

# Farmer's Awareness and Participation about Crop Insurance: An Econometrics Analysis



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## Abstract

The study attempts to examine the factors which are responsible for farmer's awareness to crop insurance schemes and to know the determinants of farmer's participation on crop insurance schemes in Bhadrak district of Odisha. Bhadrak district is one of the coastal district and the river Baitarani flows, as a result every year crops are damaged either by flood or cyclone. Hence the some of the farmers have adopted the crop insurance schemes to crop loss. The findings indicate that there are significant relationship between farmer's benefit and age, education and land holding. Like, there are significant relationship between farmer's satisfaction and education, age and land holding. The study also reveals the success of crop insurance schemes also depend on governments awareness programme with regard to crop insurance and there would be easy access of agricultural loans to farmers in the study area.

**Keywords:** Agricultural Loans, Awareness, Crop, Crop Insurance.

## Introduction

In India, agriculture plays a significant role in Indian economy. After the Green revolution, the importance of agricultural sector has been increased in Indian economic scenario. Now days rapid growth of agricultural is not only achieve self-reliance but also needed in household food security and maintain equal distribution income and wealth, reduce poverty, increase in national income. In India crop insurance was introduced in the year 1985 and in the year 1999, this scheme was replaced by National Agricultural insurance scheme. "Crop insurance" is an arrangement aimed at mitigating finance losses, suffered by the farmers due to damage and destruction of their crops resulting from various production risks. According to the national agricultural policy (NAP) 2000, despite of technological development farmers are continuous to be unstable due to natural calamities and price fluctuations. Crop insurance has been one of the most reliable and longest programmes for stabilization and risk management for farmers in many countries. Crop Insurance is very important, to give protection under risky of agricultural and it gives protection at the time of chemical use decision, cultural portion, production decision and cropping pattern decision.

## Need for Study

India is agricultural based country. About 70% people depend on agricultural directly. For having no adequate irrigation facility so farmers of India depend on nature. There is very common of farmers are debt and death in debt (S. Gupta 2000)<sup>1</sup>. Agricultural is the back bone of Indian economy, most of people in India depend upon agricultural sector. Agricultural production is decline due to lack of financial, irrigational facility, flood, droughts and climate. In India crop insurance is one of the best instruments for protecting farmers from Agricultural variability. In India crop insurance has been managed by the general insurance corporation (GIC). The govt. has now established a separate agricultural participation of (GIC), and four public sectors general insurance company and NABARD. Crop insurance not only helps the farmers to withstand the stock from uncertain situation but also acts as incentive to use the resources efficiently and achieve higher level of productivity (Shashi and K.B Umesh 2012).<sup>2</sup>

Bhadrak district is one of the agricultural under developed district of Odisha. In this study purposively Bhadrak district has been selected. Bhadrak is a heavy rain fall and also flood effected area, so farmers face lots of problems and unable to grip the benefit during monsoon season. Both rabi and kharif period crops are grown. Official record reveals that out

of seven blocks Chandabali block has the highest number of crop insured farmer. Thus the study aims to examining the determinants of the present crop insurance system in the Chandabali block.

### Objective of The Study

1. To study the determinants of the farmer's awareness about the crop insurance in the study area.
2. To study the determinants of farmer's participation on crop insurance scheme in the study area.

### Hypothesis

1. There is no significant relationship between benefits and age, education and size of land holding of the insurance farmers.
2. There is no significant relationship between satisfaction and age, education and size of land holding of the insurance.

### Reveiw of Literature

In an effort to identify the possible gap from the existing research study on crop insurance and to focus the un-researched area, a review of some critical and more recent studies relating to farm insurance is attempted.

KS Sreejamal (2016)<sup>3</sup>, "whether based crop insurance scheme a study on awareness of the farmer (policy holder) towards the scheming plakkad district". The study on farmer's awareness of crop insurance was conducted in kollengod talak of palkkad district in Kerala because the climate of the district is slightly different from the rest state. Here the study focuses on weather based crop insurance scheme and its benefits to the farmer and it is available to all kinds of farmers, big or small.

