EURASIAN JOURNAL OF HIGHER EDUCATION

Online ISSN: 1694-5964 Print ISSN: 1694-5956

Farmers' Opinion on Cost and Benefit of Agriculture Insurance

Ramu Malini

PG Department of Commerce and Research Centre
Sri Parasakthi College for Women, Courtallam
maliniramu@yahoo.co.in

Ibrahim Malini

PG Department of Commerce and Research Centre
Sri Parasakthi College for Women, Courtallam
malinibrahim04@gmail.com

Abstract

Agriculture development is an index of country's progress because the development of all other sectors depends upon the development of agriculture sector. But, the development of agriculture is affected by natural disasters. Agriculture insurance is an only protective mechanism against the perils present in agriculture. It largely solves the problem of farmers and largely in the hands of farmers. The subscription and success of agriculture insurance is determined by its cost and benefit. If the farmers have positive opinion on cost and benefit of agriculture insurance they will come forward to subscribe and stabilize their wealth and sustain the economic growth of nation by agriculture. This phenomenon, induce the researchers to stumble upon the solution to assess the opinion of farmers on cost and benefit of agriculture insurance and to test the significant difference in the farmers' opinion on cost and benefit of agriculture insurance.

The primary data collected from 600 farmers availing agriculture insurance within Tirunelveli District in the Indian State of Tamil Nadu to make an in-depth study to address the above issues. The respondents were selected by adopting stratified random sampling technique. The collected data were analyzed by applying Percentage Analysis and Sign test. The study revealed that green insurance is a beneficial plan to the farmers to face the negative income shock at reasonable premium. The majority of the respondents felt that agriculture insurance has covered 0-50% risk. Sign Test proved that there is a significant difference in the opinion of farmers on the cost and benefits of agriculture insurance. Technological adoption in the estimation of loss of crop yield, prompt settlement of claims and additional perils at additional premium are suggested mission to enhance the vision of the farmers on cost and benefits of

agriculture insurance. Besides, it helps the farmers to lead a peaceful life and induce them to contribute more towards sustainable agriculture development of the country.

Keywords: Agriculture Insurance, Cost and Benefit of Agriculture Insurance, Farmers' Opinion, Sign Test

1. Introduction

Agriculture development is an index of country's progress because the development of all other sectors depends upon the development of agriculture sector. But, the development of agriculture is affected by natural disasters. Hence, the subject of green insurance was discussed in Indian Parliament as early as 1950 and government assured that viable agriculture insurance scheme would be introduced. General Insurance Corporation of India (GIC) made a beginning in green insurance scheme in 1972 by implementing an experimental crop insurance scheme for cotton crop on individual approach. The scheme is extended to variety of crops through variety of crop insurance schemes to prevail over the perils presents in agriculture field in the LPG era. Single agency and single scheme cannot satisfy all needs of the agricultural sectors. So a number of formal financial agencies are working to meet the credit requirements of the farming community. Presently, agriculture insurance companies comprises of three main streams, Commercial Banks, Co–operative Banks and Regional Rural Banks. These institution guarantees financial compensation to the insured in the event of any adversity and carve up the losses partially or fully. What they demanded from demand side to offer the benefits to beneficiaries? What are benefits offered to farmers via agriculture insurance?

These queries are painstaking as a present research problem.

1.2. Statement of the Problem

Tirunelveli is one of the agriculture blocks in southern Tamil Nadu due to the perennial river of Tamirabarani. The district has two main seasons, Kar (From June to September during south west monsoon) and Pishanam (From October to February during north-east monsoon). The climate of Tirunelveli is too conducive for crop yield, having realized the potentiality of agriculture, the farmers' are largely depends on crop cultivation. Unfortunately, often the torrential or deficit rain ruins the benefit of the agriculturists in Tirunelveli and increases their risk. But, these risks can be reduced by proper implementation of Green insurance. But the implementation of green insurance largely depends on the farmers' opinion on the cost and benefit of agriculture insurance. Hence, agriculture insurance is a protective mechanism for farmers against the perils present in agriculture. It largely solves the problem of farmers and largely in the hands of farmers. The subscription and success of agriculture insurance is determined by its cost and benefit. If the farmers have positive opinion on cost and benefit of agriculture insurance they will come forward to subscribe and stabilize their wealth and sustain the economic growth of nation by agriculture.

This phenomenon, induce the researchers to stumble upon the solution for the following queries:

- What is the opinion of farmers on cost and benefit of agriculture insurance?
- Is there any significant difference in the farmers' opinion on cost and benefit of agriculture insurance?

