

*Original Research Article***Assessment of farmer's awareness of agricultural insurance packages: evidence from "Farming is our pride" communities of Zamfara State, Nigeria**Ayoyinka Nurudeen **Jatto***Field officer, NIRSAL Project monitoring reporting and remediation office, block B CBN building premises Gusau Zamfara State, Nigeria***Correspondence to:****Ayoyinka Nurudeen Jatto**, e-mail: nuayjao@yahoo.com, Ayoyinka.jatto@nirsal.com**Abstract**

Agricultural insurance has been one of the most crucial instruments in modern agricultural value chain financing. This study assesses farmer's awareness of agricultural insurance packages available in the farming communities of Zamfara State. The study uses a primary source of data collected through a structured questionnaire. From the ten listed common crops majorly grown in the state, ten farmers were purposively selected from each association to make up 100 farmers for the study. The results showed that the majority of the farmers were males with mean age of 40 years and they were educated. Majority of the farmers were married, most of them having a mean family size of seven persons, average farm size of three hectares, average farm experience of about 16 years and majority (61%) was combining farming with other occupation. Most of the respondents belonged to a cooperative society with eight years of membership. The binary logistic regression showed that the only factor responsible for farmers' awareness of agricultural insurance packages is membership in a cooperative society. It was concluded that farmers' awareness of agricultural insurance packages is significantly influenced only by membership of cooperative association. It is recommended that policy makers, agricultural insurance firms, and other actors in agricultural activities should put cogent effort in awareness and symposiums on agricultural insurance packages to enable farmers be aware of different agricultural insurance packages that can mitigate the uncertainty they face in their agricultural activities.

Keywords: Agricultural insurance; awareness; binary logistic; risks; cooperatives.**INTRODUCTION**

Farmers live with risk and make decisions every day that affect their farming operations. Many of the factors affecting the decisions that farmers make cannot be predicted with 100% accuracy: weather conditions change, prices at the time of harvest could drop, hired labour may not be available at peak times, machinery and equipment could break down when most needed, draught animals might die, and government policy can change overnight. All of these changes are examples of the risks that farmers face in managing their farm as a business (Kahan, 2008). All these risks affect farmers' profitability because over the years, as a result of market liberalization and globalization, farming has increasingly becomes riskier making smallholder farmers more vulnerable.

Risk has been identified as a major factor reducing the potential for increased resource availability in farming (Olubiyo and Hill, 2006). Despite that, agriculture is still the source of livelihood in many developing countries including Nigeria. Farmers are more exposed to adverse natural event, such as flood,

draught, pest, bush fire and the economic cost of major disasters may even increase further in the future because of climate change (Akinrinola and Okunola, 2014).

Agricultural insurance is a reliable tool that agricultural producers and farmers can potentially use, adopt and mitigate the risk associated with adverse events. Agriculture remains an important economic sector in Nigeria because it is still a source of growth and a potential source of investment opportunities for all its citizens. Agricultural production can vary widely from year to year due to unforeseen weather, diseases/pest infestation and/or market condition causing wide swings in yields and commodity price.

In general, insurance is a form of risk management used to hedge against a contingent loss. Agricultural insurance is designed to provide covers for losses incurred due to reduction in expected output from agricultural products (Azubuike, 2015). Despite the contributions of agriculture to the economic development of Nigeria, as well as the introduction of agricultural Insurance scheme which was designed to

assist farmers in management of risk exposures there are still significant numbers of farmers in Nigeria who are not insured or are having difficulty in claim processing simply because they could not meet certain conditions for their claim to be paid (Garba, 2012).

The major agricultural insurance packages are for crops and livestock. Others include fisheries and forestry. Crop insurance and livestock insurance provide the two broad categories for which commercial insurance covers are designed. Because of the complexities brought to agricultural ventures due to mechanization, a broad range of traditional policies, namely personal accident, fire, vehicles, machinery and public liability covers are made essential parts of a comprehensive agricultural insurance package.