Yasmin Sabina and Hazarika C (2015)<sup>4</sup>, the state of Assam is a primarily an agricultural economy. In this study focus on awareness of the farmers in kamrup district. The study describe the households regarding agricultural insurance. It aims at helping the farmers in stabilizing their farm income, particularly in disaster year. This paper found that awareness level about the crop insurance schemes was very poor nearly 73% of the farmers could not answer the basic question of what crop insurances was, because of lack of information and lack of awareness. Therefore better information dissemination is required to mitigate the problem and information should be made available at free cost.

Ali Akhataer (2013)<sup>5</sup>, had study on the article "Farmer willingness for index based crop insurance on rain fed areas of Pakistan". The study reveals that crop insurance contributes to increase profit and the well being of the farmers in rain fed areas of Pakistan.

Mani, et al; (2012)<sup>6</sup>, analysis the awareness and adoption of crop insurance and identify in which way of crop insurance adoption in Nagapatinam. They found the farmers were not sure about their participation in crop insurance scheme and. Thus crop insurance Provide financial helps to the farmers, through providing compensation. Compensation amount deposits in their bank account, because farmers suffered many losses. If farmers' lands were 5 acre but they are not mention their land they do not get proper compensation farmers could high returns

than non insurance farmers. Thus crop insurance has been found to absorb the production risk efficiently and positively influence on the income of farmers.

Boyd and Milton (2011)<sup>7</sup>, had studied on Factors affecting crop insurance purchases in China: the Inner Mongolia region. They had developed the probit model of regression and their study revealed that the variables like knowledge and behavioral information, risk level, and crop insurance premium level, main information sources for crop insurance, role of farmer in the village, and Off- farm income influence purchase of insurance in the study area.

Suresh Kumar, D., et.al (2011)<sup>8</sup> had made the study on An Analysis of Farmers' Perception and Awareness towards Crop Insurance as a Tool for Risk Management in Tamil Nadu. They had used Probit and Tobit models of regression to examine farmers' perception and awareness about crop insurance in Tamil Nadu. The study revealed that Education level and Social Participation are main factors for enhancing the awareness about crop insurance scheme in the study area.

Narayanan A. G. V. and Saravanan T.P (2011)<sup>9</sup>, had conducted a Study on Customers' Perception towards General Insurance Products (Livestock & Crop Insurance) with Special Reference to Erode Rural in Tamilnadu. The study revealed that the customer care and TV Media are the most effective to know about the agricultural insurance. Moreover the study indicated about the significant relationship between level of satisfaction and period of insurance in the study area.

Kong and others (2011)<sup>11</sup>, had conducted the study on Factors influencing Shaanxi and Gansu farmers' willingness to purchase weather insurance. The authors had conducted the linear regression model to examine the willingness J.Sunder and Lalitha Ramakrishnan (2015)<sup>12</sup>, to pay for weather insurance in the study area and the result indicated that the demand for drought insurance is downward sloping.

had conducted "a study on Awareness towards Purchase Benefits and Satisfaction Level towards Crop Insurance". There were 360 farmer's were selected from the Kunichampet and Mannadipet district through structured questionnaire method of collecting data. The findings revealed that there were constraints like less benefits and dissatisfaction towards claims settlement of crop insurance.

D. Suresh Kumar and others, (2010)<sup>13</sup> had conducted the study on Farmers' Perception and Awareness towards Crop Insurance as a Tool for Risk Management in Tamilnadu. The authors had critically examine the farmer's perceive about the risk mitigation measures provided by the government and about their preference.

### Methodology

The study was conducted in purposively Bhadrak district of Odisha. In this study multiple sampling method such as purposive sampling and multi stage sampling method were adopted. Focus group method and Interview method were the method of data collection. Bhadrak district is the one of the costal district of Odisha. There are seven blocks in

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Bhadrak district. Out of seven blocks Chandabali block is the flood prone block of Bhadrak district. At the first stage Bhadrak district was purposively selected, at the second stage Chandabali block was purposively selected, at the third stage Bhuinbruti, gram panchayat was purposively selected as it's most part is flood affected area and at the fourth stage three villages namely, Purusatyampur, Bauljoda and

Bhuinbruti villages were purposively selected. Finally, 100 respondents were purposively selected. For data analysis ANOVA was used to test the hypothesis and Probit Regression model was used to examine factors affecting the awareness and the factors affecting the farmers participation to crop insurance programme in the study area. The study was conducted by help of SPSS and Eviews Packages.