1.3 Scope of The Study

The following are the scope of the study.

- Geographical **scope**

This study has focused on insured farmers in Tirunelveli city which is the capital of Tirunelveli District, located in the southern region of Tamil Nadu State, India.

- **Topical** scope

It covers the insured farmers' in the study area and borrowed agriculture loan from the banks located in Tirunelveli District.

- **Analytical** scope

It has covered the fulfillment of the study objectives i.e to analyze the farmers' opinion on cost and benefit of agriculture insurance.

- **Functional** scope

It is to offer a set of meaningful suggestions to the supply side of agriculture insurance on the basis of opinion of farmers in order to sustain the economy via agriculture business'.

1.4. Significance of the Study

This study will pave the way to the agriculture insurance agencies, government and financial institutions while framing guidelines in the formulation of new schemes and modification of existing agriculture insurance scheme.

The result of the study will support the supplier of insurance company to take appropriate decision regarding the benefits to be offered to farmers and the amount of premium to be collected from farmers.

The research methodology of this study will be a mode/ model to the potential research scholars to design their present/ future research. Further it will serve as a strong source of secondary data for the academicians and scholars to pursue their research.

1.5. Objectives of the Study

- To analyze the opinion of farmers on cost borne by the farmers to obtain agriculture insurance
- To analyze the opinion of farmers on the benefits attained by the farmers via agriculture insurance.
- To test the significant difference in the opinion of farmers on the cost and benefits of agriculture insurance

1.6. Limitations of the Study

The following are the important limitations that the researcher faced in the study.

- The study is limited to Tirunelveli District.
- The researcher has taken only 9 taluks in Tirunelveli District.
- It covers only insured farmers' in Tirunelveli District.
- The sample was restricted to 600 farmers
- This analysis does not include the insurance agencies.
- The validity and reliability of the data depends on the truthfulness of the responses from the respondents.

1.7. Research Methodology

Sources of Data

Primary and Secondary data are used for this study. The Interview Schedule was used to collect the primary data from the respondents. The secondary data were collected from the annual reports published by the General Insurance Corporation of India, Agricultural Insurance Company (AIC) of India, Insurance Regulatory and Development Authority (IRDA) of India and also those published by NABARD and the Reserve Bank of India publications. Journals, working papers, research reports, and websites were viewed for collection of data and personal discussion with farmers in agriculture.

Sampling Design

The respondents were selected by adopting **Multi Stage** simple random Sampling technique.

Stage: 1 **To** identify the Taluks to be surveyed.

Stage: II **To** narrow down the research in selecting the number of banks

Stage: III **To** choose the farmers availing agriculture insurance from the banks within the selected Taluks.

Sample Size:

Total number of farmers availing agriculture insurance from the selected 36 banks is 6928 farmers. One tenth of the farmers are sufficient for undertaking an in-depth study. At the last stage, one tenth of the beneficiaries (693) were selected randomly from banks within the selected taluks. But, the primary data regarding the cost and benefits of agriculture insurance was clearly and completely given by 600 insured farmers. So, the sample size of the research is 600.

Statistical Tools

The collected data was analyzed by applying simple percentage analysis and sign test. The formula for sign test is:

$$Z = \text{Number of '+' sign} - \mu / \sigma$$

$$\mu = 0.5\ n$$

$$\sigma = \sqrt{0.25\ n}$$

Confidence level Estimate (CI):

Z score, 1.96 for the 95% **confidence** interval has only 2.5% on each side i.e. two tailed test. The probability for a **Z** score below −**1.96** is 2.5%, and similarly for a **Z** score above +**1.96**; added together this is **5%.**

1.9. Hypothesis of the Study

H_0: There is no significant difference in the opinion of farmers on the cost and benefits of agriculture insurance

H_1: There is a significant difference in the opinion of farmers on the cost and benefits of agriculture insurance

The hypothesis is tested at **5%** level of significance.

2. Review of Literature

The comprehensive study and interpretation of literature that relates to the present study plays a vital role in providing an insight into the research. Hence, the research work pursued from 2010 to 2019 related to this study were reviewed and given below.

