

Assessing Farmers' Perception, Awareness and Influential Factors to Purchase a Crop Insurance as a Tool for Risk Management

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ABSTRACT

Crop insurance (CI) is an efficient risk management tool used in agriculture which secures the socio-economic situation of farmers. It has been used in a variety of forms and purposes in more than 70 countries in the world. CI helps to stabilize farmers' income, encourage farmers to adopt improved technologies and reduce the risk for credit agencies which can result in an increased flow of credit to the farmers. Although, the benefits of CI are well-known, there is a huge lack in voluntary participation of farmers in the scheme. This study was aimed to assess farmers' perception, awareness and influential factors towards purchasing of a CI, as well as to identify the way of developing crop insurance schemes in Sri Lanka. Primary data were collected from 30 insured and non-insured farmers. Descriptive statistics showed that 87% of farmers were willing to join for CI and 60% of farmers were dissatisfied while 40% satisfied over the prevailing crop insurance schemes. According to the results of Logistic Regression, farmers' satisfaction towards CI scheme, obtaining crop loans, social participation of farmers and their affordability to premium rate positively impact on their willingness towards CI while farmers' capacity to manage with own resource impact negatively. It is necessary to implement the awareness programs about benefits and importance of CI to enhance the adoption of crop insurance schemes in Sri Lanka.

KEYWORDS: Credit agencies, Crop insurance, Logistic regression, Risk management

INTRODUCTION

Risk management has become increasingly important in virtually all aspects of the economy, including agriculture which has always been a risky venture. Agricultural production and farm incomes in Sri Lanka are frequently affected due to the change of climate and natural threats, specifically floods, droughts, and pests and diseases. Agriculture contributes 11.2% to the Gross Domestic Product (GDP) and any disturbance in its production has a multiplier effect on the economy of a country like Sri Lanka (Central Bank Annual Report, 2011). The Sri Lankan Government has been concerned about the growing risk in agriculture, which results in unfortunate phenomenon of farmers' suicides, as happened in North Central Province.

Extreme weather events and other natural hazards tend to increase risk in agriculture and this highlights the importance of an efficient risk management tool for a farmer to withstand in adverse conditions. Many approaches can be used to manage agriculture-related risks and among them, insurance is an important instrument that is available to help the financial management of risks through transfer to a third party.

Crop Insurance (CI) has been recognized as a basic risk management tool in agriculture which secures the socio-economic situation of farmers. According to Food and Agriculture Organization (FAO) survey published in 1991, CI has been used in more than 70 countries in the world. In particular, developing countries

have established crop insurance programs not only to provide farmers with another risk management tool, but also to promote other goals; such as improving farmers' access to credit and promoting production of high value crops that might also have higher yield risk (Vandevveer, 2001).

Crop insurance helps to stabilize farmers' income, by reducing adverse effects resulting from substantial crop losses due to natural hazards, encourage farmers to adopt improved technologies which can lead to increased production and more efficient use of resources and reduce risk for credit agencies, which can result in an increased flow of credit to the farmers (Rambukwella *et al.*, 2007). Further, CI contributes to self-reliance and self-respect among farmers by protecting themselves against the loss of their crops, because they know for sure that the CI will cover the possible loss of income.

The Agricultural and Agrarian Insurance Board (AAIB), a specialist insurance division of the Ministry of Agricultural Development and Agrarian Services is the main agricultural insurer in Sri Lanka with a network of 26 regional offices and 550 agricultural service centers serving about 15,000 villages. SANASA Insurance Company Limited (SICL) which was inaugurated in 2003 has now expanded to become one of the most important cooperative networks in private sector of Sri Lanka providing financial support for more than 400,000 farmers involved in agriculture (FAO, 2011).

The Sri Lankan government has instituted several crop insurance programs as safety measures in an attempt to develop the agricultural sector in recent years. Although, benefits of CI have been accepted well in theory, there is a discrepancy between the theory and practical application due to low level of voluntary participation. The insurance coverage for each season with the comparison of acreage cultivated is far from satisfactory. Currently, Sri Lankan farmers are joining with the crop insurance schemes, because CI is mandatory when farmers' access subsidized bank loans.

