

Determinants of Farmers Awareness about Crop Insurance Case of Ouesse District, Benin

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Abstract- The commune of Ouesse is an area strongly threatened by climatic variations. To deal with this, agricultural insurance becomes a necessary tool for farmers. Unfortunately maize farmers are not interested in that product. This may be due to the fact that they do not know agricultural insurance. This study seeks to increase the number of producers interested in insurance by analyzing the factors that influence the awareness of maize insurance. It was carried out among 62 maize farmers that were randomly selected. The data collected from producers are relative to: socio-demographic characteristics, awareness, sources and types of information about maize insurance. The information was analyzed from SPSS software. The results show that the majority of farmers (54, 84%) are not aware of maize insurance. Among those farmers, few (32,14%) know about the insurance indemnity procedures. In addition, a binary logistic regression analysis reveals that: regularity in use of radio, access to credit and level of education have a positive and significant effect on awareness about maize insurance. It would be necessary to increase awareness among farmers through other means of communication (telephones, billboard, posters.etc.) about insurance (especially on the compensation procedure) and microfinance institutions. Insurance must work together with all microfinance institutions of the study area, so that a large majority of farmers will be aware of agricultural insurance.

Keywords - Benin, Ouèssè District, Insurance, Awareness, Determinants. Of The Annual Report.

I. INTRODUCTION

Agriculture is a very important activity in developing countries [1]. In Benin, it contributes to 36% of GDP, 88% of export earnings [2] and employ 70% of the active population [3]. Unfortunately this agriculture is threatened by many risks namely those of: production, market, financial, legal and climatic [4]. With regard to climate risks, in recent years, studies on climate variability have revealed a noticeable decrease in rainfall (-5.5 mm / year) on average [5]. Indeed, by examining the evolution of the climatic factors of the three Beninese climatic zones (South, Center and North) between 1960 and 2008, the average number of rainy days has been reduced. The fall is more pronounced in the North (120 days of rain in 1960 to 65 days of rain in 2008) than in the South (128 days of rain / year in 1960 to 80 days of rain in 2008)

[6]. According to these same authors, the reduction of rainfall causes degradation of the plant cover, promotes erosion by accelerating desertification mechanisms and logically causes the decline of soil fertility. The constant decline in the level of soil fertility has resulted in a continuous decline in crop yields [7]. The decrease in annual rainfall over the last 20 years has led to a decline in Beninese food production [8]. This is the case of maize, which dropped drastically after the 2005-2006 season, when it was 1400 kg / ha and reached less than 800 kg / ha during the 2007-2008 season [9]. This climatic variability does not only translate into a water deficit, but also changes in other climatic parameters such as relative humidity, vapor pressure, and temperature [10]. Benin's temperature has also increased significantly (over 1 ° C) in recent years [6] and has had negative effects on crops. In addition, still as impacts of

climate change, there has been an upsurge of heavy rains resulting in the destruction of 25,000 ha of food crops and 1,204 ha of cotton fields with around 53,674 producers affected and damage estimated at 9.4 billion FCFA [11].

Unfortunately, the effects and risks of climate change will continue and intensify in the future. Precipitation will be reduced by 13 to 15% in the north of the country, with an increase in temperature between + 2.6 ° C and + 3.2 ° C by 2100 [12]. The evolution of these phenomena will be accompanied by significant drops in yields. According to a study on climate scenarios and future crop yields, the decline in yields will affect the main crops in sub-Saharan Africa, notably cassava (-26%), groundnuts (-15%) and maize (-11%) [13].