Catherine Mazwi R. Tsikirayi and Epharim Manoki et al (2010) made a study entitled "Analysis of the Uptake of Agricultural Insurance Services by the Agricultural Sector in Zimbabwe". Agricultural insurance in Zimbabwe mainly falls under the short-term or non-life insurance arm of the insurance industry. Contribution of agricultural or farming insurance premium to the gross premium income is low (5%) compared to other industries. The relative contribution of agricultural insurance to gross premium is not commensurate with the high level of contribution of agriculture to Gross Domestic Product. Farmers' thus failed to appreciate the importance of insurance, as government financed their farming activities and this obviously affected the rate of insurance uptake in the sector. Own price factor is the premium or price that the farmer pays monthly or as a once off annual payment for the insurance policy for a given level of coverage or indemnity. A high premium, relative to low coverage, would reduce demand for a particular policy and conversely, a low premium, relative to high coverage, will increase uptake.

The study found that there were a total of 25 registered insurance companies in Zimbabwe. Of these, 15 insurers, representing about 60%, currently provide agricultural insurance. It was further noted that the branch network of agricultural insurance providers is limited, with most of the branches located in Harare, the capital city, and in a few major towns. A survey of both farmers' and insurers revealed that the location of most insurers makes it difficult for farmers' to access insurance service providers or vice versa. This has an overall effect of reducing uptake of farming insurance policies. Furthermore, the study showed a general agreement among insurers that the economic downturn experienced from 2000 up to 2009 in Zimbabwe had negative effects on the insurance sector. The survey revealed that besides agricultural insurance, the majority of farmers' manage farm risk through diversification, as already mentioned earlier in this study, regarding determinants of uptake. He suggested that the government intervention by way of subsidies to farmers', enforcing the need for all farming operations to be insured and accessibility of insurance services through convenient location. The insurers further suggested improvement in agricultural production and the need for contractors to purchase insurance on behalf of the farmers'. The farmers' on the other hand, felt that fair and ethical practices (for instance, fair premiums) by insurers and cooperation between insurers and local institutions would aid uptake of insurance.

She concluded that agriculture has always been the mainstay of the Zimbabwean economy and as such should be supported by all sectors to ensure its recovery. Farming is a very volatile business, exposed to the vagaries of natural disasters, the mercy of fluctuating world prices, and protectionism policies in various markets. This study has shown that agricultural insurance is necessary for the farming sector to cushion their operations from these

unpredictable challenges. However, inadequacies have been identified that impede the sector to achieve its mandate of serving the nation's needs and export the excess to boost the foreign currency reserves of the country. If this sector is going to benefit from the insurance industry, it behaves key players such as, Commission of Insurance, Insurance Council of Zimbabwe (ICZ), Agricultural Research and Extension Services (AREX) and Ministry of Agriculture (MoA), the farmers' Union and other relevant bodies, to sit down and map out strategies that will restore the status of the Agricultural sector to its former enviable position of being the food provider for the nation as well as the region. To do that, the players need to appreciate the key role played by Agricultural Insurance Companies in facilitating the viability of the Agricultural sector.

Malini, R. (2011) in her research article titled "Attitude of Farmers' toward Agriculture Insurance: A Study with special reference to Ambasamudram Area of Tamil Nadu" pointed out that the implementation of agriculture insurance largely depends on the farmers' attitude. The study assesses the attitude of 60 respondents towards agriculture insurance, and favorable factors and problems prevailing in implementing it. The study reveals that the farmers have good attitude toward agriculture insurance. Besides they accept that certain favorable factors and stumbling blocks are prevalent in implementing agriculture insurance in Ambasamudram area. This study also suggested certain mechanism to boost up the share of agriculture income in the study area.

Geoffroy Enjolras and Fabian Capitanio (2012) in their research article "The demand for Crop Insurance: Combined Approaches for France and Italy". The objectives to understand which factors affect crop insurance decision in France and Italy. One aim of this study is to understand if this change is in favor of the insurer or of the insured. The study used a survey of farmers' in France and Italy belonging to the Farm Accountancy Date Network (FADN). Within the original database, we selected only farms that had continuously belonged to the sample between 2002 and 2007. Our sample finally included 9306 farms among which 2998 are French and 6308 are Italian. Among these farms 1602 are insured. She found that the French and Italian farmers' seem to face comparable cost for purchasing insurance but in mean 55 terms, it seems that French farmers' benefit more from insurance. Except for climatic variables, the results of the estimations are quite similar between the two countries. It is in particular the case for the influence of the elasticity of the premium per hectare to the liability i.e. insurance coverage. Among the way farmers' traditionally use to hedge, there exist diversification, measured by the number of cultivated crops per hectare, and irrigation. These techniques have a positive effect on insurance in France. In this context, they act as complements to insurance. In Italy, the negative sign associated to cultivated crops indicates that diversification is a substitute to insurance. Despites the parallel between France and Italy, the practice of insurance is different in two countries. For instance, French farmers' are more diversified than Italian ones. Similarly, our study indicates that French insured farms are more willing to receive premiums than Italian farms. However, many factors that lead to insurance are quite similar between the two states. She conclude that the extent in the range of covered risks provided by the reforms of public systems; at now, most of catastrophic risks are included in the policies, which led to a significant increase in the premium levels in Italy while this effect was mitigated in France due to public subsidies. As a result, insurance tent to become more costly and less profitable. Yet the potential benefits procured by insurance overcame the costs so that an insured farmer remained insured even if insurance was more

