environmentally, food loss and waste inflict a host of impacts, including unnecessary greenhouse gas emissions and inefficiently used water and land, which in turn can lead to diminished natural ecosystems and the services they provide (Lipinski, Hanson, Lomax, Kitinoja, Waite and Searchinger, 2013).

Provision of relevant information is said to be crucial in enhancing farmers' knowledge of agricultural practices. Consequently, radio is one of the channels of communication that provides information to farmers on various agricultural practices. However, there is a gap concerning the extent to which radio contributes to the prevention of post-harvest losses of agricultural produce in Benue State. This study therefore, investigates the extent to which radio contributes to the prevention of post-harvest losses of agricultural produce in Benue State, Nigeria.

1.2. Objectives of the Study

The broad objective of this study is to examine the how farmers perceive the way radio contributes to the prevention of post-harvest losses of agricultural produce in Benue State, Nigeria. Specifically, the study is aimed at achieving the following objectives:

- i. To determine what farmers, perceive to be the extent to which they are exposed to radio agricultural information aimed at post-harvest losses prevention in Benue State.
- ii. To investigate farmer's perception of the specific radio messages available to them on post-harvest losses prevention of agricultural produce in Benue State.
- iii. To ascertain farmers' perception of the specific way radio information on prevention of post-harvest losses of agricultural produce influence farmers in Benue State.
- iv. To find out what farmers perceive to be the extent to which radio contributes to the prevention of post-harvest losses of agricultural produce in Benue State.
- v. To determine what farmers', perceive to be the specific formats radio messages on post-harvest losses of agricultural produce are disseminated to them (farmers).

1.3. Research Questions

- i. What do farmers perceive to be the extent to which they are exposed to radio agricultural information aimed at preventing post-harvest losses in Benue State?
- ii. What is farmers' perception of the specific radio messages available to them on post-harvest losses prevention of agricultural produce in Benue State?
- iii. What do farmers perceive to be the specific ways through which radio information on post-harvest losses influences them?
- iv. What do farmers perceive to be the extent to which radio contributes to the prevention of post-harvest losses of agricultural produce in Benue State?
- v. What do farmers perceive to be the specific formats of radio messages on post-harvest losses of agricultural produce are disseminated to them (farmers)?

2. Literature Review

Food loss and waste according to Lipinski, Hanson, Lomax, Kitinoja, Waite and Searchinger (2013) refers to the edible parts of plants and animals that are produced or harvested for human consumption but that are not ultimately consumed by people. FAO (2013), cited in Kiaya (2014) defines food losses as the decrease in edible food mass (dry matter) or nutritional value (quality) of food that was originally intended for human consumption. In particular, "food loss" refers to food that spills, spoils, incurs an abnormal reduction in quality such as bruising or wilting, or otherwise gets lost before it reaches the consumer. Food loss is the unintended result of an

agricultural process or technical limitation in storage, infrastructure, packaging, or marketing. Lipinski (2013) et al have said “food waste” refers to food that is of good quality and fit for human consumption but that does not get consumed because it is discarded—either before or after it spoils. Food waste is the result of negligence or a conscious decision to throw food away.

Food losses take place at production, postharvest and processing stages in the food supply chain. Food losses are mainly due to poor infrastructure and logistics, lack of technology, insufficient skills, knowledge and management capacity of supply chain actors, and lack to markets (Parfitt et al., 2010, cited in Kiaya, 2014).

Food losses have serious impact on the overall agricultural development of every nation. On the global level, Lipinski, et al (2013) reveal that 24 percent of global food loss and waste occurs at production, another 24 percent during handling and storage, and 35 percent at consumption. According to them, these three stages taken together account for more than 80 percent of global food loss and waste.

