

Assessment of Rural Farmers' Attitudes toward Agricultural Insurance Scheme as a Risk Management Strategy in Kogi State, North central Nigeria

Adah, O.C.¹ Chia, J.I.² Shaibu, M.U.³

1. Department of Agricultural Education, Kogi State College of Education, Ankpa, Nigeria
2. Department of Agricultural Extension and Communication, University of Agriculture, Makurdi, Benue State, Nigeria
3. Postgraduate Student, Department of Agricultural Economics and Extension, Kogi State University, Anyigba, Nigeria

Abstract

The study assessed rural farmers' attitudes towards agricultural insurance scheme in Kogi State, North central Nigeria. Simple random sampling technique was used to select 240 rural farmers from the four agricultural zones in the state. Data obtained through structured questionnaire were analysed using descriptive statistics and mean score from a four point Likert type of scale. The findings showed that 70.8% of the rural farmers were male in their productive age of 44 years while average household size of 7 members operated on a mean farm size of 1.4 hectares. Rural farmers in the state had negative attitude towards agricultural insurance scheme. They perceived that insurers exploited them with high premium (M=3.3) and that government was not giving them enough support (M=3.3). The respondents were also constrained in their access to insurance experts due to long distance (M=3.3). The study recommends that government should subsidize agricultural insurance to enable serious farmers afford the premium. Also, there is need to create awareness on technical issues on agricultural insurance programme implementation. This can be realized through well focused public enlightenment programmes, including extension services delivery.

Keywords: Perception, NAIS, Risk, Premium

Introduction

Agriculture is a risky prospect, wherever it is subject to vagaries of nature like flood, drought and cyclone. According to Kumar *et al.* (2011) agriculture contributes 24 percent to the GDP and any disturbance in its production has a multiplier effect on the economy of the country like Nigeria. Owing to the fact that economic growth and agricultural growth are tied to each other, managing risks in agriculture is a big challenge to both the policy makers and researchers. Risk is uncertainty to economic loss while insurance is an economic institution that reduces risk by combining, under one management, a group of objects so situated that the aggregate accidental losses to which the group is subjected becomes predictable within narrow limits; including certain legal contracts under which the insurer for consideration, promises to reimburse the insured or to render certain services in case of certain described accidental losses.

Risk is believed to play an important role in the investment decisions of individual farmers (Knight *et al.*, 2003). According to Gupta (2008), risk is the act of providing financial protection for property and life against death, loss or damage, while insurance is the equitable transfer of a risk or loss from one entity to another in exchange for a premium or a guaranteed and quantifiable small loss to prevent a large and possibly devastating loss.

Risk management can then be defined as choosing among alternatives to reduce the effects of risk. This requires an evaluation of trade-off between changes in risk, expected returns and entrepreneurial freedom, among others. According to Friedberg in Aidoo *et al.* (2014) farmers have traditionally managed risks by using less risky technologies of lower but reliably yielding drought-resistant crops; by seeking diversification both in terms of production activities on-farm and income generating activities off-farm; and by devising informal and formal risk sharing arrangements. Hazell *et al.* in Aidoo *et al.* (2014) pointed out that while these mechanisms may work well for low magnitude losses, even if they are frequent, they often prove to be inadequate for risk that is infrequent but severe. Hence, the World Bank (2005) postulated that there is the potential for these major risks to increase in the future-price risk due to liberalization of trade and production risk due to the effects of climate change. It therefore behoves on the farmer to manage risk in farming as part of the general management of the farming business.

Attitude is a situation whereby farmers behave consistently favourable or unfavourable towards an object, product or service. It is the more or less permanent feelings, thoughts and predispositions a person has about certain aspects of his environment (van den Ban and Hawkins in Adah, 2015). Hence, most agricultural programmes and innovations fade off after their pilot stage due to lack of interest on the part of the providers (Wixson and Katchoya, 2011) and low willingness to pay (demand) for the services or products (Enjolras and

Adinolfi, 2013; Mahul, and Stutley, 2010), a behaviour influenced by farmers' attitude.