expensive. The study of the similarities and the differences noticed between French and Italian farmers' toward crop insurance decision allow understanding the dynamics of a recent and promising market. It also opens many perspectives in terms of risk management and of insurance development considering the forthcoming evolution of the Common Agricultural Policy.

Mohanapriya.T and Senthilkumar.V.M (2017) in their paper titled An Analysis on Problems in Implementing National Agriculture Insurance Scheme with Special Reference to Erode Block. From the study it is understand that unawareness, no faith in the scheme, delay in claim settlement, not satisfied with the indemnity level are the reason for not availing NAIS scheme. The factors like quick settlement and making the scheme voluntary for loanee farmers' requires modification to increase the usage of NAIS scheme.

Thirumoorthy.R. and Geetha.V (2017) conducted "A Study on Awareness of Farmers towards Crop Insurance in Erode and Namakkal District". The main aim of the study was to identify the farmers' awareness towards crop insurance. The study was based on primary data which was collected from 200 farmers and around erode and Namakkal district were selected by the investigator used simple random sampling technique. They concluded that the crop insurance not only solves the credit problem of farmer but also help out country to grow economically. Crop insurance plays an important role in agriculture; hence the crop insurance is carried out as a credit vehicle in rural areas with the objective of risk dispersal to small, marginal and large farmers and socio economically weaker section of population for the development of agriculture. The government should take necessary steps to educate the importance of crop insurance to farmers.

Sona and Muniraju (2018) have tried on "Status of crop Insurance in India: A Study with Reference to Kodagu District of Karnataka State." The main aim of the study was to know the factors influencing and constraints in adoption of crop insurance schemes and to ascertain the status of crop insurance scheme. The study showed that crop insurance has fared poorly, due to problems related to lack of information that leads to lack of awareness. Therefore better information dissemination is required to mitigate the problem and the access to such information should be made available at nominal cost. They concluded that the earnest efforts should be taken to make the farmers realize the real purpose of the scheme, beyond perceiving it as mere fund granting development programme.

Kumbalep and Devaraju (2018) they examined on "Awareness and Perceptions of Farmers about Crop Insurance - A Study in Kolar District of Karnataka State". Researchers found that the 1) only 20% farmers aware of crop insurance schemes 2) farmers were satisfied with premium subsidy provided by the government and service providers. 3) Indemnity need to be increased and quick settlement has to be done.

Joshua, Kwame and Benjamin (2019) they examined on "Willingness to pay for crop insurance in Tolon District of Ghana: Application of an endogenous treatment effect model". The study found that 48% of the respondents were aware of crop insurance. Efforts are needed to enhance awareness of crop insurance among small-scale farmers. This can be done through meetings and durbars with farmers to educate them on the importance of crop insurance. Farmers associations and groups can serve as important conduit for the dissemination of information on crop insurance to farmers. Awareness creation can also be carried out through extension education by agricultural extension officers.

A large number of research studies have been conducted on agriculture insurance in covering various strategies with reference to different geographical locations in India and abroad. So far nobody has analyzed the study on "Farmers' opinion on cost and benefit of agriculture insurance. Hence, the researchers have taken this study and analyzed. This type of research not only helps the Agricultural Insurance Company alone but also helpful to the funding agencies like commercial banks, Regional Rural Banks and as well as the government in the modification of existing agricultural insurance schemes and formulation of new agricultural insurance schemes to the farmers for the economic development of India.

3. Analyses and Interpretation of Data

The opinion of farmers on cost and benefit of agriculture insurance analyzed in two phases and the result is given in Table 1 to Table 4.

I Phase

The opinion of farmers on cost evaluated via premium paid by the farmers to obtain agriculture insurance.