Since information is said to be essential in achieving effective agricultural production, Choudhury (2006) observes that public awareness campaigns must be implemented in order to increase awareness of the costs and implication of losses after harvest/production. Fixed targets must also be established to curb postharvest losses, along the same lines as those used in family planning and other time bound national programs. Public awareness campaigns should involve scientists, as well as extension and social worker organizations, and should incorporate the use of audio visual aids and the mass communication systems, including both print and electronic media (p. 21). Purushothaman (2003), cited in Onkargouda (2013) believes that the success of agricultural development programmes in developing countries largely depends on the nature and extent of use of mass media in mobilization of people for development. The planners in developing countries realize that the development of agriculture could be hastened with the effective use of mass media. The observation made by Onkargouda (2013) is about the effectiveness of radio in disseminating agricultural innovations is also clear here. According to him:

- Radio is considered as an effective tool to disseminate agricultural information among the farmers and it is the most powerful mass medium for broadcasting information quickly. It is a powerful communication medium ..., in the absence of regular and stable electric supply in rural areas. People have to depend on radio to meet their needs of information. Radio can reach large audience at the same time. In terms of cost, it is an extremely economical medium as compared to other extension media and methods involving individual and group contacts. Radio is considered as a credible source of information and is taken as authentic, trustworthy and prestigious medium of communication. Credibility refers to the trustworthiness of information perceived by farmers as important and assists in the adoption of information. This influences the adoption of agricultural technology as farmers think them as praiseworthy. A credible source of information stimulates farmers to adopt the recommended package which is suitable to local farm condition (p.18).

Sailas and Archie (n. d.), in their study found that although peasant farmers are well-aware of extension service programmes, they do not satisfy their agricultural information needs. This is because there are not enough extension workers, they do not have the means of transport to reach all households, they lack the communication skills to effectively interact with the peasant farmers, and they lack the motivation to carry out their work. A community radio service was the most preferred medium of communication for rural peasant farmers. The farming programmes are relevant to their own agricultural activities, their own language and accents are used, and they can contribute to the programme content. Woodard (2012) avers that for decades now, radio has been a dominant source of information for farmers in much of sub-Saharan Africa. Although the reach of radio varies from country to country, it is estimated that between 80 and 90 percent of households in Africa have access to a functional radio. Woodard (2012) further avers that:

- Radio is likely where most of your audience is. It is still the most commonly accessible communications medium for significant segments of the rural population, including farmers, in many African nations. In fact, in the majority of developing countries more than 75 percent of households own a radio, and at least 95 percent of the globe has access to a radio signal. Moreover, effective radio programming has the capacity to present itself as an extension of the long and established practice of oral arts and spoken word in many traditional African cultures. The potential impact of radio is further heightened through the incorporation of interactive elements, which has been shown to lead to positive increases in listenership, recall of information, and adoption rates. We know that radio can be extremely effective when used appropriately—the key is making sure you are using radio in a way that connects to listeners (p.vii).

In their study, Okwu, Kuku and Aba (2007) found that 66% of the respondents listened to agricultural programmes aired on Radio Benue and 42% of the listeners indicated that the programmes were relevant to their agricultural information needs. Majority of the respondents admitted that they gained some new knowledge through listening to the programmes. The programmes, to a large extent, had the desired impact on the listeners (P. 14).

In the study conducted, Adekunle, Onyibe, Ogunyinka, Omenesa, Auta and Kuyello (2004) found that radio is the preferred medium for receiving agricultural information across the age groups. Ango, Illo, Yakubu, Yelwa and Aliyu (2013) in their study found that most of the farmers obtained agricultural information through radio agricultural programmes (97.8%) out of which majority had access to information through the format of presentation or discussion by an expert and or an extension worker through radio (77.8%). The finding also reveals that farmers adopted the information disseminated through radio, which was found to be highly relevant (32.2%) to the farmers’ agricultural activities. Through the agricultural radio programmes aired, the farmers gained the knowledge of agricultural management practices (26.7%), prevention of post-harvest losses (17.8%) and appropriate application of fertilizer (16.7%). The radio agricultural programmes were found to be very relevant linkage to agricultural information by majority (97.8%) of

the farmers (p. 538). Onkargouda (2013) studied and found that farm radio programmes are the second credible, next to agriculture extension workers. This might be due to the fact that extension worker is very much available in the village and gives the information in required format.