Farmers are always confronted with an ever-changing fluctuation of possible price, market and yield variability, natural calamities, and other outcomes that affect their financial returns and overall welfare. The consequences of decisions or events are often not known with certainty until long after such decisions were made. A number of studies show that small-scale farmers are risk averse (Salimonu and Falusi, 2009; Wencong, Aiqin and Jian, 2006; and Shapiro, Brorsen, and Doster, 1992). Rural farmers manage risk by preferring enterprises that provide satisfactory levels of security and certainty. Rural farmers in Kogi state are characterized with low incomes, small sizes of holdings aimed at subsistence production, large scale ignorance and poverty. These features amongst others limit their usage and attitudes towards subscribing to the insurance scheme through payment of premium. This study is therefore, an attempt to examine the attitude of rural farmers in the state towards agricultural insurance scheme as a risk management strategy.

Empirical Studies

In a controlled experimental study, findings by Gine, Townsend, and Vickery, (2008) showed that, even after offering index insurance product to rural farmers in India in places prone to serious drought risk with clear negative repercussion, only a few number of households purchased the insurance. Their study showed that those who bought the insurance were the wealthier and the better educated while the poor had little understanding of the product and others expressed little trust in the product and the organization. In addition to their findings, it was observed that the index insurance product designs were friendly but the premiums were three times on average larger than the expected payouts. Farmers could not pay any insurance premiums at least prior to harvest because of their low incomes and wealth (Sarris, Karfakis, and Christiaensen, 2008). McCarthy (2003) reported that, farmers with high incomes were more likely to buy rainfall insurance when compared to those with low incomes.

Studies have revealed that farmers expressed negative perception and attitude towards agricultural insurance. However, evidence from literatures also shows that, some insurance programmes are perceived positively by farmers. Mojarradi, Zamani, and Zarafshan, (2008) used path analysis to test for exogenous variables, perception towards agricultural insurance as an intervening variable and attitude towards agricultural insurance as the dependent variable. They reported that farmers had positive attitude towards private crop insurance agents. Also, Garforth (2005) used stated attitude to measure how good or bad the respondent felt it would be to take out insurance for their farm to cover against consequential losses. The findings indicated that the stated attitude of the whole sample was neutral to slightly positive.

Yazdanpanah, *et al.* (2009) attributed farmers' satisfaction with crop insurance to several factors; commitment to bank and quality of services for farmers insured previously, and bank image, quality of service for currently insured farmers, quality of service, and indemnity for all farmers. Rostami, *et al.* (2007) showed that several individuals, economic, and social factors influence farmers' attitude toward agricultural insurance. The most important factors in this area are education, area of lands used and diversity in production, risk aversion, and type of ownership.

Fazelbeigi and Yavari (2010) found the most significant drawbacks in insurance fund to be lack of compliance with economic frameworks and business principles, issues in statistics system, lack of competition in service sector, and lack of constant evaluation and monitoring. In addition, they found several threats faced by insurance fund: improper structure of production entities, disintegrated lands, lack of production standards, and poor living and operation systems.

In examining effective constructs in attitudes of the insured toward private agents, Mojarradi, *et al.* (2008) used path analysis to find that policy holders' expectations met by insurers, their views on insurance, and access to resources have positive and significant impact on attitudes. In addition, age and insurance background indirectly influenced attitudes toward insurance. Mojarradi, *et al.* (2008) believed that creating and maintaining optimum attitude towards private agency can be achieved through meeting policy holders' expectations, emphasizing training and agricultural extension, and making optimum use of mass media, in particular radio and television.