II Phase

Four yardsticks such as Time of Compensation, Sharing Risk, Insurance Coverage and perils covered are adopted to analyze the opinion of farmers on benefits of agriculture insurance.

I Phase: The Opinion of Farmers on Premium

The opinion of farmers on premium paid to obtain agriculture insurance has been analyzed by percentage analysis and sign test. The result is given in Table 1 and Table 2

Table 1. Opinion of Farmers on Premium Percentage Analysis

Particulars	Opinion of Farmers on Premium			Total
	Yes	No Opinion	No	
Very High	139 (23.17)	46 (7.67)	415 (69.17)	**600 (100)**
Low	323 (53.83)	62 (10.33)	215 (35.83)	**600 (100)**
Reasonable	398 (66.33)	46 (7.67)	156 (26.00)	**600 (100)**

Source: Primary Data collected from the farmers selected for study (Figures in Parentheses are Percentages)

It is clear from Table 1 that a majority of the respondents (more than 50%) have positive opinion on the rate of premium on agriculture insurance. The percentage analysis revealed

that a majority of the farmers felt that the rate of premium on agriculture insurance is reasonable and not high.

The percentage of 'Yes' response ranges between 23.17 and 66.33. The percentage of 'No' response ranges between 7.67 and 10.33. The percentage of 'Neutral' response ranges between 26 and 69.17. This indicates that the farmers have different opinion on the rate of premium of agriculture insurance. In order to examine whether there is any significant difference in the opinion of farmers on the rate of premium on agriculture insurance, the sign test has been applied,

Table 2. Opinion of Farmers on Premium Sign Test

Particulars	Opinion of Farmers' on Premium			Z – Value for 95% Confidence Interval	Inference at the level of 5%
	Number of '+' Signs	Number of '-' Signs	Total		
Very High	139	415	554	-11.12	Significant
Low	323	215	508	12.95	Significant
Reasonable	398	156	554	7.83	Significant

Source: Primary Data collected from the farmers selected for study

It is inferred from Table 2 that the Z-value is not within the acceptance region of null hypothesis (Z= -1.96 to Z= 1.96) for all the statements. **1.96** is used because the **95**% **confidence** interval has only 2.5% on each side.

It indicates that there are significant differences in the opinion of the farmers towards the rate of premium on agriculture insurance such as premium rate is low and reasonable. This is proved by the number of 'Yes' responses of the farmers to these statements more than 50%. Besides, the Z-value for premium rate is very high (-11.12). Z-value is significant but it has a negative sign. The negative sign is due to a large number of "No" responses. Since, majority of the farmers' (more than 50%) felt that the rate of premium is not a problem indulged with implementing agriculture insurance. Hence, it is concluded that the farmers have positive opinion on premium rate on agriculture insurance.

II Phase: **The Opinion of Farmers on Benefits of Agriculture Insurance**

The opinion of farmers on benefits of agriculture insurance measured via four components such as Time of Compensation, Sharing Risk, Insurance Coverage and perils covered and the result of the analysis exhibited in Table.3 and Table.4

Table 3. The Opinion of Farmers on Benefits of Agriculture Insurance Percentage Analysis

Particulars	Benefits to the Farmers			Total
	Yes	No Opinion	No	
Time of Compensation				
Within 6 months	301 (50.16)	40 (6.67)	259 (43.17)	**600 (100)**
6 months – 1 year	278 (46.33)	130 (21.67)	192 (32.00)	**600 (100)**
1year – 2 years	321 (53.5)	21 (3.5)	258 (43.00)	**600 (100)**
Above 2 years	323 (53.83)	46 (7.67)	231 (38.50)	**600 (100)**
Sharing of Risk				
0 – 50 %	406 (67.67)	23 (3.5)	173 (28.83)	**600 (100)**
50% - 75%	300 (50.00)	69 (11.50)	231 (38.50)	**600 (100)**
Above 75%	169 (28.17)	231 (38.50)	200 (33.33)	**600 (100)**
Insurance Coverage				
Cost of production	328 (54.67)	70 (11.67)	202 (33.67)	**600 (100)**
Value of yield losses	414 (69.00)	34 (5.67)	152 (25.33)	**600 (100)**
Loan borrowed for agriculture	282 (47.00)	101 (16.83)	217 (36.17)	**600 (100)**
Perils Covered				
Damages to crops by human beings	274 (45.67)	46 (7.67)	280 (46.66)	**600 (100)**
Natural Disasters	442 (73.67)	45 (4.50)	113 (18.83)	**600 (100)**
Damages to crops by wild animals	402 (67.00)	106 (17.67)	92 (15.33)	**600 (100)**
Pests and Disease	418 (69.67)	82 (13.67)	100 (16.67)	**600 (100)**

Source: Primary Data collected from the farmers selected for study (Figures in Parentheses are Percentages).