Khan, Muhammad, Mahmood and Khan (2013) conducted study and concluded that, on the whole, the extent and effectiveness of agricultural information disseminated through electronic media regarding agronomic practices was comparatively more than that of plant protection measures. Roy et al (1968) in Onkargouda (2013) however, studied agricultural innovation among Indian farmers and found that out of four most-used sources radio was given fourth, that is the last place for its credibility. Sandhu (1970), cited in Onkargouda (2013) reported that in terms of the credibility placed upon radio as sources of farm information, radio was ranked third amongst seven selected sources. The first two positions went to demonstrations and university scientists respectively. According to Somasundaram (1976) cited in Onkargouda (2013) radio was first in order of channels utilized by both adopters and non- adopters for getting information about all the practices. Hiriyannaiah (1977) in Onkargouda (2013) found that out of seven sources of information, radio has received second rank in credibility by the graduate and educated farmers of Dharwad district. Annamalai (1979) in Onkargouda (2013) also reported that the awareness stage radio was utilized as farm information sources for the practices like seeds treatment and fertilizers application. Patil (1980) in a study conducted in Bijapur district has brought to light that amongst ten sources of information, small farmers have accorded fifth rank to radio compared to other farmers who have accorded second rank. Joshi (1985) found radio as the effective source credibility utilized by the farmers in sixth position. Nazam (2000) found that 68.8% of the respondents became aware of modern technology through radio/TV while extension worker, newspaper and agricultural magazines served as sources of information for 23.3, 13.3 and 3.3% of respondents respectively. Opera (2008) found that 88.10% of the farmers regarded the extension agents as their source of information, followed by the fellow farmers, radio, and television as indicated by 71.20, 63.20, and 43.30% of the farmers, respectively.

Ewuola, Ogunsumi and Augustu (2010) in their study of the *Assessment of Extension Media use Among Youth Farmers in Oyo and Ondo States* have found that the channels that were popular among the respondents include: radio and personal contact (53.7%) while demonstration was popular among the extension agents.

There are studies which indicate that in as much as radio is effective in disseminating agricultural innovations, it does not perform adequately in terms of disseminating such innovations to farmers. Ridwan, Suleiman and Fatonji (2014) in their study found that peasant fish farmers are not aware of agricultural innovations on radio. They, however, acknowledged that they received commercials on agricultural produce and technologies through radio, but in most cases, the commercials are not useful because the technologies advertised are often unaffordable. The respondents also believe that agricultural innovations are not available in radio programmes and the few programmes on agriculture are not useful because they do not address their problems.

2.2. Theoretical Framework

Diffusion of Innovations Theory has been used to anchor this study.

2.2.1. Diffusion of Innovation Theory

Propounded by B. Ryan and N. Gross (1943), the theory holds that in the innovation diffusion process, the media presents information that makes us aware of the existence of an idea. From there, the person gets interested, constantly evaluates the item, takes a trial of the item and finally acquires it (Bittner, 2003 in Anaeto, Onabajo and Osifeso, 2008). Daramola (2003) in Anaeto, Onabajo and Osifeso (2008) states that “the paradigm holds that the media have a crucial role to play in the process of diffusion of innovation because they create awareness among a large number of people at the same time”.

The relevance of this theory to the present study is that radio messages on post-harvest management practice of agricultural produce can arouse farmers’ interest to try and adopt the new practice disseminated to them for effective post-harvest management of agricultural produce. It also shows that radio dissemination of information on best post-harvest management practices of agricultural produce is crucial for trial and adoption of such practices.

3. Methodology

Survey research design was used to carry out this study. The method was adopted because it paves the way for human population such as the one in this study to be studied. This method also helps to study large and small population by selecting and studying samples chosen from the population to discover the relative incidence, distribution and interrelation of sociological and psychological variations. Questionnaire was the instrument used for data collection.

The population of the study comprised all the farmers in Benue State-Nigeria. According to National Bureau of Statistics (2012, p. 14), Benue State has a total number of Six Hundred and Fifty-Seven Thousand Seven Hundred and Seven (657767) farmers. Since the population size of 657767 was huge and cannot be studied as a whole in this study, a sample size of One Thousand One Hundred and One (1,111) was drawn from the population using a published statistical table for sample size determination under ± 3 precision level with confidence level of 95% and $P=5$. According to this formula, when population size is greater than 100,000 under the precision level of ± 3 , the sample size should be 1,111 (Taro Yamane, 1967 in Kusugh, 2016). The sample size of this study is therefore One Thousand One Hundred and One (1,111).