Farmers throughout history have been required to make decisions under uncertainty and use different coping strategies for survival, since they do not have control over weather calamities, pest and diseases (Yazdanpanah et al., 2013). In order to succeed, farmers need to generate more profit and become competitive. They must have a good understanding of the farming environment and be skilled at managing risk. By dealing with risks more effectively, better farming opportunities arise when farmers are aware of insurance policies and packages around them to reduce their exposure to uncertainty. There is a need to understand the present situation and its attendant effects on farmers' awareness of agricultural insurance packages and policies for future accessibility to the farming communities and farmers. Therefore, the main aim of this study is to carry out an assessment on farmers' awareness of agricultural insurance packages but specifically, to understand the socio-economic factors responsible for farmers' responsiveness about agricultural insurance packages in Zamfara State.

MATERIALS AND METHODS

The study was carried out in Zamfara State, northwestern Nigeria populated with the Hausa and Fulani peoples. With an area of 38,418 square kilometers, it is bordered in the North by Niger Republic, to the South by Kaduna State. In the east it is bordered by Kastina State and to the West by Sokoto and Niger States. It has a population of 3,278,873 according to the 2006 census and contains fourteen local government areas. The main occupation of the people of Zamfara State is agriculture, thus the slogan "Farming is our pride". Major crops grown here include rice, cotton, sorghum, maize, millets, sesame, soybeans, wheat, groundnut and onions.

From the ten listed common crops majorly grown in the state, ten farmers were purposively selected from each crop-based association to make up 100 farmers for the study. Primary data were used for the study, and a questionnaire was used to obtain information on variables such as farm size, age, and farming experience,

farm income, participation in association, years of education, credit accessibility, marital status, extension visit, household size etc. Analyses were done using binary Logit regression.

The Model

Binary Logit regression: This was used to assess farmers awareness of agricultural insurance packages. There are two reason for choosing binary Logit model for this study instead of linear probability and probit models according to Rahman and Alamu (2003).

1. Logit models ensure production of probability of choice within (0, 1) range.
2. This is an advantage over linear probability model.
3. It is easier and more convenient to compute than probit model

The Binary logit model specification is as follows:

$$The\ probability: Y_{(1-\frac{1}{X_i})}, J = 1 - 7; F(Z_i) = \frac{1}{1 + e^{(-z_i)}} = \frac{e^{z_i}}{e^{z_i} + 1} \quad (1)$$

Where,

$$Z_i = \alpha + \beta_{1X_{i1}} + \beta_{2X_{i2}} + \dots + \beta_{7X_{i7}} + U \quad (2)$$

Where:

Z_i is an unobservable variable in the sense that X_i are generated from the field, β are not observable. In order to obtain the value of Z_i, the likelihood of observing the sample needs to be formed by introducing a dichotomous response variable Y_i.

Y_i = dependent variable

Y_i = 1 {if yes or zero otherwise},

0 = not Aware of agricultural insurance packages

1 = Aware of agricultural insurance packages

I = Number of respondents sampled

j = The socio-economic characteristic of the respondents

X₁ = Farming experience (yrs.)

X₂ = Education (yrs.)

X₃ = Farm size (ha)

X₄ = Age (yrs.)

X₅ = Annual Income from Agricultural activities (N)

X₆ = Labour size (number)

X₇ = Family size (number)

RESULTS AND DISCUSSION

Socio-economic variables

The results of the analysis of the socio-economic characteristics, and factors influencing the farmers' awareness of agricultural insurance packages in the study area are thus explained.

Sex

The results from Table 1 show that 94% of the farmers were males and 6% females. This higher proportion of males to females may be because religion and

custom play crucial roles in the livelihoods of the people in the study area in that the males are to provide for the household. The implication of male dominance may also be that productivity is expected to be higher because males have tendency to be more labour-efficient. This result agrees with the finding of Jatto (2012) that males were dominant among poultry egg producers in Ilorin.

Table 1. Socio-economic description of the respondents

Variables	Frequency	Percentage
Sex		
Male	94	94
Female	6	6
Total	100	100
Age		
≥30	23	23
35–45	57	57
46above	20	20
Total	100	100
Mean Age	40 years	
Educational level		
Secondary	15	15
Tertiary	83	83
Quranic	2	2
Total	100	100
Marital status		
Single	11	11
Married	89	89
Total	100	100
Family size		
≥5	28	28
6–12	56	56
13above	16	16
Total	100	100
Mean family size	7	
Farm size		
≥5	56	56
6above	34	34
Total	100	100
Mean	3	
Farm experience		
≥15	48	48
16–25	35	35
26above	17	17
Total	100	100
Mean farm experience	16	
Occupation		
Farming alone	39	39
Farming and other activities	61	61
Total	100	100