Materials and Methods

This study was carried out in Kogi State, North central Nigeria. Kogi State is popularly called the Confluence State due to the fact that the confluence of Rivers Niger and Benue is at its headquarters in Lokoja. Lokoja, the state headquarter was the first administrative capital of modern day-Nigeria. The State lies between latitude 6°30'N and 8°48'N and longitude 5°23'E and 7°48'E. Kogi State has a population of about 3,278,487 people (Federal Republic of Nigeria (FRN), 2007). The state has land area of about 30,354.74 square kilometers. Out of this total area, the state has 2million hectares of cultivable land but only about 0.5 million hectares are under cultivation, (Kogi State Economic Empowerment and Development Strategy (KOSEEDS), 2004).

A random sampling technique was used to select two (2) Local Government Areas (LGAs) each from

the four agricultural zones (Aiyetoro-Gbede, Anyigba, Koton-Karfe and Alloma) in the state. Two communities from each of the LGAs were randomly selected to give a total of sixteen communities used for the study. Fifteen rural farmers were randomly selected from each of the sixteen communities to give a total of 240 respondents. Structured questionnaire was administered to the sampled rural farmers from the selected communities. The study used descriptive statistics and mean score from a four- point Likert type of scale to analyze the data obtained.

Likert scale was developed by Rensis Likert in the 1930s (Coolican, 2009). The scale was used to assess the attitudes of rural farmers to agricultural insurance scheme as specified below:

Opinion	Point
Strongly Agree (SA)	4
Agree (A)	3
Disagree (D)	2
Strongly Disagree (SD)	1

The mean response to each item was calculated using the following formula:

$$\bar{X} = \frac{\sum FX}{N}$$

Where:

\bar{X} = means response,

\sum = summation,

F = number of respondents choosing a particular scale point,

X = numerical value of the scale point; and

N = total number of respondents to the item.

The mean response to each item was interpreted using the concept of real limits of numbers. The numerical value of the scale points (response modes) and their respective real limits are as follows:

Strongly Disagree (SD) = 1 point with real limits of 0.5 - 1.49

Disagree (D) = 2 points with real limits of 1.50 - 2.49

Agree (A) = 3 points with real limits of 2.50 - 3.49

Strongly Agree (SA) = 4 points with real limits of 3.50 - 4.49

Decision Rule: The mean of these weights is 2.5 [(4+3 + 2 + 1) ÷ 4 = 2.5]. A mean score of 2.5 or more implied that rural farmers in the state agreed to that particular item.

Results and Discussion

Socioeconomic Characteristics of Rural Farmers in Kogi State

The socioeconomic characteristics of rural farmers in the study area are presented in Table 1. The dominance of male rural farmers could be attributed to the labour requirements in farming activities. Farming operations such as land clearing, cultivation, weeding, and harvesting are labour intensive and require the effort which could be provided by male farmers. Akinrinola and Okunola (2014) attributed the dominance of male farmers to their ability to take more risks than the female farmers and that they are more informed on how to manage their vulnerability to loss by participating in the insurance scheme. The mean age was 44 years. This implies that rural farmers in the state were in their productive age. The mean age of 44 years is less than the national average age of 47 years. This finding agrees with Ibitoye (2011), who classified productive age of farmers to be between 20 and 50 years. Ogundele and Okoruwa (2006) asserted that only those farmers within the productive age group of 20 - 45 years are likely to possess the necessary strength to carry out farming operations.

The result further indicates that 72.5% of the rural farmers were married. Marital status determines an individual's decision to demonstrate a mark of social responsibility and also indicate a readily available source of labour input. Adegeye and Dittoh (1985) declared that small- scale farmers could only be successful if they were married especially when they had to rely on family labour. The mean household size was 7 members. This finding is in agreement with Shaibu, Ibitoye and Saliu (2014) who reported an average family size of 7 members. Onuche, Adejoh and Adah (2015) also reported that Kogi farmers had an average household size of 7. This is close to the national average house size of 6. This implies that most rural farmers in the state had more household members which could be available as family labour for farming activities. Large household size could also reduce the rate of adoption of agricultural innovation like the agricultural insurance scheme.