In sampling respondents in this study, a multistage sampling technique was used. First, based on the already existing geopolitical strata of the area, stratified sampling technique was used to group Benue State into three geopolitical zones- Zone A, Zone B and Zone C respectively. Thereafter, purpose sampling technique was used to select three hundred and seventy (370) respondents from Zone A, three hundred and seventy-one (371) respondents from Zone B, and three hundred and seventy (370) respondents from zones C. The

reason why purposive sampling technique was used is that only farmers who listen to radio were included in the sample. Consequently, 1111 respondents were sampled in the study.

The instrument used for data collection was the questionnaire. The questionnaire instrument was divided into two sections i.e. Sections A and B. Section A was on demographic while section B comprised information on the topic under investigation. The questionnaire instrument was administered through face-to-face approach. The reason for using face to face approach in the administration of the questionnaire was to help clarify any misconception that may arise in the course of filling in the questionnaire. It was also to ensure high returned rate of the instrument. Data collected were analyzed through the use of tables been expressed in frequency and simple percentages.

4. Results

A total of 1,111 copies of the questionnaire were administered on the respondents in this study but all the copies were suitable and valid for analysis in this study. 79 (7.11%) out of the copies of the questionnaire administered suffered mortality, while 1032 (92.89%) copies of the questionnaire administered were valid and therefore used for analysis since they constituted the significant majority of the questionnaire distributed.

The farmers sampled in the study across Benue State comprised 609 (59.01%) male and 423 (40.99%) female; 327 (31.88%) bachelors or unmarried persons, 691 (66.96%) married persons, 14 (1.36%) divorced persons; 79 (7.65%) aged between 18-28 years, 120 (11.63%) aged 29-38 years, 305 (29.55%) aged 39-48 years, 371 (35.91%) aged 49-58 years, 157 (15.21%) aged 59 years and above; 119 (11.53%) holders of First School Leaving Certificate, 541 (52.42%) holders of secondary certificate and 372 (36.05%) holders of tertiary certificate.

- Research Question One: What do farmers perceive of to be the extent to which they are exposed to radio agricultural information aimed at preventing post-harvest losses in Benue State?

Research question one is answered using table one below:

Response	Frequency	Percentage
To a large extent	671	65.02
To a little extent	349	38.82
Difficult to say	12	1.16
Total	1032	100

Table 1: Extent of Farmers' Exposure to Radio Agricultural Information on Post-Harvest Losses Prevention in Benue State
Source: Field Survey, 2016

Table one which is concerned with the extent of farmers' exposure to radio information on post-harvest losses prevention in Benue State revealed that 671 (65.02%) respondents said it was to a large extent, 349 (38.82%) respondents were of the opinion that it was to a little extent, while 12 respondents representing (1.16%) found it difficult to say.

The research question one is therefore answered to the effect that the extent of farmers' exposure to specific information on post-harvest losses prevention of agricultural produce on radio in Benue State is large.

- Research Question Two: What is farmers' perception of the specific radio messages available to them on post-harvest losses prevention of agricultural produce in Benue State?

Research question two is answered using table two below:

Response	Frequency	Percentage
Maturity harvesting	47	4.55
During Harvesting	61	5.91
Post-harvest field handling	55	5.33
Harvest field processing	48	4.65
Transportation from the farm	67	6.49
Post field harvest processing	151	14.63
Packaging	109	10.56
Storage	187	18.12
Transportation to the market	78	7.56
Marketing/consumption	115	11.14
All of the above	114	11.05
Total	1032	100

Table 2: Specific Radio Messages available to farmers on Post-Harvest Losses Prevention of Agricultural produce in Benue State
Source: Field Survey, 2016

Table two which is concerned with the specific radio messages available to farmers on the prevention post-harvest losses of agricultural produce in Benue State revealed that 47 (4.55%) respondents there were radio messages available to them concerning

maturity harvesting of agricultural produce, 61 (5.91%) respondents said there were messages to them on during harvesting, 55 (5.33%) respondents said there were radio messages available to them on post-harvest field handling of agricultural produce, 48 (4.65%) respondents said there were radio messages available to them on field processing of agricultural product, 67 (6.49%) respondents were of the opinion that there were radio messages available to them on transportation of agricultural produce from the farm, 151 (14.63%) respondents said there were radio messages to them on post-harvest field processing, 109 (10.56%) respondents said there were radio messages available to them on packaging of agricultural produce, 187 (18.12%) respondents said there were radio messages available to them on storage of agricultural produce, 78 (7.56%) respondents said there were radio messages available to them on transportation of agricultural produce to the market, 115 (11.14%) respondents said there were radio messages available to them on marketing/consumption of agricultural produce to avoid post-harvest losses, while 114 (11.05%) respondents said all of the above messages were available to them.