Realizing the importance of CI as a tool for managing risk and uncertainties in agriculture, this research project examined the farmers' perception, awareness and influential factors towards purchasing of a CI as a risk management tool. Also this study aimed to examine farmers' willingness to join (WTJ) as well as their willingness to pay (WTP) for the crop insurance scheme and finally, identify the way of revamp crop insurance schemes in Sri Lanka.

METHODOLOGY

Data Collection

The study mainly focused on the paddy insurance scheme. Therefore, among the major paddy producing districts, the Kurunagala district was selected for primary data collection during the period from January to April, 2013.

According to the AAIB data in 2012/2013, Ganewatta and Ibbagamuwa Agrarian Service Centers (ASC) and under the SICL, Kuliypatiya DS divisions were selected in terms of the highest number of farmers with insurance policies. Data were collected from randomly selected 30 insured farmers from the list obtained from AAIB and SICL. To obtain the information from non-insured farmers in the same locality, another 30 farmers were selected who have not purchased a CI. Information were collected from both categories by face-to-face interviews using a structured questionnaire.

Data Analysis

Chi-square analysis was carried out to select socio economic variables which have higher association with the purchasing of a CI. The Logistic Regression was performed to identify the factors that influenced the farmers' perception and willingness towards crop insurance schemes implemented by the government and other financial institutions.

The Binary Logistic Regression model measuring the probability that a farmer is willing to purchase a CI is expressed as below:

$$P_i = F(CI_i) = F(X_i\beta + \epsilon_i) = \frac{1}{1 + e^{-CI_i}}$$

$$= \frac{1}{1 + e^{-(X_i\beta + \epsilon_i)}}$$

P_i is the probability function and CI_i is willingness to purchase a crop insurance of i^{th} farmer where, 1(one) indicate that an individual obtained and 0 (Zero) who did not purchase a crop insurance. X_i is a vector of socio-demographic, attitudinal and behavioral variables, β is a vector with the corresponding estimated variables' coefficients. The error vector ϵ_i consists of unobservable random variables.

RESULTS AND DISCUSSION

Descriptive Statistics

The majority of the farmers were males while there were few females who involve in farming in both populations.

Table 1. Socio-economic variables

Variable	Scale	Percentage (%)	
		IF	NIF
Gender	Male	83	87
	Female	16	13
Age (years)	≤30	3	7
	31 - 40	7	13
	41 - 50	37	20
	51- 60	33	20
	>61	20	40
Education level	No schooling	0	3
	Primary	30	23
	Secondary	63	67
	Tertiary	7	7
Experience on Farming (years)	<10	3.3	10
	10-30	63.3	47
	>30	33.3	43
Profession	Yes	30	23
	No	70	77
Income (Rs.)	≤10000	40	43
	10000-20000	30	27
	20000-30000	27	13
	≥30000	3	17
Ownership of Land	Land owner	13	7
	Owner & Farmer	80	73
	Tenancy Farmer	7	20
Irrigation Type	Major	60	63.3
	Minor	10	23.3
	Rain fed	30	13.3

IF- Insured Farmers; NIF- Non-Insured Farmer

The most of the non-insured (40%) were more than 61 years, while the majority of insured farmers, 36.7% and 33.3% belong to the age group of 41-50 and 51-60 years respectively (Table 1). It reveals that the majority of insured farmers are over 40 years of age and purchasing a CI by young farmers comparatively low.

Most of the farmers had primary or secondary education. This situation is very favorable for insurance companies to run a proper awareness programs about the crop insurance scheme to increase the voluntary participation of farmers in the scheme. Most of the insured farmers were well experienced (63%) having 10 to 30 years of experience in farming. The average farming experience among them was 28 years.

As expected, the larger majority of the respondents in the study area were engaging in farming as their mainstay. Around 57% of insured farmers earned between Rs. 10,000-30,000, while most of the non-insured farmers (43%) earned below Rs. 10,000 as their monthly income (Table 1). However, results showed that the percentage of non-insured farmers who earned more than Rs. 30,000 was higher than insured farmers.

Most of the farmers (80%) who insured their paddy lands owned their holdings. It reveals that participation of tenant farmers in crop insurance is very low. The most of the farmers (60%) who worked in major irrigation schemes insured their paddy lands, while few farmers (10%) who worked in minor irrigation conditions going for insurance in the sample area.