Time of Compensation

The percentage of 'Yes' response ranges between 46.33 and 53.83. The percentage of 'No' response ranges between 32 and 43.17 and the percentage of 'Neutral opinion' response ranges between 3.5 and 21.67. It is clear from Table 3 that 50% of the respondents agreed that the compensation is given within 6 months. But the majority of the respondents (more than 50%) felt that the compensation time is very long i.e above 2 years. It induces the researchers to apply sign test examine whether there is any significant difference in the opinion of the farmers on the time of compensation when the agriculture insurance subscribed.

Sharing Risk

It is clear from Table 3 that a majority of the respondents (more than 60%) felt that the agriculture insurance has covered 0 – 50% of risk in agriculture. Exactly half of the respondents (50%) felt that the agriculture insurance covered 50 – 75% of risk in agriculture and only 28.17 percent of the respondents felt that the agriculture insurance covered above75% of risk in agriculture. The percentage of 'Yes' response ranges between 28.17 and 67.67. The percentage of 'No' response ranges between 28.83 and 38.5. The 'Neutral opinion' response ranges between 3.5 and 38.5. This indicates that the opinion of farmers on sharing risk via agriculture insurance varies from farmer to farmer. In order to ascertain whether there is any significant difference in the responses of farmers towards the sharing of risk via agriculture insurance, the sign test has been applied.

Insurance Coverage

It is clear from Table 5.11 that a majority of the respondents have good opinion about agriculture insurance, such as; agriculture insurance covered the value of yield losses, cost of production and the amount of production of loan or crop. 36.17% of the farmers felt that agriculture insurance has not covered the amount of production of crop or loan. 5.67% of the respondents neither agree nor disagree that agriculture insurance has covered the value of yield losses and 69% of the respondents felt that the agriculture insurance has covered the value of yield losses.

The percentage of 'Yes' response ranges between 47 and 69. The 'No' response ranges between 25.33 and 36.17, and the percentage of 'Neutral opinion' response ranges between 5.67 and 16.83. This indicates that the farmers have various opinions on agriculture insurance. In order to examine whether there is any significant difference in the feelings of the farmers towards insurance coverage under agriculture insurance, the sign test has been applied.

Perils Covered

It is clear from Table 3 that the majority of respondents have positive opinion on perils covered such as flood and landslide, drought, pests and disease and damaged to crops by wild animals under agriculture insurance. But 46.66% of the farmers felt that the agriculture insurance has not covered the damaged to crops by wild animal. 17.67% of the farmers neither agree nor disagree that agriculture insurance has covered in drought. The percentage of 'yes' response ranges between 46.33 and 73.67. The percentage of 'No' response ranges between 15.33 and 46. The percentage of 'Neutral opinion' response ranges between 4.5 and 17.67. This indicates that the opinion of the farmers' on perils covered under agriculture insurance varies from farmer to farmer. In order to ascertain whether there is any significant

difference in the responses of farmers towards perils covered under agriculture insurance, the sign test has been applied.

Table 4. The Opinion of Farmers on Benefits of Agriculture Insurance Sign Test

Particulars	Benefits to the Farmers			Z – Value for 95% Confidence Interval	Inference at the level of 5% Significant
	Number of '+' Signs	Number of '-' Signs	Total		
Time of Compensation					
Within 6 months	301	259	560	-1.95	Insignificant
6 months – 1 year	278	192	470	3.92	Significant
1 year – 2 years	321	258	579	2.62	Significant
Above 2 years	323	231	554	3.92	Significant
Sharing of Risk					
0 – 50 %	406	173	579	9.67	Significant
50% - 75%	296	235	531	2.65	Significant
Above 75%	169	200	369	-1.54	Insignificant
Insurance Coverage					
Cost of production	328	202	530	5.48	Significant
Value of yield losses	282	217	499	2.46	Significant
Loan borrowed for agriculture	414	152	566	11.02	Significant
Perils Covered					
Damages to crops by wild animal	274	280	554	-0.26	Insignificant
Flood and landslide	442	113	555	13.98	Significant
Drought	402	92	494	13.95	Significant
Pests and Disease	418	100	518	13.97	Significant

Source: Primary Data collected from the farmers selected for study

Time of Compensation

Table 5.8 shows that the Z-value is not within the accepted region of null hypothesis (Z=-1.96 to Z = 1.96) for all the statements, except the first statement (compensation time is within 6 months). **1.96** is used because the **95**% **confidence** interval has only 2.5% on each side.