Also, 80.8% of the rural farmers were literate at various levels of education. The mean educational level was 7 years. Education increases farmers' decision to accept agricultural innovation such as the agricultural insurance scheme. This finding agrees with Onuche, Opaluwa and Edoke (2014); and Onuche, Adejoh and Adah (2015) who reported an average schooling years of 7.2 years and 7 years respectively. This is in consonance with earlier finding of Obinne (1991) in Adah and Obinne(2015) that education is a factor in the adoption of high yielding modern technologies.

The average year of farming was 17 years. This suggests that the farmers in the study area were largely experienced. Adah and Obinne (2015) reported that experience comes with time and has proven to be of great advantage especially as the level of mastery increases with it. Farming experience could also increase the adoption of agricultural innovation like the agricultural insurance scheme. Increased years of farming expose farmers to various sources of risk and their likelihood to accept the insurance scheme. This finding agrees with Idrisa, Ogunbameru and Madukwe (2012) who reported that experience depicts a good signal for adoption since it helps to convince the farmer of the importance of innovation. Also, Agbamu(2006) believes that experience impacts positively on innovation adoption. The average farm size of 1.4 hectare is slightly higher than the national average of 1.3 but the same as the average of 1.43 hectare reported by Onuche, *et al.* (2014). This finding is an indication that all the farmers operated on a small- scale.

The average annual farm income was ₦71, 000. This finding agrees with Ibitoye, Shaibu and Omole (2015) who reported a positive average annual farm income among rural farmers in Kogi state. The average farm income in this study is an indication that agricultural production in the state is still at the subsistence level. Mikloda (2006) associated low income with poverty. According to Amalu (2005), over 90% of Nigeria's food supply comes from the agricultural population who are small-holder farmers. Onuche *et al.* (2015) in their study reported that the low average farm income was reflective of a high level of poverty in the area and the dire need for an extension delivery system.

Table 1: Socioeconomic Statistics of Rural Farmers in Kogi State

Variables	Frequency	Percentage	Mean/Mode
A. Sex			
Male	170	70.8	Male
Female	70	21.2	
Total	240	100	
B. Age (Years)			
21-30	28	11.7	44yrs
31-40	72	30.0	
41-50	80	33.3	
51-60	36	15.0	
Above 60	24	10.0	
Total	240	100	
C. Marital Status			
Single	24	10.0	Married
Married	174	72.5	
Divorce	08	3.3	
Widow	18	7.5	
Widower	16	6.7	
Total	240	100	
D. Household Size (Number)			
1-5	76	31.7	7
6-10	140	58.3	
11-15	18	7.5	
Above 15	06	2.5	
Total	240	100	
E. Educational Status (Yrs.)			
No schooling	32	13.3	7yrs
1-6	86	35.8	
7-12	82	34.2	
Above 12	40	16.7	
Total	240	100	
F. Farming Experience(Yrs)			
1-10	74	30.8	17yrs
11-20	90	37.6	
21-30	50	20.8	
Above 30	26	10.8	
Total	240	100	
G. Farm Size(Ha)			
≤ 1.0	120	50.0	1.4ha
1.1-2.0	68	28.3	
2.1-3.0	28	11.7	
> 3.0	24	10.0	
Total	240	100	
H. Farm Income (₦)			
≤50,000	104	43.3	71,000
50,001-100,000	88	36.7	
100,001-150,000	24	10.0	
150,001-200,000	14	5.8	
Above 200,000	10	4.2	
Total	240	100	

Attitudes of Rural Farmers Toward Agricultural Insurance Scheme

Farmers' attitudes toward agricultural insurance scheme are presented in Table 2.