Risk Relief Measures Adopted by Farmers in the Event of Crop Failure

These respondents were further asked what source they would tap if they suffer loss due to crop failure. Different ways of recovering their losses, stated by the farmers were summarized in the Table 2.

Table 2. Different strategies adopted by farmers to face loss

Response	Percentage (%)
Borrowing from friends and relatives	40
Hypothecation of jewelry	20
More than one opinion	13
Borrowing from money lender	10
Government relief	10
Co-operative society	4
Lease of land	3

Of the total respondents, 40% get financial support borrowing from friends and relatives, while 20% respondents mentioned that they will go for hypothecation of jewelry. Borrowing loan from co-operative society and lease of land were mentioned by a few respondents (Table 2). If farmers were adopted crop insurance scheme, losses incurred by crop failure would be compensated from indemnity and it would be also useful when disbursing bank loans.

Farmers Awareness about Crop Insurance as a Tool for Risk Management

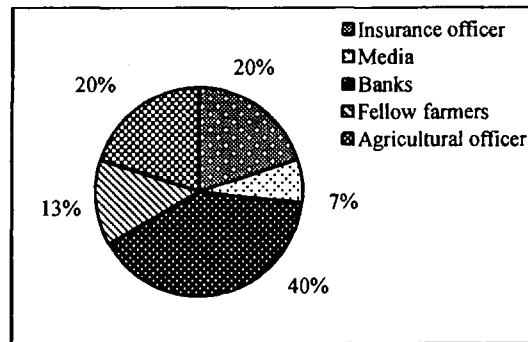


Figure 1. Sources of Information

Farmers acquire information about crop insurance schemes from various sources including banks, insurance officers, agriculture officers and fellow farmers (Figure 1). Among them, Banks (40%) play an important role in disseminating information about insurance products when they granting crop loans.

Non-insured Farmers' Perception on Crop Insurance

Degree of agreement on several statements of non-insured farmers' perception on CI were evaluated by likert scale and data were summarized in the Table 3.

Table 3. Non-insured farmers' perception on Crop Insurance

Response for not availing the CI	SDA or D	N	SA or A
Inadequate publicity	3	3	94
No faith in scheme / agency	7	7	86
Lack of co-operation from the agency	10	10	80
Lack of awareness	34	3	63
No need	17	20	63
Complex documentation	23	40	37
Lack of premium paying capacity	37	30	33
Non-institutional source of loan	30	47	23

SDA or D- Strongly disagreed or disagreed, N- Neutral, SA or A- Strongly agreed or agreed

As the study revealed, inadequate publicity about the scheme, no faith in the scheme and lack of cooperation from the agency were the most important reasons for not availing crop insurance scheme (Table 3).

Factors Affecting to the Participation in Crop Insurance Schemes

In the first face of the analysis, to find out factors associated with the participation in crop insurance schemes, chi-square analysis was carried out and factors which have a strong association with the purchasing of CI were selected.

According to the chi-square analysis, awareness and satisfaction towards crop insurance schemes (1 if satisfied; 0, otherwise), affordability of farmers to premium rate (AFFORD = 1 for yes, 0, otherwise), social participation of farmer (SOCIAL = 1 for participation in social organization, 0 otherwise), capacity to manage with own resource (OWN = 1 for yes, 0 otherwise) and obtaining crop loans (OCL = 1 for yes, 0 otherwise) have significant association with the participation in crop insurance schemes at 0.05 (Table 4).

Table 4. Results of Chi-square test

Variable	Chi-square	P-value
Awareness	13.469	0.000*
Satisfaction	11.915	0.001*
AFFORD	5.455	0.020*
SOCIAL	5.711	0.017*
OWN	6.239	0.012*
OCL	10.800	0.001*

*Significance at 0.05 level

Then the Binary Logistic Regression was done by using the most significant variables which were selected from chi-square analysis and other socio-economic variables.

Table 5. Results of the Binary Logistic Regression

Variable	Coef.	SE	P-value	Odd ratio
SOCIAL	3.271	1.980	0.098**	0.540
Satisfaction	2.914	1.564	0.062**	18.430
OWN	-4.450	1.997	0.026*	0.01
OCL	4.063	1.947	0.037*	58.13
AFFORD	4.612	2.176	0.034*	100.71

*Significant at 5% **Significant at 1% level

The results indicated that the satisfaction towards crop insurance schemes, obtaining crop loans, social participation of farmer and their affordability to premium rate positively

impact on their probability towards purchase a CI while capacity to manage with own resource impact negatively (Table 5).