There are also frequent droughts and frequent floods [14]. In order to minimize the agricultural risks, the producers have developed various solutions: the abandonment of certain varieties to the detriment of the resistant ones, the modification of the cultural associations, the progressive change of the agricultural cultural calendar and technical itineraries, the intensification of the use of fertilizers [15] and then agricultural insurance. According to [16], with increasing variability in precipitation and temperature, as well as increased risk of pests and diseases, caused by climate change, insurance is a valuable tool that protects the food security of farm families. By helping to increase the productivity of cropland, it also indirectly helps mitigate climate change by reducing pressure to cultivate more land. It encourages producers to always resume crop production after a bad harvest. Given the many benefits of insurance and the risks posed by agriculture, the Beninese government has included a financing access axis in its strategic program to revive the agricultural sector, which expired at the end of 2015. This action touched on the insurance mechanisms that led to the setting up of an agricultural insurance agency called AMAB (Mutual Agricultural Insurance of Benin). This product was created by farmers in 2010 and aims to offer a multitude of products including insurance: multi-risk crops, cotton, market gardening, livestock mortality, fish farming, poultry mortality, agricultural products stored and agricultural warehouses, automotive, individual-accidents and indexed cotton and maize. The agricultural insurance product started in 2013 in the municipality of Ouèssè. Few producers are interested in this type of product in ouesse. For this reason, insurance agency offers in this area only a climate risk reduction service for maize crops. Insurance agency works in collaboration with a microfinance institution called sian'son for farmers to be more interested in the product of insurance. Thus, all maize producers who make agricultural loans from

this institution must be obligatorily covered by insurance services. The services offered often coincides with the growing season of maize. Before covering the farmers, they must pay a total insurance premium which is 10.000 FCFA/ha (which is approximately equivalent to 15, 24 euros). Following these numerous attempts to make producers aware of insurance, few studies have been conducted to analyze producers' awareness. Thus, this study analyses the factors influencing maize farmer's awareness.

What is the proportion of farmers who know about insurance?

What are the sources and types of information about agricultural insurance?

What are the factors that influence insurance awareness?

It is to answer these questions that the present study was carried out in the commune of Ouèssè.

II. MATERIAL AND METHODS

1. Study zone

The study was carried out in the commune of Ouèssè which is classified in the 5th agro-ecological zone of Benin and is located in the tropical humid zone. It stands on a fairly homogeneous region covering a peneplain modeled on dominated Precambrian material, mainly in the east, by granite hills of about 300 meters [17]. It is a large food producing area, commonly referred to as the " granary " area of the Hills Department. It enjoys a tropical climate intermediate between the Guinean climate and the Sudanese climate, with the trend in recent years towards a growing season instead of two a year. The annual rainfall varies between 1100 and 1200 mm [18]. This area is currently threatened by climate change [19].

2. Sampling and sample size

The survey was conducted among 62 randomly selected maize farmers. This number of farmers were chosen according to the financial means and time available. It meets the statistical size requirements (sample size greater than 30) [20]. The sample was randomly selected to give all farmers the same probability of being selected. Those farmers were selected from the list of maize farmers of the municipality of Ouesse. Maize farmers are chosen because insurance companies in the municipality currently seeks to reduce only the risks associated with maize production. The data collected from them are related to their socio-demographic characteristics, awareness about crop insurance, sources and types of information. This information was collected using

structured interviews based on a questionnaire. The information obtained was analyzed from Statistical Package for Social sciences (SPSS) software version 25.

3. Methods and tools of analysis

The Probit and Tobit models were used for studying awareness about crop insurance [21]. In this study, logit regression model was estimated to determine the factors that influence the awareness about maize insurance. The awareness about insurance is dichotomous. Only two possibilities are possible. Either the farmer has knowledge about insurance or he has not. Logit regression has been chosen because, logistic distribution is better in applied research over the probit model [22]. The dependent variable of the model is defined as per equation (1) :

$$Y = \beta_0 + \beta_1 \text{Acredit} + \beta_2 \text{Sourc_inc} + \beta_3 \text{cult_area} + \beta_4 \text{exp} + \beta_5 \text{massmedia} + \beta_6 \text{educ_level} + \epsilon. (1).$$

Acredit : access to credit from the farmers, **Sourc_inc** : Major source of income from the farmers, **cult_area** : Cultivated area of maize, **exp** : experience in agricultural production, **massmedia** : regularity in the use of radio, **educ_level** : level of education.

