FARMER'S WILLINGNESS TO PAY FOR CROP INSURANCE IN CHITWAN DISTRICT, NEPAL

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ABSTRACT

This study was targeted to estimate the Willingness to Pay (WTP) by the banana farmers to crop insurance premium and factors influencing it. Purposive random sampling method was employed to select total sample size of 120 (60 insured and 60 non-insured) among the registered banana farmers of Chitwan district, Nepal. The average WTP was found to be Rs. 3037.5 (≈ USD 30) at current situation and. 4712.5 (≈ USD 46) at the ideal situation where all the constraints for production are supposed to be solved. The results depicted that the factors like Age of Household Head, Years of schooling of the farmer, Annual income from agriculture, Membership in a cooperative, Loss experience and Farmer's risk behavior had a significantly positive influence on WTP.

Keywords: Banana, crop insurance, factors, insured, non-insured, willingness to pay (WTP),

INTRODUCTION

Agriculture continues to be extremely important business in case of Nepal which contributes 32.6% to national GDP and provides employment to 65.6% of population (MoAD, 2015). Among the harvests of business significance, banana is a standout amongst the most critical natural product usually developed in sub-tropical and tropical part of the country. Banana positioned third in production and fifth in territory among fruit crops in Nepal (CBS, 2014). In Nepal, around 6.4% of national food production is lost every year in light of different hazards (FAO, 2012).

Realizing the importance of crop insurance as a tool for managing risk and uncertainties in agriculture, Government of Nepal and National Insurance Board promulgated Crop and Livestock Insurance Directive in 1st January 2013 and instituted crop insurance scheme as a safety measure in recent years (MoAD, 2013). Multi-peril insurance scheme is the only insurance scheme which is currently in use in Nepal. At present, there are 17 non-life insurance companies which are providing insurance facilities in different districts of Nepal. Government of Nepal is providing 75% subsidy on insurance premium at present.

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The cost of insuring per plant of banana is Rs. 2 for the banana growers (MoAD, 2015).

Although the crop insurance scheme has been developed in Nepal, its appropriate implementation and regulation has not been practiced intensively till date. The main problem is with the low level of programme acceptance and adoption by the targeted group and reduced chances of success for such programmes. Due to low level of participation of farmers in the crop insurance, the future of this scheme is totally uncertain and no one is in the stage to say it by now. As such, their priorities, needs, and constraints facing them on the ground are not considered. Till today, no any study has been carried out to drag the actual cause behind low level of participation and the factors influencing the decision for crop insurance. The National crop insurance policy also doesn't have much research base to proceed further effectively.

OBJECTIVES

The objective of this research was to estimate Willingness to Pay (WTP) by the banana farmers to crop insurance premium and factors affecting it.

METHODOLOGY

Using purposive simple random sampling 60 insured and 60 non-insured were selected among the total population of 620 registered commercial banana farmers of Chitwan as Chitwan district is one of the major banana production and marketing hub in the region. Two different sets of questionnaire were prepared for insured and non-insured. For the process of primary data collection, face to face interview was used to collect information from the targeted farmers so that that information could be used in data analysis. For the purpose of data preliminary study, data verification and validation, Focus Group Discussion (FGD) and Key Informants (KI) survey was conducted.

Data collected through household survey was cleaned, coded and compiled and entered in MS Excel 2007 to prepare fairly clear database. Descriptive statistics was used to summarize the variables. Similarly SPSS (version 16) was used for t-test and STATA 14 for chi-square test, Logit model and Tobit model. Contingent Valuation Method (CVM) which was used in this study involves asking individuals directly in hypothetical survey the maximum amount they are willing to pay (WTP) to have the commodity in question.