Variables	Frequency	Percentage
Membership of association		
≥5	57	57
6-15	32	32
6above	11	11
Total	100	100
Mean	8 years	
Do you understand agricultural insurance packages available		
Yes	25	25
No	75	75
Total	100	100

Age

The results from Table 1 further show that 23% of the farmers were within the age bracket of ≥30 years, 57% within the age range of 35 to 45 years, and 20% above 46 years. The result shows that majority of the farmers are relatively young and are still in their active age. The implication is that younger farmers are likely to adopt innovation faster than the older ones and should have clear understanding on procedures that will mitigate the risks they are exposed to. The finding agrees with Jatto (2012) that the majority of farmers within the age range of 41 to 50 years are still in their active age and more receptive to innovation.

Educational level and years spent in schooling

The results from Table 1 show that majority (80%) of the farmers had tertiary education and spent more than 12 years in formal education acquisition. The results also show that most farmers had tertiary education meaning that they are highly educated. It is expected that the level of education will contribute significantly to decision making and risk exposure of a farmer. This finding supports Ndahitsa (2008) in that the level of education determines the quality of skills of farmers, their allocative abilities and how well informed they are about the innovations and technologies around them. It is also in agreement with data of Oladipo and Adekunle (2010) showing that individuals with higher educational attainment are usually being faster adopters of innovation.

Marital status

The results from Table 1 show that the majority of the farmers (89%) were married and 11% single. Thus the married farmers are responsible according to the societal standard because they are likely to have some experience of life and risk associated to farming.

Family size

The results show that 28% of the farmers have 5 and below family size, 56% have a family size between

6 and 12, and 16% have 13 more than 13. Most of the farmers have family size range from 6 to 12 people. The implication is that the farmers will spend more on feeding, education, health care and other living expenses on their dependents. These expenses may account for low savings at the end of every harvest season and might lead to their ability of ignoring insuring their farm.

Farm size

The results from Table 1 show that 56% of the farmers had 5 ha of land and less, whereas 34% had 6 ha and more. The implication of this might be that the smaller the farm the lesser the risk associated. This is in line with data of Afolabi (2010) that an average farmer operated a small farm below 5 hectares.

Farm experience

The results show that 48% of the farmers had farming experience of about 15 years, 35% had 16 to 25 years farming experience, and 17% had 26 years and above. Experience is the knowledge, skill and practices acquired over a certain period that is accrued to farmers in practice. The results show that most (48%) of the farmers had 15 years experience in farming activities. The implication of this is that farmers in the study area should have had series of risk experience that will enable them to understand the need for insuring their farms. The findings agree with the work of Oluwatayo et al. (2008) that farmers with more experience would be more efficient, have better knowledge of climatic conditions and market situation and are thus expected to run a more efficient, profitable enterprise and be able to identify production risks.

Occupation

The results show that the majority (61%) of the farmers combine farming with other occupation while 39% are only farmers. This indicates that farming is not a full time job among the farmers in the study area and that most farmers depend on other income activities as a means of livelihood. The implication of this is that farmers in the study area might not rely solely on farming because of risks associated and look for ways of mitigating the effects to improve their livelihood. This result supports the findings of Jatto (2012) that farmers with farming as a major occupation might have irregular income. On the other hand, farmers who engage in additional jobs supplement their income to enhance their livelihood.

Membership of cooperative society

The results from Table 1 show that the majority, 57% had 5 years membership in cooperatives, 32% had between 6 to 15 years of cooperatives experience, and 11% had a 16 years' experience. The implication of this result is that the majority of the farmers will have access

to improved information from among the cooperative society they belong to. This may enhance their production and productivity in terms of sourcing for credit, insurance facilities or other sundries to boost their productivity. The farmers thus will share information and have a common stand on issues affecting their day-to-day farming activities.

Awareness of agricultural insurance packages

The results from Table 1 show that the majority of the farmers (75%) are not aware of any agricultural insurance packages available to them in the study area whereas 25% reported an idea of what is available. The results also indicate that despite high literacy observed from the respondents, many still do not show interest in insurance product packages to mitigate their farming activities against uncertainty. The one sample *t*-test done for the response shows (Table 2) that there is a significant difference ($P < 0.001$) between those who are aware and those not aware about agricultural insurance packages available in the study area.