4. Presentation of the variables included in the model

Two types of variables were used to run the model. It is the dependent variable which is the awareness of maize insurance and the explanatory variables which are access to credit, major source of income, cultivated area of maize, experience in agricultural production, regularity in the use of radio and the level of education.

5. The variable explained

The variable explained in this study is awareness of maize insurance. This variable is AWA encoded. It takes 1, when a farmer is aware and 0 when he is not.

6. Explanatory variables

The explanatory variables introduced in the model are : access to credit (**Acredit**), major source of income (**Sourc_inc**), cultivated area of maize (**cult_area**), experience in agricultural production (**exp**), regularity in the use of radio (**massmedia**) and the level of education (**educ_level**). Several studies supported the explanatory variables of this study.

Access to credit: This variable expresses whether the producer has accessed agricultural credit or not. It takes 1 if the farmer has accessed credit and 0 if not. [23] have shown

that there can be a link between microfinance institutions and insurance because insurance can be implemented through microfinance institutions. In this area of study, some maize farmers are forced to make insurance before making agricultural loans. This variable may explain the awareness of maize insurance. The access to credit would have a positive effect on maize insurance awareness.

Sourc_inc : This variable is the major source of income.[24] have shown that major sources of income can explain the knowledge of insurance. A farmer who has agriculture as the main activity will look for information to secure his income and have knowledge about insurance. It takes 1 when agriculture is the main source of income and 0 if not. This variable would have a positive effect on awareness of insurance.

Exp: Experienced producers can have a great ability to predict and manage climate risks. They would tend more to be aware of insurance while looking for risk management. But [25] have shown that it is rather young producers who are inclined to take more risks by adopting new varieties. In this study the negative effect is expected, because insurance is still being implementing, and experienced farmers may have got their own risk management strategies. So they may not be curious to the point of knowing the insurance. The negative effect is expected.

Educ_level : This variable is binary and takes 1 when the producer is formally educated and 0 otherwise. According to [26], there is a link between level of education and insurance. Farmers who are educated tend to have knowledge about maize insurance. The positive effect is expected.

Massmedia: This variable measures the regularity of farmers in the use of the radio to inform themselves. [21] have already shown that the search for information by reading newspapers can explain the knowledge of insurance. In this study area, very few farmers read newspaper, as they are not educated and the radio is an important information tool. In addition, insurance services of this area of study raise awareness on insurance through radio. It takes 1 when the farmer listen to radio every day and 0 if not. The positive effect is expected.

cult_area : The area planted for maize production can affect awareness. Large-scale producers are more likely to adopt agricultural insurance [27]. This is because large scale farmers seek to secure their income and then look for a way to reduce their risk. They therefore acquire knowledge about insurance. The expected effect is positive.

The table 1 shows the variables introduced in the regression model and the expected effects.

Table 1 : Summary of model variables and expected effects

Variables	Types of variables	Description	
Awareness	Qualitative	Dependent variable :1 if farmers are aware and 0 if not.	
Explanatory variables of the model			Expected effects
Access to credit	Qualitative	Farmer accessed to agricultural credit, 1 if the farmer accessed and 0 if not	+
Area planted for maize production	Quantitative	Cultivated area of maize (ha)	+
Experience	Quantitative	The number of years of experience of maize production	-
Level of education	Qualitative	Level of education of the farmer, 1 if the farmer is educated and 0 if not	+
Mass media	Qualitative	Regularity in use of radio. 1 if the farmer listen to radio every day and 0 if not	+
Major source of income	Qualitative	If agricultural production is a major source of farmers the variable takes 1 and 0 if not	+