RESULTS AND DISCUSSION

SOCIO-ECONOMIC CHARACTERISTICS

Table 1: Socio-economic and behavioral characteristics of insured and non-insured

Socio-economic characteristics	Banana farmers		Statistics	
	Insured	Non-insured	t-test	Chi-square
Gender of HH Head			-	0.776
Male	55(91.67)	52(86.67)	-	-
Female	5(8.33)	8(13.33)	-	-
Average year of schooling	9.68	7.2	2.962***	
Banana cultivated land	144.51	44.26	3.957***	-
Income from Agriculture	820333.33	327850	3.782***	-
Agriculture related training received	39(65%)	16(26.7%)		17.76***
Membership in group	45(75%)	25(41.7%)		13.71***
Membership in cooperative	54(90%)	33(55%)		18.43***

Note: Figures in parenthesis indicate percentage

(Source: Field survey, 2016)

The results presented in Table 1. revealed that average year of schooling, banana cultivated land holding and income from agriculture have positive significant effect on decision to buy the insurance scheme. The variables are highly significant at 1% level.

The results of chi-square test revealed that there was no significant difference between sex of the household head and major occupation of the household whereas the variables like agriculture related training, membership of the group and membership of the cooperatives have positive significant effect on the decision to buy insurance scheme for their banana crop.

WILLINGNESS TO PAY (WTP)

To determine the respondents average WTP for insurance, arithmetic mean was used for estimating WTP at the present scenario and WTP at the ideal situation.

$$\text{Average WTP} = \frac{\text{Sum of bidding amount (Total WTP)}}{\text{Total number of respondents who are willing to pay}}$$

The findings revealed that the average WTP for the insured at present situation was Rs. 3037.5 (≈ USD 30) and average willingness to pay for the insured with positive WTP (i.e.>0) was Rs. 3608.9 (≈ USD 36).

Similarly, at the ideal situation, the average WTP for all the banana farmers was Rs. 4712.5(≈ USD 47) and the average WTP of farmers with positive willingness to pay (i.e. > 0) was Rs 5490.29 (≈ USD 54). The average willingness to pay at the ideal situation was seen comparatively greater than that in the present situation Table 2. This reflected that farmers were still willing to pay more in case of betterment of the insurance scheme.

Table 2: Willingness to pay for the insurance at present situation and ideal situation

	Condition	Minimum	Maximum	Std. Dev	Mean	t-test
WTP at present situation	Non-truncated	0	5000	1475.52	3037.5	6.209***
	Truncated >0	1500	5000	712.76	3608.9	
WTP at ideal situation	Non-truncated	0	9000	2357.42	4712.5	7.325***
	Truncated >0	2000	9000	1473.60	5490.3	

(Source: Field study, 2016)

T-test results reflected that there is significant difference between the Willingness to Pay (WTP) of the insured and non-insured in both the truncated (>0 i.e. positive) and non-truncated (including 0 WTP) conditions at 1 percent level in the present situation. Similarly results were found in case of ideal situation too. This implies that insured were highly motivated towards the scheme and were ready to pay comparatively higher amount than non-insured.

FACTORS DETERMINING BANANA FARMER'S WILLINGNESS TO PAY (WTP)

Table 3: Factors determining banana farmer's willingness to pay for insurance

Determinants of WTP	Coefficient	Std. Err.	T	dy/dx
Age of Household Head (HHH)	21.8154**	10.451	2.09	21.271
Gender of HHH (1=male, 0=female)	-389.3797	373.233	-1.04	-379.668
Years of schooling	84.6951***	28.805	2.94	82.587
Annual agriculture income (Rs)	1558.6790***	247.319	6.3	1519.804
Agriculture related Training (1=Yes, 0=No)	250.4751	293.436	0.85	244.228
Membership in group (1=yes, 0=No)	-496.2138	285.244	-1.74	-483.838
Membership of cooperative (1=yes, 0=No)	952.0712***	302.757	3.14	928.325
Experienced loss (1=yes, 0=no)	1693.1780**	704.550	2.4	1650.949
Member out-migrated (1=Yes, 0=No)	176.9319	224.379	0.79	172.519
Farmer's category	536.4330**	217.939	2.46	523.05
Constant	-9484.6970	1515.312	-6.26	0.000