### Tabulation and Data Analysis

**ANOVA: 1 Benefits and Age, Level of Education and Land Holding of The Farmers**

Variable		Sum of Squares	Df	Mean Square	F	Sig.
Age of respondents	Between Groups	2.71	3	.230	5.309	.0008*
	Within Groups	69.44	96	.744		
	Total	72.150	99			
Education of the respondent	Between Groups	1.173	2	.587	6.802	.000*
	Within Groups	70.939	97	.731		
	Total	72.112	99			
Land holding	Between Groups	1.174	2	.587	7.802	.000*
	With in Groups	70.937	97	.731		
	Total	72.110	99			

Source: Field Survey, \* Significance at 5%

The above table shows that the significant relation between benefit and age, education level and land holding of the respondents. The result indicates that there is significant relation between benefit and age of the respondents, it is because the corresponding p-value of age is .0008 which is less

than p-value of .005, that means it is significant at 5%. Like the corresponding p-value of education level and land holding are as .000 and .000, which are less than p-value of .05. Therefore these two variables are also significant at 5% and there is significant relation between benefit and age and land holding.

**ANOVA: 2 Satisfaction and Age, Level Of Education and Land Holding of The Farmers**

Variable		Sum of Squares	Df	Mean Square	F	Sig.
Age of respondents	Between Groups	.690	3	.230	6.309	.000*
	Within Groups	71.62	96	.744		
	Total	72.310	99			
Education of the respondent	Between Groups	1.173	2	.587	6.372	.000*
	Within Groups	71.26	97	.731		
	Total	72.433	99			
Land holding	Between Groups	1.686	2	.587	5.352	.000*
	With in Groups	70.937	97	.731		
	Total	72.623	99			

Source: Field Survey, \* significance at 5%

The above table shows that the significant relationship between satisfaction and age, education level and land holding respondents in the study area. The result indicates that the corresponding value of age, education level and land holding with regard to satisfaction level of respondents are highly significant as per the p-value of age, education level and land holding are concerned such as p-value are equal to .000, .000 and .000, which are less than the p-value .05. Therefore all the variables are significant at 5% and there is significant relationship between all

variables with the satisfaction level of respondents in the study area.

#### Probit model-1

$$Y = a + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + \mu \dots\dots\dots (1)$$

Y= Binary, (1 for crop insurance and 0 for otherwise)

X<sub>1</sub> = Land holding

X<sub>2</sub> = Access to loan

X<sub>3</sub> = Age of the respondents

X<sub>4</sub> = education level

μ = Error

**Table III: Probit Regression Table**

Variable	Coefficient	Std. Error	Z statistics	Prob
Constant	-18.61822	6.983935	-2.665864	0.0077
Land holding	0.140178	1.011556	0.058632	0.8898
Access loan	2.214025	0.068649	0.058632	0.04532*
Age of respondents	1.404026	0.482543	2.909642	0.03062*
Education level	3.45050	0.43735	2.8035	0.0043**

\* Significant at 1 %, \*\* significant at 5 %

In this study to know the determinants of farmer's participation in crop insurance programmes one probit regression model was conducted. In this model the dependent variable is binary as the value of 1 is for farmer's participation in crop insurance programme and the value of 0 for non-participation of farmers in crop insurance programme and there are four variables such as land holding, access to loan, age of the respondents and education level of the respondents are taken as independent variables. The result indicates that the variable access to loan is significant at 5 %, the variable age of the respondent is significant at 5% and the variable education level is also significant at 1 %. More over the result indicates

that these three variables are positive determinants of farmers participation in crop insurance programme in the study area.