Source : Results of research

III. RESULTS

1. Socio-economic characteristics of respondents, awareness, sources and types of information of crop insurance

1.1. Socio-economic characteristics of respondents

In the study area, the majority of farmers obtain the major source of income from agricultural activities. This is because, the study area is rural and most farmers make their living from agricultural production. Moreover, 55,26 % of farmers who have agricultural activities as major income, are aware about maize insurance. In the study area, maize is male activities. The majority of farmers (91,94%) surveyed are men. The average age of respondents is 46 years, with an average of 44 years for those aware of insurance and 46 for farmers not aware of maize insurance. Then, the farmers

who are not aware of insurance are older than those aware. The same result is observed with farmers experience in agricultural activities. Farmers who are aware are less experienced in agricultural activities. The study also reveals the average land size of farmers for maize production is almost the same (3 hectares) whether farmers are aware or not. Moreover, most of farmers had no school education (62,91%). Only 37,09% of farmers were educated. While most of educated farmers are aware about insurance, few of non educated farmers are aware of maize insurance. In the study area, the majority of farmers are not used to getting news on radio. Although, the results show that 70% of farmers who are aware of maize insurance, listen to radio every single day.

Table 2 : Socio-economic characteristics of respondents

Qualitatives variables (Average (%))				
	Aware	Not aware		All farmers
Farmers Sex (%)	Male	43,85	56,14	91,94
	Female	40	60	8,06
Educational level (%)	Yes	82,60	17,14	37,09
	No	23,07	76,92	62,91
Access to credit (%)	Yes	84	16	40
	No	81	11	60
Regularity in using radio for news (%)	Yes	70	30	32,25
	No	33	67	0,68
Agriculture is a Major source of income (%)	Yes	55,26	44,73	61,29
	No	70,83	29,16	38,70
	Quantitatives variables (Average and Standard deviation)			
	Aware	Not aware		All farmers
Age	44,14 (±11,68)		46,47 (±8,63)	46,51 (± 10,26)
Cultivated area of maize	3,50 (± 3,52)		3,52 (±0,36)	3,51(± 1,69)
Experience in Agricultural activities	21,46 (±2,54)		23,12 (±1,96)	22,37 (±12,29)

Source : Document search result

1.2. Awareness, sources and types of information of maize insurance

1.2.1. Awareness about maize insurance

In this study, results revealed that the majority of respondents are not aware about maize insurance (54,84%). Only 45,16% of respondents are aware about maize insurance.

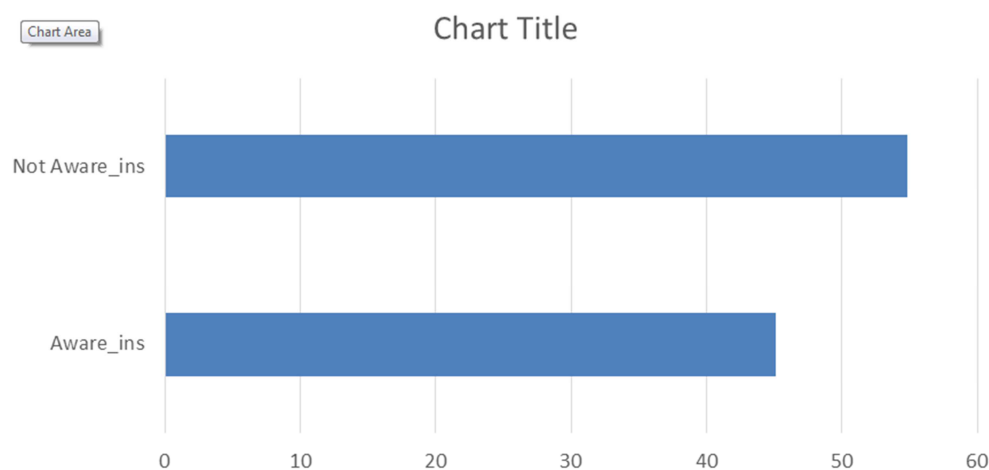


Figure 1 : awareness of maize insurance

1.2.2. Sources of information regarding maize insurance

There are four main sources of information about maize insurance : massmedia, microfinance companies, farmers and insurance company agents. In fact, among farmers aware of maize insurance, 100% of them received

information regarding insurance from insurance compagny agents and from microfinance institution agents. Other farmers (67%) received information from their fellowships who also farmers like them. And 60% got information about insurance on radio which is the most used in rural areas.