The research question two is therefore answered using table two to the effect that maturity harvest of agricultural produce, during harvesting, post-harvest field handling of agricultural produce, field processing of agricultural produce, transportation of agricultural produce from the farm, post-harvest field processing, packaging of agricultural produce, storage of agricultural produce, transportation of agricultural produce to the market, and marketing/consumption of agricultural produce are some of the specific radio messages available to farmers for prevention of post-harvest losses of agricultural produce in Benue State but most especially the ones on storage and post-harvest processing.

- Research Table 3: What do farmers perceive to be the specific ways through which radio information on post-harvest losses influences them?

Research table three is answered using table three as below:

Response	Frequency	Percentage
Allowing agricultural produce to reach maturity stage before harvesting	39	3.78
Proper handling of agricultural produce during harvesting to avoid wastage	47	4.55
Use of appropriate and improved storage facilities	374	36.24
Proper drying of agricultural produce before storage	129	12.50
Application of insecticides on agricultural produce before storage	115	11.14
Proper packaging of agricultural produce before evacuating them from the farm to avoid losses	31	3.00
Proper packaging of agricultural produce before transporting them to the market to avoid losses	127	12.31
Use of standardized and appropriate methods of processing agricultural produce to avoid losses	79	7.66
All of the above	91	8.82
Total	1032	

Table 3: Specific ways through which Radio Information on Prevention of Post-Harvest Losses of Agricultural Produce Influence Farmers in Benue State
Source: Field Survey, 2016

Table three which is concerned with the specific ways through which farmers are influenced by radio information available to them on post-harvest losses of agricultural produce in Benue State revealed that radio information has made 39 (3.78%) farmers to allow their agricultural produce to reach maturity stage before harvesting them, made 47 (4.55%) farmers to properly handle their agricultural produce during harvesting to avoid losses, made 374 (36.24%) farmers to use appropriate and improved storage facilities, made 129 (12.50%) farmers to dry their agricultural produce harvested from the farm properly before storage, made 115 (11.14%) farmers to apply insecticides on agricultural produce before storage, made 31 (3.00%) farmers to engaged in proper packaging of agricultural produce before evacuating them from farm to avoid losses, made 127 (12.31%) farmers to properly package their agricultural produce before transporting them to the market to avoid losses, made 79 (7.66%) farmers to use standardized and appropriate methods of processing their agricultural produce to avoid losses, made 91 (8.82%) respondents do all of the above.

Research question three is answered using table three to the effect that radio information on post-harvest losses prevention of agricultural produce influence farmers through allowing their agricultural produce to reach maturity stage before harvesting, properly handle their agricultural produce during harvesting to avoid losses, use appropriate and improved storage facilities, dry their agricultural produce harvested from the farm properly before storage, apply insecticides on agricultural produce before storage, engage in proper packaging of agricultural produce before evacuating them from farm to avoid losses, properly packaged their agricultural produce before transporting them to the market to avoid losses, and engage in the use standardized and appropriate methods of processing their agricultural produce to avoid losses, but what farmers do more is use of improved storage facilities.

- Research Question 4: What do farmers perceive to be the extent to which radio contributes to the prevention of post-harvest losses of agricultural produce in Benue State?

To answer research question four, table four is presented thus:

Response	Frequency	Percentage
To a large extent	701	67.93
To a little extent	315	30.52
Difficult to say	16	1.55
Total	1032	100

Table 4: Extent of Radio's Contributions to prevention of post-harvest losses of agricultural produce in Benue State
Source: Field Survey, 2016.

Table four which is concerned with the extent of radio's contributions to post-harvest losses prevention in Benue State revealed that 701 (67.93%) respondents said the contributions of radio to post-harvest losses prevention of agricultural produce in Benue State was to a large extent, 315 (30.52%) respondents were of the opinion that the contributions of radio to post-harvest losses prevention in Benue State is to a little extent, while 16 (1.55%) respondents found it difficult to comment.