Table 2: Attitudes of Rural Farmers Toward Nigeria Agricultural Insurance Scheme (NAIS), N = 240

Items	Frequency				Mean Score
	SA (4)	A (3)	D (2)	SD (1)	
i. Insurance makes it easier to obtain loan from banks	103	89	26	22	3.1
ii. Insurers exploit the farmers with high premium	122	74	32	12	3.3
iii. Paying/buying agricultural insurance is stressful	19	106	83	32	2.5
iv. I waste a lot of time and difficulty in using insurance	32	155	23	30	2.8
v. All insurance claims are handled within the expected time	03	0	189	48	1.8
vi. Long distance discourages me from the use of NAIS office/expert	128	76	26	10	3.3
vii. Agricultural insurance does not compensate farmers fairly	67	139	32	02	3.1
viii. The income of farmers is not protected by the NAIS	44	79	83	34	2.6
ix. With NAIS operation, I feel the government does not give enough support	111	91	38	0	3.3
x. Insurance saves me from risks so, I will continue with the programme	0	11	106	123	2.0
xi. I do not understand how to go about taking agricultural insurance	89	30	96	25	2.8
xii. I am satisfied with the handlings of insurance services	21	12	95	112	1.8

Source: Field Survey, 2015.

The respondents perceived that insurers exploited farmers with high premium (M=3.3). Against this finding, Kumar *et al.* (2011) found that almost all the willing-to-insure farmers (96%) accepted to pay a premium of up to 2 per cent of sum insured. This confirms the fact that farmers are at home with low premiums. The high premium made the farmers to feel that government was not giving them enough support (M=3.3). The farmers were also limited in their access to insurance experts due to long distance (M=3.3). The result further shows that small-scale farmers in the state had negative perception about the compensation fairness of the NAIS (M=3.1). They perceived that, the design of the insurance contract was not fair and beneficial to farmers but favoured mostly the insurance company, the Nigeria Agricultural Insurance Company (NAIC). Due to this, farmers perceived that, their future income was still not well protected by the insurance programme (M=2.6). The respondents further perceived that they wasted a lot of time in using agricultural insurance scheme (M=2.8). Farmers felt that, they spent so much time to get the insurance services. Some of the respondents also perceived that they did not know how to go about taking agricultural insurance (M=2.8) and as well perceived paying/buying agricultural insurance to be stressful (M=2.5).

The findings also show that rural farmers in the state generally had negative perception towards agricultural insurance scheme. Farmers had high expectations of being compensated after facing yield loss. This suggests that implementation procedures were not sufficiently communicated to the farmers, resulting to farmers' view of the insurance programme as not being beneficial to them. This finding agrees with Philip and Zhang (2014) who reported that the general attitude of farmers towards the drought insurance programme was negative and mentioned compensation fairness of drought insurance, convenience of service delivery of drought insurance, programme appropriateness, and government's protection to farmers as the major factors that affected farmers' attitudes toward drought insurance. The findings also corroborate with (Yazdanpanah, Zamani, and Moghadam, 2009) who found out that, the image of an organization, indemnity, quality of services are among other factors that determined satisfaction of farmers about crop insurance services in Fars province.

Conclusion and Recommendations

The study assessed attitudes of rural farmers toward agricultural insurance scheme in Kogi state, North central Nigeria. It can be concluded that the general attitude of farmers towards the agricultural insurance programme was negative because farmers had high expectations from the scheme but received unexpected handlings from the programme. It is therefore recommended that:

- i) There is need to increase the present level of agricultural insurance in the state. This will enable rural farmers subscribe to the scheme through payment of premium.
- ii) Technical issues on agricultural insurance programme implementation need to be well prepared and information of the implementation modalities ought to be well shared among farmers. Failure to do so may lead small-holder farmers to have negative attitudes to future intervention that comes to them.
- iii) There is need for sensitization of rural farmers on the importance of insurance policy by government, non – governmental organizations, agro services providers and insurance corporations. This will ensure proper adoption of the programme by rural farmers via well focused public enlightenment programmes.
- iv) Government and insurance corporations could make use of extension services to create proper

awareness on the scheme, since majorly the extension agents are grassroots operators that work directly with the farmers.