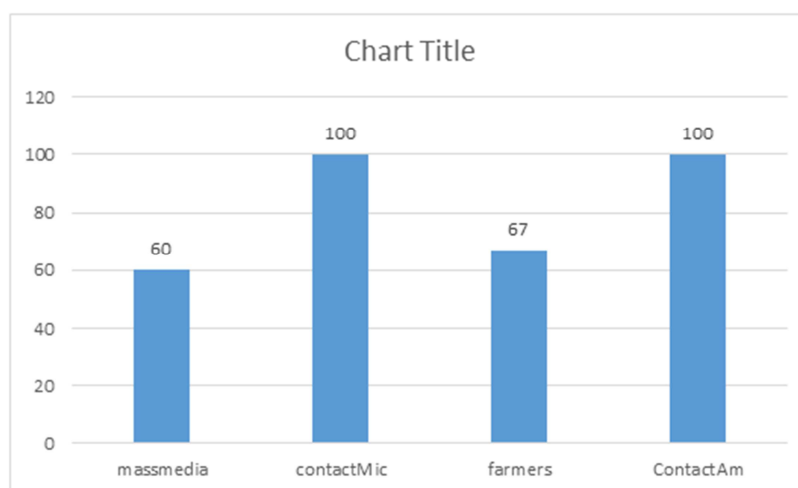


Figure 2 : Sources of information regarding maize insurance

1.2.3. Types of information received about insurance

In this study, the types of information circulating are related to : prime of maize insurance, indemnity procedure, maize insurance object and maize insurance subscription procedure. Few farmers (32,14%) are aware about the indemnity procedure, whereas every one of them know

about the insurance object and the prime. Farmers of this study area who are aware of maize insurance, know how to subscribe to insurance services even though 10,27% of them don't have any information on subscription procedure.

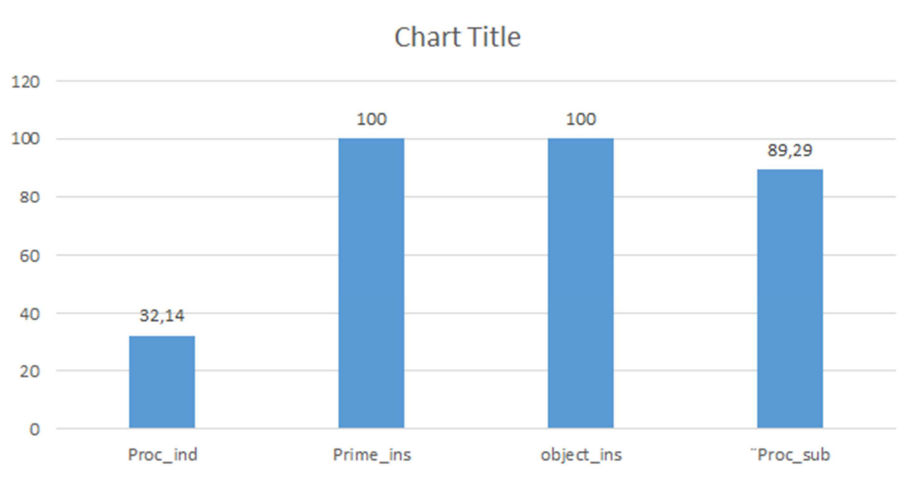


Figure 3 : Types of information received on maize insurance

2. Estimation of the logistic regression model

Table 3 presents the results of the estimation of the logistic regression model performed.