Research question four is therefore answered to the effect that the contributions of radio to post-harvest losses of agricultural produce in Benue State is to a large extent.

- Research Question 5: What do farmers perceive to be the specific formats radio messages on post-harvest losses of agricultural produce are disseminated to them (farmers)?

To answer research question five, table five is presented and used as follows:

Response	Frequency	Percentage
Straight news presentation	607	58.82
Discussion	85	8.24
Interview	69	6.69
Documentary	59	5.72
Commentary	41	3.97
Drama	15	1.45
Jingles	225	21.80
Total	1032	100

Table 5: Specific Formats of Radio Messages on Post-Harvest Losses of Agricultural produce to farmers in Benue State
Source: Field Survey, 2016.

Table five which concerns with the particular formats of radio messages on post-harvest losses prevention to farmers revealed that 607 (58.82%) farmers sampled got radio messages on post-harvest losses prevention of agricultural produce through straight news presentation, 85 (8.24%) farmers got radio messages on post-harvest losses prevention of agricultural produce through discussion format, 69 (6.69%) farmers got radio messages on post-harvest losses prevention of agricultural produce through interview, 59 (5.72%) farmers got radio messages on post-harvest losses prevention of agricultural produce through documentary format, 41 (3.97%) farmers got radio through commentary format, 15 (1.45%) farmers got radio through drama, while 225 (21.80%) farmers got radio through jingles.

Research question five is answered through the use of table five to the effect that straight news presentation, discussion, interview, documentary, commentary, drama and jingles are specific formats of radio messages on post-harvest losses prevention of agricultural produce in Benue State.

5. Discussion

Based on the data presented and research questions answered, the following findings were made:

The exposure of farmers to specific radio information on post-harvest losses prevention of agricultural produce in Benue State is to a large extent. This is evident in table one where the exposure of 671 (65.02%) farmers to radio information on post-harvest losses prevention of agricultural produce in Benue State was to a little extent as against 349 (33.82%) farmers whose exposure to radio information on post-harvest losses of agricultural produce was a little extent, and 12 (1.16%) farmers who were rather indifference. This implies that farmers have adequate exposure to specific radio information on post-harvest losses prevention of agricultural produce in Benue State. The fact that farmers benefit from radio information on a post-harvest losses prevention of agricultural produce shows the relevance of information and education to farmers on improved agricultural practices. This is tandem with Van den Ban and Hawkins (1992) Olowu and Oyedokun (2000), cited in Okwu, Kuku and Aba (2007, p. 14) attest that farmers need to be informed and educated about improved agricultural practices to enable them increase their productivity and income.

Another finding of the study revealed that harvest of agricultural produce when matured, during harvesting, post-harvest field handling of agricultural produce, field processing of agricultural produce, transportation of agricultural produce from the farm, post-harvest field processing, packaging of agricultural produce, storage of agricultural produce, transportation of agricultural produce to the market, and marketing/consumption of agricultural produce are some of the specific radio messages available to farmers for prevention of post-harvest losses of agricultural produce in Benue State but most especially the ones on storage and post-harvest processing of agricultural produce. This is evident in table two where messages on harvesting of agricultural produce when matured were available to 47 (4.55%) farmers, 61 (5.91%) farmers have access to radio messages on post-harvest losses prevention during

harvesting, 55 (5.33%) have access to radio messages on post-harvest field handling of agricultural produce, 48 (4.65%) farmers have access to radio messages on field processing of agricultural product, 67 (6.49%) have access to radio messages on transportation of agricultural produce from the farm, 151 (14.63%) farmers have access to radio messages on post-harvest field processing, 109 (10.56%) farmers have access to radio messages on packaging of agricultural produce, 187 (18.12%) farmers have access to radio messages on storage of agricultural produce, 78 (7.56%) farmers have access to radio messages on transportation of agricultural produce to the market, 115 (11.14%) farmers have access to radio messages on marketing/consumption of agricultural produce to avoid post-harvest losses, and 114 (11.05%) who have access to radio messages on all of the above. This finding justifies the principles of diffusion of innovation theory which according to Daramola (2003) in Anaeto, Onabajo and Osifeso (2008) indicate that "...the media have a crucial role to play in the process of diffusion of innovation because they create awareness among a large number of people at the same time".