Thus, the study recommends that those five factors might change farmers' perception and willingness towards CI into positive or negative way.

Perception of Insured Farmers towards Crop Insurance Schemes

More than half of the insured farmers considered bank compulsion as the reason for going for insurance, because crop insurance is considered as compulsory when granting crop loans by some government and private banks.

Table 6. Insured farmers' perception on CI

Perception	Response	Percentage (%)
Motivation	Banks' compulsion	60
	Financial security	33
	Both	7
Satisfaction	Satisfactory	60
	Not Satisfactory	40
Premium rate	Reasonable	80
	High	20
	Low	0
	Can't say	0
Willing to pay	Up to 5 %	83
	5-8 %	17

Most of the respondents (60%) expressed dissatisfaction while about 40% expressed satisfaction over the prevailing crop insurance schemes implemented by the public sector and the private insurance companies. Most of the insured farmers felt that the existing premium rate was reasonable (Table 6). About 83% of the farmers would like to pay premium at the rate of 5% while 17% were willing for a range of 5-8%.

It was found that, 87% were willing to go in for CI, while 5% could not take any decision. Although, majority of insured farmers expressed willingness to insure their crops, only 67% of farmers had adopted crop insurance for this season. In addition, the insured farmers were asked to what extent they would like the insurance agency to bear the crop loss and to what extent they themselves would bear the loss. As the results revealed, average sample farmers wanted sharing of loss by insurance agency and farmer in the ratio of 68:32 %.

Furthermore, farmers mentioned about their experience on present crop insurance scheme (Table 7). Less than 20% of the farmers responded that the indemnity is not sufficient, in accordance with the cost of production. As the study revealed, the average

cost of production of paddy is approximately Rs. 24500 per acre.

Bad experiences with indemnity level due to under-estimation of crop losses and delay in indemnity payments have caused dissatisfaction among the farmers.

Table 7. Experience of farmers about Crop Insurance Schemes

Statement	SP (%)
Documentation	82
Crops covered	70
Premium rate	63
Claim procedure	40
Facilities available at agency	40
Indemnity level	17
Delay of indemnity payments	17

SP - Satisfied Percentage

Respondents made several suggestions for improving the existing scheme for crop insurance. A majority of the farmers (87%) proposed extension in insurance cover to more crops to improve the scheme. Around 70% of the farmers want quick settlement of claims (QSC). Only 30% of the farmers want to reduce the premium. Beneficiaries were asked to indicate their preference for the media through which awareness on insurance should be created. Seminars were the most preferred choice followed by television (Table 8).

Table 8. Suggestions for Improving Crop Insurance Scheme

Perception	Response	Percentage (%)
Suggestions	Cover more crops	87
	QSC	70
	Insurance service at village level	67
	Reduce premium	30
Media	Seminars	53
	Radio / T.V	20
	News paper	17
	Handouts	10

CONCLUSIONS

It has been found that the crop insurance scheme is popular among the paddy growers in Sri Lanka. However, to enhance its adoption, determinants of buying behavior of farmers are required to be examined. The study revealed that the factors such as farmers satisfaction towards scheme, obtaining crop loans, social participation of farmers in organizations and their affordability to premium rate are influenced positively the adoption of insurance, while capacity to manage with own resource impact negatively. It is necessary to implement the extension programs to increase awareness

among the farmers about crop insurance schemes in Sri Lanka.

Furthermore, it is essential to conduct extension programs to aware about the rules and regulations of the scheme among the participants and there should be a direct linkage with farmers and the insurance company. There is a need for immediate supervision and assessment of crop damages and timely payments of indemnities to enhance satisfaction among farmers towards scheme and its reach to the target group.

The study has clearly brought out the urgency of developing more innovative schemes and the intervention of private sector. Crop Insurance should be made compulsory when granting crop loans by the government and private banks and it also should be linked with the fertilizer subsidy program carried out by the government. At least 100,000 farmers will be benefited through this way, if they lose their crops. But, to make it more reliable, there are many challenges to be overcome. To avoid fraud and the costs related to visual assessment of damage and increase transparency, it is essential to develop a group-based crop insurance product that is both simple and innovative.

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