The Z-value of the first statement is within the null hypothesis region (-1.95). This indicates that there are significant differences in the attitude of farmers towards the compensation time on agriculture insurance which is from 1year to above 2 years. This is proved by the number of 'Yes' responses of the respondents to these statements (more than 45%).

Hence, the farmers have positive opinion on the time of compensation. They accepted that the compensation paid between 6 months and 2 years, when they subscribe agriculture insurance. But they felt that the time of compensation within 6 months is not possible.

Sharing of Risk

It is inferred from Table 5.10 that the Z-value is not within the acceptance region of null hypothesis (Z= -1.96 to Z= 1.96) for all the statements. It indicates that there are significant differences in the responses of farmers towards the sharing of risk via agriculture insurance. These significant differences are due to a large number of 'Yes' responses. Besides, the Z-value for 75% - 100% of risk sharing is significant but it has a negative sign. This indicates that there are significant differences in the responses of the farmers towards the above 75% of risk sharing.

Table 5.10 shows that Z – value is not within the accepted region of null hypothesis (Z = -1.96 to Z= 1.96) for all the statements, except the third statement is (above 75%). It indicates that there are significant differences in the responses of farmers towards the sharing of risk via agriculture insurance. These significant differences are due to a large number of 'Yes' responses. The Z-value of the first statement is within the null hypothesis region (-1.54). Most of the respondents show their negative sign towards the above 75% risk sharing of risk via agriculture insurance and few farmers agreed that agriculture insurance has covered 50% - 75% of risk.

Insurance Coverage

It is evident from Table 5.12 that Z-value is not within the accepted region of null hypothesis (Z= -1.96 to Z= 1.96) for all statements. This indicates that there are significant differences in the opinion of the farmers towards the agriculture insurance which covered the cost of production, value of yield losses and the amount of production of crop or loan. Hence, it is concluded that the farmers have good attitude regarding insurance coverage by agriculture insurance. They agreed that agriculture insurance covered the cost of production, value of yield losses and the amount of production of crop or loan.

Perils Covered

It is clear from Table 5.14 that Z-value is not within the accepted region of null hypothesis (Z= -1.96 to Z= 1.96) for all statements except the first statement (damages to crops by wild animals). The Z-value of the first statement is within the null hypothesis region (-0.26). This indicates that there are significant differences in the attitude of the farmers towards perils covered under the agriculture insurance such as pest and disease, drought, and, flood and

landslide. This is proved by the number of 'Yes' responses of the respondents to these statements (more than 60%).

Hence, it is concluded that the farmers have positive opinion on perils covered under the agriculture insurance. But, they felt that the agriculture insurance has not covered the damaged to crops by wild animals.

4. Findings of the Study

The findings are listed below based on the analysis made with the data collected.

4.1 Farmers' Opinion on Cost of Agriculture Insurance

The study revealed that agriculture insurance is a beneficial plan to the farmers to face the negative income shock at reasonable premium. Sign Test proved that there is no significant difference in the attitude of farmers towards the cost of agriculture insurance.

4.2. Farmers' Opinion on Benefits of Agriculture Insurance

4.2.1. Time of Compensation

The majority of the respondents (more than 50%) felt that the compensation time on agriculture insurance is very long i.e above 2 years. Sign test expressed that there is no significant difference in the opinion of the farmers on the time of compensation except the compensation time is within 6 months.

4.2.2. Sharing Risk

The majority of the respondents (more than 60%) felt that the agriculture insurance has covered 0 – 50% of risk in agriculture. The sign test indicates that there is a significant difference in the attitude of farmers towards sharing of risk. "above 75% of risk" covered in agriculture insurance is denied.

4.2.3. Insurance Coverage

69% of the respondents felt that the agriculture insurance has covered the value of yield losses. Sign Test proved that there is no significant difference in the attitude of farmers towards the insurance coverage of agriculture insurance.

4.2.4. Perils Covered

The majority of respondents have good attitude towards perils covered in Agriculture Insurance, such as flood and landslide, drought, pests and disease and damaged to crops by wild animals. The sign test proved that there is no significant difference in the attitude of farmers towards the perils covered of agriculture insurance except the statement 'Crops damaged by wild animals'.