**Probit Model: 2**

$$Y = a + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + \mu \dots\dots\dots (2)$$

Y= Awareness about crop insurance (1 for awareness and 0 for otherwise)

X<sub>1</sub>=Education level of farmers

X<sub>2</sub>=Farming experience of the farmers (in Year)

X<sub>3</sub>=News paper reading of the farmer (1 for yes and 0 for otherwise)

X<sub>4</sub>= watching TV (1for yes and 0 for otherwise)

μ=Error term

**Table IV: Probit Regression Model**

Variable	Coefficient	Stand. Error	Z. statistic	Prob.
Constant	3.857931	2.062610	1.870412	0.0641
Education	1.095699	0.217255	1.440491	0.06596***
Experience	-0.027967	0.025317	-1.10586	0.2691
Watching TV	1.729592	0.717895	1.016293	0.0495**
News Paper	-0.762632	1.110225	-0.686917	0.4921

\* Significant at 1 %, \* significant at 5 % and \*\*\* significant at 10 %

The above table is related to the determinants of the farmer's awareness to crop insurance programme. In this probit model the variables like education, farmers experience, watching TV and reading news paper are taken as independent variables and the dependant variable is taken as binary having two value as 1 for farmer's awareness to crop insurance otherwise 0. The result indicates that education level of farmer is significantly influence the awareness programme and the variable watching TV also significant to create farmer's awareness to crop insurance.

**Findings**

1. There is significant relationship between benefits and age, education and size of land holding of the insurance farmers. It means the benefit derived from the crop insurance scheme with the age of the farmer respondents are significantly related, which indicates that as the farmer's age increases benefits from the crop insurance also increases, like farmer's education level also significantly related with benefit of crop insurance and the land size of the farmer's also significantly related with benefit from crop insurance scheme.
2. There is significant relationship between satisfaction and age, education and size of land holding of the farmers. The result indicates that the relationship between farmer's satisfactions about the crop insurance with age of the respondents is significantly related, like farmer's satisfaction with the education level also significantly related and also the relationship between farmer's satisfactions with size of the land holding of the farmers. It indicates that

farmer's satisfaction level with regard to crop insurance determined by the older farmer, educated farmer and large size of the land holding of the farmers.

3. Farmer's age, excess to loan, and education level were important factors which influence the farmer's participation in crop insurance scheme. The probit model-1 indicates that probability of participation in crop insurance is significantly high for those who have access to loan. More over the result revealed that education level and age of respondents positively influence farmers' participation in crop insurance.
4. The Probit Model-2 was performed to identify the factors which influence awareness of the farmers about crop insurance scheme. The estimates of Probit model have been presented in table no 2. The variables like Watching TV and education level of farmers were found to be statistically significant in generating the farmer's awareness about crop insurance schemes.

**Suggestions**

1. It is suggested that Govt. intervention is necessary, because the crop insurance scheme is not properly implemented, because the most of the farmers are illiterate and unaware of crop insurance scheme.
2. More awareness on crop insurance should be created by respective agencies or governments.
3. Regular orientation programs/ counseling camps should be arranged through banks and insurance authorities at village level to enhance the awareness of crop insurance scheme.

4. Mutual efforts of NGOs, financial institutions and governments are required to improve the reach to the crop insurance scheme.
5. In order to make the success of crop insurance scheme in the study area rural credit system should be diversified to all categories of the farmer.

## Conclusion

The study has presented the analyses of farmer's participation and awareness to crop insurance scheme in the flood prone area of Bhadrak district. The findings of the study show that farmer's benefit and satisfaction level about the crop insurance scheme determines by variables like age, education and land size of the farmer's. But since the most of the farmers are illiterate therefore they are unable to avail the benefit of crop insurance scheme. Farmers in Bhadrak district mainly dependent on farming and others source for their livelihood. Farmers are required to provide more financial support from the government and government should take the initiative of providing market facilities and door to door awareness programme should be strengthened, it is because some of the area of Bhadrak district are flood prone areas. The district is mainly affected during the rainy season as rivers are flooded with rain water and every year sea cyclone also hits the district badly in comparison to other costal districts of Odisha.

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## Footnotes

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