Finding also revealed that radio information on post-harvest losses prevention of agricultural produce influence farmers through allowing their agricultural produce to reach maturity stage before harvesting, properly handle their agricultural produce during harvesting to avoid losses, use appropriate and improved storage facilities, dry their agricultural produce harvested from the farm properly before storage, apply insecticides on agricultural produce before storage, engage in proper packaging of agricultural produce before evacuating them from farm to avoid losses, properly packaged their agricultural produce before transporting them to the market to avoid losses, and engage in the use standardized and appropriate methods of processing their agricultural produce to avoid losses, but what farmers do more is use of improved storage facilities. This is evident in table three where radio information has made 39 (3.78%) farmers to allow their agricultural produce to reach maturity stage before harvesting them, made 47 (4.55%) farmers to properly handle their agricultural produce during harvesting to avoid losses, made 374 (36.24%) farmers to use appropriate and improved storage facilities, made 129 (12.50%) farmers to dry their agricultural produce harvested from the farm properly before storage, made 115 (11.14%) farmers to apply insecticides on agricultural produce before storage, made 31 (3.00%) farmers to engaged in proper packaging of agricultural produce before evacuating them from farm to avoid losses, made 127 (12.31%) farmers to properly package their agricultural produce before transporting them to the market to avoid losses, made 79 (7.66%) farmers to use standardized and appropriate methods of processing their agricultural produce to avoid losses, and made 91 (8.82%) respondents do all of the above.

Finding further revealed that the contributions of radio to post-harvest losses of agricultural produce in Benue State is to a great extent. This is evident in table four where 671 (65.02%) farmers received information from the radio on post-harvest losses prevention of agricultural produce to a large extent, 349 (33.82%) farmers received radio information on post-harvest losses of agricultural produce to a little extent, while 12 respondents representing (1.16%) found it difficult to say.

Finding, also revealed that straight news presentation, discussion, interview, documentary, commentary, drama and jingles were specific formats of radio messages on post-harvest losses prevention of agricultural produce to farmers in Benue State. This is evident in table 5 where 607 (58.82%) farmers got radio messages on post-harvest losses prevention of agricultural produce through straight news presentation, 85 (8.24%) farmers were through discussion format, 69 (6.69%) farmers were through interview, 59 (5.72%) farmers were through documentary format, 41 (3.97%) farmers were through news commentary format, 15 (1.45%) farmers were through drama, while 225 (21.80%) farmers were through jingles respectively. In the study conducted Ango, Illo, Yakubu, Yelwa and Aliyu (2013) found that most of the farmers obtained agricultural information through radio agricultural programmes (97.8%) out of which majority had access to information through the format of presentation or discussion by an expert and or an extension worker through radio (77.8%).

5.1. Conclusion

This is evident in our present that farmers in Benue state are making use of radio information on the prevention of post-harvest losses of agricultural produce in a variety of ways. It is therefore not out of place to conclude this study by asserting that radio is making substantial contribution to the prevention of post-harvest losses of agricultural produce in Benue state, Nigeria.

5.2. Recommendations

Based on the conclusion of this study, the following recommendations are made:

- i. Farmers should continue to source information from the radio on the prevention of post-harvest losses of agricultural produce in Benue State to keep them abreast with current innovations and practices of preventing post-harvest losses in the state.
- ii. Radio stations across Benue State should intensify their contributions to the prevention of post-harvest losses of agricultural produce so that farmers are more adequately exposed to all the relevant methods and techniques necessary for effective prevention of losses experienced during post-harvest period. By doing so, farmers can adequately enjoy the value of their products from agricultural practice for more enhanced agricultural development in the state.
- iii. In contributing to the prevention of post-harvest losses of agricultural produce, the radio must give equal attention to all practices that can help farmers to address the problem of post-harvest losses of agricultural produce in Benue State.
- iv. Radio stations across Benue State should ensure that programmes on post-harvest losses of agricultural produce are broadcast more through discussion and interview with agricultural experts and drama formats that can help to expose farmers to and give them an in depth understanding of all the practices that will help to prevent post-harvest losses of agricultural produce in Benue State.

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