5. Suggestions

The suggestions are listed below based on the findings of the study.

- The farmers felt that the agriculture insurance is offered at reasonable premium. Hence the Government and Farmers' bank should continue the same.

- The Prompt settlement of claims within a year is suggested.
- The government and farmers' bank should share 50% to 75% risk indulged in agriculture via agriculture insurance.
- Technological adoption is suggested for the insurance company and Government such as remote sensing, aerial imaginary, satellite that can help in acreage estimation, quicker yield estimation and loss estimation to settle the compensation promptly.
- Additional perils should be covered at additional premium especially damage by wild animals.
-

6. Conclusion

The farmers opined that Agriculture Insurance is a beneficial plan to face the negative income shock at reasonable premium. Technological adoption in the estimation of loss of crop yield and additional perils at additional premium are suggested mission to enhance the vision of the farmers on cost and benefits of agriculture insurance. Besides, it helps the farmers to lead a peaceful life and induce them to contribute more towards sustainable agriculture development of the country.

7. Scope for Facilitating Research

The following areas have been identified for carrying out an in-depth study about agriculture insurance in future.

- Captivating young minds with creative attributes of agriculture insurance.
- Prospects and Problems in the implementation of agriculture insurance in Tamil Nadu.
- Perception of farmers' towards agriculture insurance can be extended based on the parameter such as the geographical area, sample size, topic, analysis and time.
- An evaluation of agriculture insurance in Tamil Nadu.
- Role of Banks in the implementation of agriculture insurance in Tamil Nadu.

Note:

The primary data collected from 600 sample respondents by I. Malini during her Ph.D Research work. She pursued her research work under Dr. R.Malini and she was awarded Ph.D degree on 23.03.2021. This present paper based on the data collected via structured interview schedule for the research work entailed ***"Prospects and Problems in the Implementation of Green Insurance – A Study with Special Reference to Tirunelveli District".***

References

Catherine Mazwi R. Tsikirayi, Ephraim Makoni and Joseph Matiza (2010), "Analysis of the Uptake of the Agricultural Insurance Services by the Agricultural Sector in Zimbabwe", Journal of International Business and Cultural Studies, Page no. 1-14.

Duhan Anju and Singh Satbir (2017), "Factor Affecting Awareness Level of Farmers about Crop Insurance: A Case Study of Haryana." Asian Journal of Agricultural Extension, Economics and Sociology, Issue 21 (4), pp- 1-7.

Geoffroy Enjolras, Fabian Capitanio and Felice Adinolfi (2012), "The Demand for Crop Insurance: Combined Approaches for France and Italy". *Agricultural Economics Review* Vol.13 No.1.

Joshua, Kwame and Benjamin (2019) "Willingness to pay for crop insurance in Tolon District of Ghana: Application of an endogenous treatment effect model" AIMS Journal of Agriculture and Food, Volume - 4 Issue - (2), pp-362-375.

Kumar Amlendu and Kant Shashi (2017): "Crop Insurance in India: Scope for Improvement." International Journal of Advance Engineering and Research Development, Vol-4, Issue-6, pp-23-27.

Kumbalep Saraswathi and M. Devaraju (2018): "Awareness and Perceptions of Farmers about Crop Insurance-A Study in Kolar District of Karnataka State". International Journal of Advances in Science Engineering and Technology, Vol-6, Issue-1, ISSN-2321-8991, PP-90-94.

Malini.R (2011), "Attitude of Farmers toward Agriculture Insurance", The IUP Journal of Agricultural Economics, Vol. VIII, No.3, Pg no. 24.

Mohanapriya.T and SenthilkumarV.M (2017), "An Analysis on Problems in implementing National Agriculture Insurance Scheme with Special Reference to Erode Block" Asian Journal of Management, Issue 8 (3), pp: 681-687.

Robert Aidoo, James Osei Menash, Prosper Wie and Dadson Awunyo Vitor, Asian Economic and Financial Review, 2014, 4(3): 341-354.

Sindhu.C and Thaslim Ariff.U (2017), "A Study on Farmers Preference towards Crop Insurance" International Journal of Interdisciplinary Research in Arts and Humanities, Impact Factor: 4.675 ISSN: 2456 – 3145, vol 2, Issue 2, Pg.138.

Sona H. C. And Muniraju Y. (2018) "Status of crop Insurance in India: A Study with Reference to Kodagu District of Karanataka State." International Journal of Management Studies, Vol-5, Issue- 3(9), pp-1-13.