Table 3: Estimation of the logistic regression model

Factors	Coefficients	Standard error	Wald	Prob
Access to credit	4,04	1,316	9,439	0,002* **
Major source of income	-0,192	1,215	0,025	0,874
Cultivated area of maize	0,088	0,208	0,178	0,673
Experience in agricultural activities	0,034	0,40	0,691	0,406
Mass media	2,285	1,274	3,219	0,073*
Educational Level	3,980	1,229	10,49	0,001* **
Constante	-4,841	1,890	6,559	0,010* *

Number of observations : 62, Prob>chi2=0,000, log pseudolikelihood= -35,319, R2 of Nagelkerke=0,741, ***=significant at 1%, **=significant at 5%, *=significant at 10%.

Source : Estimation results.

The regression model binary logistics employed to analyse the factors influencing crop insurance awareness is globally significant at a threshold of 1% ($p=0,000<1\%$). Variables such as : access to credit, educational level and experience of agricultural activities influence positively crop insurance awareness. Three variables are not significant : source of major income, maize landsize cultivated and experience in agricultural activities.

IV. DISCUSSION

Access to credit : "Access to credit" has a positive and significant effect at the 1% threshold on crop insurance

awareness. This result is due to the fact that maize insurance scheme is being implemented through a microfinance agency called SIAN'SON in the study area. In fact, farmers who borrow money from that agency compulsory are insured. In addition, the other microfinance institutions of the study area sometimes impose insurance on producers when the amount of money to be lent to them is high. The same result has been found by [28] who showed that access to credit has positively influenced crop insurance awareness. Moreover, [23] found that access to credit were an important determinant of crop insurance.

Massmedia : “Massmedia” has a positive and significant effect at the 10% threshold on crop insurance awareness. It is explained by the fact that farmers who often listen to radio, get information regarding crop insurance. In this study area, radio has been a tool to inform farmers about crop insurance. Massmedia are an important tool to bring news to farmers. [29] demonstrated the importance of radio in agriculture. It was used in delivering information. It makes it possible to reach a large population in record time. [30] noted that broadcasting in agriculture can be used to draw attention to issues. The results of this study confirm the importance of radio in disseminating agricultural innovations.

Level of education : “Educational level” has a positive and significant effect at the 1% threshold on crop insurance awareness. Thus, educated farmers are aware of crop insurance scheme. This result is similar to that of [24] who found that education affects the knowledge of farmers about maize insurance. Educated farmers are aware of maize insurance. It is because, educated farmers always look for better ways and innovations to secure their production. Thus, farmers tend to be aware of insurance and then adopt it. [26],[31], [32] found that the level of adoption of insurance increases with the level of education of producers. Knowing that one cannot make the insurance without having the knowledge on it, these authors go in the same direction as the results of this study.

V. CONCLUSION

The present study finds that awareness level of farmers were low about maize insurance. Farmers who are aware, lack information on maize insurance. Most of them don't know about the indemnity procedure. The factors influencing awareness about maize insurance are : access to credit, the regularity in use of radio and the level of education. This result suggested that it would be necessary to continue with sensitization through radio. Apart of that, other methods of communication such as mobile phones, billboards, posters should be used and more sensitization programs should be regularly organized. Microfinance institutions of the area can help insurance agency reach more farmers. They can get more farmers to know about insurance. Knowing insurance does not mean adopting insurance, other studies might study adoption of insurance and its factors.