References

- Adah, O.C. (2015). Adoption analysis of improved oil palm fruit processing technology in Kogi State, Nigeria. *Unpublished Ph.D Thesis*. Department of Agricultural Economics and Extension, Kogi State University, Anyigba, Nigeria. 14.
- Adah, O.C. and Obinne, C.P.O. (2015). Analysis of extent of awareness and adoption of improved oil palm fruit processing technology in Kogi State, Nigeria. *Journal of Biology, Agriculture and Healthcare*. 5(20): 5-10.
- Adegeye, A. J. and Dittoh, J. S. (1985). *Essentials of agricultural economics*. Ibadan, Impact Publishers. 14-21.
- Agbamu, J.U. (2006). *Essentials of agricultural communication in Nigeria*. Lagos, Malthouse Press Limited. 47-81.
- Aidoo, R., Mensah, J.O., Wie, P. and Awunyo-vitor (2014). Prospects of crop insurance as a risk management tool among arable crop farmers in Ghana. *Asian Economic and Financial Review*. 4(3) 341-354.
- Akinrinola, O.O., and Okunola, A.M. (2014). Evaluation of effects of agricultural insurance scheme on agricultural production in Ondo State, Nigeria. *RJOAS*. 4 (28) 3-8.
- Amalu, U.C. (2005). Poverty alleviation and agriculture in sub-saharan Africa: The Nigerian experience. *Journal of Food, Agriculture and Environment*, 3(2):230-236.
- Coolican, H. (2009). *Research methods and statistics in psychology*. London, Hodder Education. 179-180.
- Enjolras, G., Capitanio, F. and Adinolfi, F. (2012). The demand for crop insurance: Combined approaches for France and Italy. *Agri. Eco. Rev.* 13(1): 5-22.
- Fazelbeigi, M.M.; Yavari, G.R. (2010). An analysis of challenges faced by crop insurance fund in Iran, *Rural Areas & Development*. 13 (1): 21-41.
- Federal Republic of Nigeria (2006). *Population and housing census enumerators manual*. Abuja, National Population Commission: 1-16.
- Garforth, C. (2005) *Livestock farmers' attitudes towards consequential loss insurance against notifiable diseases*. School of Agriculture, Policy and Development, University of Reading, final report of a research study commissioned by the Livestock Strategy Division of the UK Department for Environment, Food and Rural Affairs, 2005.
- Giné, X., R.; Townsend, R., and Vickery, J. (2008). Patterns of rainfall insurance participation in rural India. *The World Bank Economic Review*. 22(3): 539-566.
- Gupta, P. K. (2008). *Fundamentals of insurance*. India, Himalaya Publishing House. 21-29.
- Ibitoye, S. J. (2011). The influence of socio-economic variables on the choice of cassava varieties in Kogi State, Nigeria. *International Journal of Agriculture, Science, Research and Technology*. 1(4); 185 – 193.
- Ibitoye, S.J., Shaibu, M.U. and Omole, B. (2015). Analysis of resource use efficiency in tomato (*Solanum lycopersicum*) production in Kogi State, *Asian Journal of Agricultural Extension, Economics & Sociology* 6(4): 220-229
- Idrisa, Y.I, Ogunbameru, B.O. and Madukwe, M.C. (2012). Logit and tobit analyses of the determinants of likelihood of adoption and extent of adoption of improved soybean seed in Borno State, Nigeria. *Greener Journal of Agricultural Sciences* 2: 37-45
- Knight, A.T., Boshoff, A.F., Cowling, R.M., & Wilson, S.L. (2003). Keeping people on the land in living landscapes: A cooperative strategy for conserving landscapes and enhancing livelihoods in the Sub-tropical Thicket Biome, South Africa. *TERU Report No. 46*. University of Port Elizabeth, South Africa.
- Kogi State Economic Empowerment and Development Strategy (KOSEEDS). (2004). *Towards poverty alleviation and wealth Creation*. Lokoja, Kogi State Ministry of Budget and Planning. 17.
- Kumar, D.S., Barah, B.C., Ranganathan, C.R., Venkatram, R., Gurunathan and Thirumoorthy, S. (2011). An analysis of farmers' perception and awareness towards crop insurance as a tool for risk management in Tamil Nadu. *Agricultural Economics Research Review*. 24: 37-46.
- Mahul, O. and Stutley, C.J. (2010) *Government support to agricultural insurance: Challenges and options for developing countries*. Washington D.C., World Bank Publications.
- McCarthy, N. (2003) *Demand for rainfall-index based insurance: A case study from Morocco* 2003, Washington, D. C: International Food Policy Research Institute.
- Mikloda, P.I. (2006). *The effect of agricultural credit guarantee scheme on household income and consumption in Adamawa State, Nigeria*. A Ph.D thesis, University of Maiduguri, Nigeria. 151
- Mojarradi, G.R., Zamani, G.H. and Zarafshan, K. (2008). Analysis of factors influencing farmers' attitudes toward private crop insurer using path analysis. *American-Eurasian Journal of Agriculture and Environmental Science*. 3(2): 247-252.
- Ogundele, O. O. and Okoruwa, V. O. (2006). Technical efficiency differentials in rice production technologies in