Table 2. T-test result of the responses on farmers' awareness of agricultural insurance packages

Coefficient	Df	Significance
28.723	99	0.000****

Factors responsible for farmers' awareness of agricultural insurance packages

The result of the maximum likelihood estimates for factors responsible for farmers awareness of agricultural insurance packages is presented in Table 3. The results show that family size and farm size are not significant. Age, education, farm experience and membership of association all have a positive coefficient. However, they are also statistically not significant except for membership of a cooperative society which is significant at 1%.

The likelihood of membership of cooperative society was the only variable factor that is significant with a positive coefficient (0.225). This means that increase in membership in years is likely to increase the farmers' awareness of agricultural insurance packages. The implication of this is that the farmers will gain more in participating in their professional society, which probably run practically oriented seminars, or other activities in educating farmers on insurance policies. Members might also be empowered economically on decision making process that can enable them to become more resilient to economic and environmental shocks.

CONCLUSION AND RECOMMENDATION

It is concluded that farmers' awareness of agricultural insurance packages is significantly influenced only by membership of a cooperative association. It

Table 3. Maximum likelihood estimate of farmers' awareness of Agricultural Insurance Packages

Variables	Coefficient	Standard error	Significance
Constant	-3.728	1.890	0.049
Age	0.017	0.064	0.787
Education	0.085	0.081	0.293
Farm experience	0.009	0.062	0.881
Family size	-0.250	0.184	0.175
Membership of association	0.225	0.070	0.001***
Work force	0.073	0.084	0.381
Farm size	-0.121	0.103	0.239

Source: Field data 2018; *** = 1 %

is recommended that policy makers, agricultural insurance firms, and other actors in agricultural activities should put cogent effort in awareness and symposiums on agricultural insurance packages to enable farmers to be aware of availability of packages that can mitigate their agricultural risks.

ACKNOWLEDGEMENT

The author appreciates the effort and time of Professor M.A. Maikasuwa of the Department of Agricultural Economics, Kebbi State University Aleiro, Kebbi State Nigeria.

REFERENCES

Afolabi J. (2010): Analysis of loan repayment among small scale farmers in Oyo State, Nigeria. *Journal of Social Sciences* 22 : 115–119.

Akinrinola O., Okunola A. (2014): Evaluation of the effects of Agricultural insurance Scheme on Agricultural production in Ondo state. *Russian Journal of Agricultura and Socioeconomic Sciences* 28: 3–8.

Azubuike S. (2015): Rural insurance: Do evidence exist for insurance penetration in Nigeria? *Journal of Social Sciences and Humanities* 2: 250–256.

Garba T. (2012): A sensitization Program on financial opportunities for Small Scale Farmers and Micro Small & Medium enterprises with the Theme the Nigeria Farmer MSMEs prospect and challenges in Lagos. Lagos: Lagos state Government.

Jatto N. A. (2012): Economics and social characteristics of registered poultry egg producers in Ilorin,

Kwara State. *Russian Journal of Agricultural and Socio-Economic Sciences*, 11: 18–23.

Kahan D. (2008): *Managing risk in farming*. Rome: Food and Agriculture Organisation.

Ndahitsa M. (2008): Impact of Small Scale Irrigation Technologies on Crop Production by Fadama users in Niger state, 10th national Annual Conference of National Association of Agricultural Economics (NAAEC) (p. 195). Abuja: National Association of Agricultural Economics.

Oladipo F., Adekunle O. (2010): Empirical Determination of Socio-economic Status and its Relationship with Selected Characteristics of Rural Male Farmers in Kwara state, Nigeria. *A Research Journal of Agriculture and Biological Sciences* 6:64–76.

Olubiyo O., Hill G. (2006): An assessment of operation of Agricultural insurance scheme in Nigeria. *African Journal of Food Agriculture, Nutrition and Development* 3: 293–312.

Oluwatayo I., Sekumade A., Adesoji S. (2008): Resource use Efficiency of Maize Farmers in Rural Nigeria. Evidence from Ekiti State., *World Journal of Agricultural Science* 4: 91–99.

Yazdanpanah M., Zamani G., Monfared N., Yaghoubi J. (2013): Measuring satisfaction of crop insurance a modified american customer satisfaction model approach applied to Iranian farmers. *International Journal of Disaster Risk Reduction* 4: 1–9.

Received: November 14, 2018
Accepted: September 19, 2019