REFERENCES

- [1] F. N. Nnadi, J. Chikaire, J. A. Echetama, R. A. Ihenacho, P. C. Ummnakwe, et C. O. Utazi, « Agricultural insurance: A strategic tool for climate change adaptation in the agricultural sector », *Net Journal of Agricultural Science*, vol. 1, n° 1, p. 1-9, mars 2013.
- [2] S. P. Houssou-goe, « Agriculture et Changements climatiques au Bénin: Risques climatiques, vulnérabilité et stratégies d'adaptation des populations rurales du département du Couffo. », Abomey Calavi, Faculté des sciences agronomiques, Bénin, 2008.
- [3] PAM, « Analyse globale de la vulnérabilité et de la sécurité alimentaire », 2013.
- [4] I. Crane, G. Gantz, S. Isaacs, D. Jose, et R. Sharp, « Introduction to risk management. Extension Risk Management », 2013.
- [5] S. Katé *et al.*, « Perceptions locales de la manifestation des changements climatiques et mesures d'adaptation dans la gestion de la fertilité des sols dans la Commune de Banikoara au Nord- Bénin », *Journal of Applied Biosciences*, vol. 82, n° 1, p. 7418-7435-7435, janv. 2014.
- [6] P. C. Gnanglè, J. A. Yabi, N. R. Yegbemey, R. G. Kakai, et N. Sopkon, « Rentabilité économique des systèmes de production des parcs à karité dans le contexte de l'adaptation au changement climatique du Nord-Benin », *African Crop Science Journal*, vol. 20, n° 2, p. 589-602-602, janv. 2012.
- [7] A. Badou, P. T. Akondé, A. Adjanohoun, I. T. Adjé, K. Aihou, et M. A. Igué, « Effets de différents modes de gestion des résidus de soja sur le rendement du maïs dans deux zones agro-écologiques du centre-Bénin ».
- [8] L. R. Ayena, « Adaptation au changement climatique et sécurité alimentaire : cas des ménages ruraux producteurs de maïs de la commune de tchaourou au Nord-Bénin. », centre régional AGRHYMET, Niger, 2016.
- [9] S. KATE, A. AMAGNIDE, C. G. HOUNMENOU, E. L. B. HOUNKPATIN, et B. SINSIN, « Changements climatiques et gestion des ressources pastorales en zone agropastorale au Nord-Bénin : cas de la commune de Banikoara », <http://www.afriquescience.info,01-juill-2015> disponible en ligne: <http://www.afriquescience.info/document.php?id=5006>
- [10] S. Katé *et al.*, « Perceptions locales de la manifestation des changements climatiques et mesures d'adaptation dans la gestion de la fertilité des sols dans la Commune de Banikoara au Nord- Bénin », *Journal of Applied Biosciences*, vol. 82, n° 1, p. 7418-7435-7435, janv. 2014.
- [11] D. E. Yaï, B. G. C. Ahodode, et F. C. Biaou, « Incidence du changement climatique sur les