- Nigeria. *African Economic Consortium, Research Paper No.154*. Nairobi, Kenya.
- Onuche,U., Adejoh,S.O. and Adah,O.C.(2015). Analysis of willingness to pay for agricultural extension services by rural small-scale fish and crops producers in Kogi State, North Central Nigeria: Imperative for sustainable agricultural development. *Asian Journal of Agriculture and Food Sciences*. 3(4) 380-387.
- Onuche,U., Opaluwa, H.I. and Edoke, M.H. (2014). Ill- health and agricultural production: Evidence from Kogi State of Nigeria. *African Journal of Food, Agriculture, Nutrition and Development*. 14 (1): 8488-8503
- Philip, D. D. and Zhang, Q. (2014). Factors affecting attitude of farmers towards drought insurance in Tanzania. *International Journal of Science Commerce and Humanities* 2(8): 27-38.
- Rostami F, Shabanali H, Movahed Mohammadi H, Irvani H. (2007). Determinants of factors in adopting insurance (Case Study: Wheat Farmers in Hersin, Kermanshah), *Economy of Agriculture & Development*, 15 (60): 1-21.
- Salimonu, K.K. and Falusi, A. O. (2009). Sources of risk and management strategies among food crop farmers in Osun State, Nigeria *African Journal of Food, Agriculture, Nutrition and Development*. 9(7), 1591-1605.
- Sarris, A., Karfakis, P. and Christiaensen, L. (2008). *Producer demand and welfare benefits of rainfall insurance in Tanzania*. Rome: FAO Commodities and Trade Policy Research Working Paper Series, 2008. 18.
- Shaibu, M.U., Ibitoye, S.J. and Saliu, O.J. (2014). Community participation and agricultural development in Ankpa Local Government Area of Kogi State, Nigeria. *Confluence Journal of Economics and Allied Sciences* 1(1): 128-136.
- Shapiro, B. I., Brorsen, B.W., Doster, D. H. (1992). Adoption of double-cropping soyabeans and wheat. *Southern Journal of Agricultural Economics*, 24(02), 33–40.
- Wixson, S.E. and Katchova, A.L. (2011). *Price asymmetric relationships in the commodity and energy markets*. University of Kentucky.
- World Bank(2005). *Managing agricultural production risk: Innovations in developing countries*. Agriculture and Rural Development Department, World Bank.
- Yazdanpanah, M., Zamani, G.H. and Rezaei Moghadam, K. (2009). Farmer's satisfaction about crop insurance: Application of path analysis. *Economy of Agriculture & Development*, 17(66): 139-164.