- productions agricoles : cas de la commune de Banikoara. », *Outlook on Agriculture*, p. 27.
- [12] R. N. Yegbemey, J. A. Yabi, G. B. Aïhounton, et A. Paraïso, « Modélisation simultanée de la perception et de l'adaptation au changement climatique : cas des producteurs de maïs du Nord Bénin (Afrique de l'Ouest) », *Cahiers Agricultures*, vol. 23, n° 3, p. 177-187 (1), mai 2014.
- [13] B. Doukpolo, « Changements climatiques et productions agricoles dans l'Ouest de la République Centrafricaine », phdthesis, Université de Abomey-Calavi ; Docteur en Géographie et Géosciences de l'Environnement (Agroclimatologie et Développement), 2014.
- [14] M. M. Niasse, « Eléments de stratégie régionale d'adaptation au changement climatique basée sur l'approche de partage des risques », Rapport final Afrique de l'ouest, 2007.
- [15] B. G. D. AIHOUTON, « Adaptation au changement climatique et durabilité économique de l'agriculture : Etude de cas de production du maïs dans le Nord-Bénin. », Parakou, Benin, 2013.
- [16] M. Hailu et B. Campbell, « Agriculture intelligente face au climat succès des communautés agricoles dans le monde. » 2013.
- [17] PDC, « Plan de développement communal. Ministère de l'intérieur, de la sécurité et de la décentralisation. République du Bénin. » 2005.
- [18] L. A. Akomagni, « Monographie de la commune de Ouessè. », Benin, 2006.
- [19] P. . Gnglè, J. Yabi, R. K. Glèglè, et N. Sokpon, « Perceptions et stratégies d'adaptations des paysans face à la gestion des parcs à Karité au Centre-Bénin. Actes du colloque international de Niamey-Changements climatiques et évaluation environnementale : enjeux et outils pour l'évaluation des impacts et l'élaboration de plans d'adaptation », p. 18, 2009.
- [20] D. L. Gujarati, *Basic Econometrics. Fourth Edition*, Hill higher education. USA: New york NY, 2003.
- [21] D. S. Kumar, B. C. Barah, C. R. Ranganathan, R. Venkatram, S. Gurunathan, et S. Thirumoorthy, « An Analysis of Farmers' Perception and Awareness towards Crop Insurance as a Tool for Risk Management in Tamil Nadu », *Agricultural Economics Research Review*, vol. Volume 24, n° Number 1, p. 1-10, 2011.
- [22] W. Greene et D. Hensher, « Modeling Ordered Choices », Cambridge University Press, Cambridge Books, 2010.
- [23] V. Karthick et K. Mani, « Factors affecting crop insurance adoption decisions by farmers in Tamil Nadu. », *Agriculture Update*, vol. 8, n° 3, p. 399-401, 2013.
- [24] A. Duhan et S. Singh, « Factors Affecting Awareness Level of Farmers about Crop Insurance: A Case Study of Haryana », *Asian Journal of Agricultural Extension, Economics & Sociology*, vol. 21, n° 4, p. 1-7, déc. 2017.
- [25] R. C. Fagbemissi, O. Coulibalt, R. Hanna, et D. Endamana, « Adoption de variétés de manioc et efficacité durable de la lutte biologique contre l'acarien vert du manioc au Bénin - Slire », 2002. [En ligne]. Disponible sur: <http://www.slire.net/document/1194>. [Consulté le: 25-nov-2018].
- [26] R. C. Bharati, N. K. Azad, K. M. Singh, S. Chakraborti, N. Chandra, et S. P. Singh, « Factors affecting adoption of crop insurance in Bihar. », *Journal of AgriSearch*, vol. 1, n° 2, p. 102-107, 2014.
- [27] F. Adinolfi, F. Capitanio, et G. Enjolras, « The demand for crop insurance: Combined approaches for France and Italy », *agricultural economics review*, vol. 2012:13, n° 1, p. pp 5-22, 2012.
- [28] O. D. Olila et O. Pambo, « Determinants of farmers' awareness about crop insurance : Evidence from Trans-Nzoia country, Kenya », 2014.
- [29] A. S. Onasanya, O. A. Onasanya, et S. F. Adedoyin, « Communication factors affecting the adoption of innovation at the grassroots level in ogun state, nigeria », 2007. available...online: https://www.researchgate.net/publication/27201865_communication_factors_affecting_the_adoption_of_innovation_at_the_grassroots_level_in_ogun_state_nigeria.
- [30] M. Mboho, « Promoting agricultural practices in Nigeria through Broadcasting », *Nigeria Journal of communication research*, vol. 1, n° 1, p. 1-14, 2009.
- [31] P. D. Kangale, A. N. Deshmukh, et S. A. Deshmukh, « Farmers perception towards crop insurance scheme. », *International Research Journal of Agricultural Economics and Statistics*, vol. 7, n° 2, p. 248-250, 2016.
- [32] F. Branstrand et F. Wester, « Factors affecting crop insurance decision A survey among Swedish farmers », 2014. [En ligne]. Disponible sur: <https://www.coursehero.com/file/13950776/Branstrand-et-al-140903/>. [Consulté le: 25-nov-2018].