***sig@1%;**sig@5%; *sig@10%

LR x2 = 106.96***; Prob>x2=0.0000; Pseudo R2 =0.0581; Log likelihood = -867.48912

19 left-censored observations at Willingness to Pay <= 0

101 uncensored observations

0 right-censored observations

Tobit model was used for determining the factors affecting the willingness to pay for the crop insurance premium is presented in Table 3. Willingness to Pay (WTP) was used as a dependent variable and 10 independent variables were used of which 6 were found to be significantly affecting the willingness to pay at 1%, 5% and 10%. Other 4 were found non-significant. The chi-square is 106.96, highly significant at 1% level, indicating that the independent variables considered jointly have a statistically significant impact on WTP.

As expected the results to be, the coefficient of age of the house hold head was having a positive sign and statistically significant at 5 percent level. Similarly, years of schooling, annual agriculture income, membership of the cooperatives was having significant effect on Willingness to Pay at 1 percent level. Years of schooling had two folds effect on willingness to pay. Farmers who had attained education can critically analyze and make own decisions on different situations of risks. This result conformed to expectation and is in line with the findings of (Piyasiri and Ariyawardana, 2002; Falola *et al.,* 2013; Aidoo *et al.,* 2014; Danso-Abbeam *et al.,* 2014). Similarly farmers with higher income had higher capacity to pay and want to insure their investment. This result is in line with the results of previous findings (Akter *et al.,* 2009; Fuks and Chatterjee, 2008). Members of the cooperatives were willing to pay more. In one hand they had access to the money and in another hand cooperatives generally invested on those whose money were insured and had ability to pay in the years of crop failure also. Another concept is that who invest more on farming also seek the security of the money invested. The result was supported by the findings of (Nieto *et al.,* 2010).

The variables like loss experience and farmer's category were significant at 5 percent level and all having positive effect. Those who had experienced loss of banana in the past were willing to Pay Rs 1650.95 more than those who hadn't experienced loss in the past with positive WTP. Members of group were willing to cut of Rs 483.84 per bigha of banana insurance. Finally risk averse farmers with positive WTP were willing to pay Rs 523.05 more than the risk seeker and risk neutral farmers for insuring a bigha of land. Once you have experienced any disaster or damage, you would always be worried about it that it could take place in the future too. So the farmers who had experienced loss of their crop were willing to pay more than those which hadn't experienced loss. The results

were supported by the findings of (Varian, 2006) factors affecting crop insurance decision. Farmers which perceived high probability for loss to occur are more willing to have insurance are likely to pay higher amount. The findings are again supported by (Balmalssaka *et al.*, 2015) who found that total damage incurred in the past also increased the probability of paying higher amount of premium. Risk averse farmers don't want to take any risk in the future. They want to insure their uncertain future by now. The findings could even be supported by the findings of (Sulewski and Gajewska, 2014). They found that higher risk averse increased the chances of implementation of most of the strategies to avoid risk. To insure their future they would even be ready to invest comparatively more than the others.

Table 4: Correlation between WTP at ideal situation and WTP at present situation

Correlation	WTP at ideal situation	WTP at present situation
WTP at ideal situation	1	
WTP at present situation	0.8620	1

(Source: Field study, 2016)

Table 4. showed that the correlation between WTP at ideal situation and WTP at present situation was 0.8620. This showed that 86.20 percent of WTP at ideal situation can be defined by factors determining WTP at present situation. This clarified the situation that the factors determining the WTP at present situation were also responsible for determining the WTP at the ideal situation

CONCLUSION

The research was targeted to find out the WTP for the insurance scheme and factors governing the decision. The result revealed that insured were willing to pay more than the non-insured in the future too. Farmers were willing to pay 52.13 percent more at the ideal situation as compared to the present situation. 68.33 percent of the non-insured were willing to adopt insurance scheme in the near future. So improvement in the scheme is utmost necessary in the future. Factors like years of schooling, annual income from agriculture, membership of credit institutions, and experience in banana farming had positive significant effect on decision to buy the scheme. Risk averse nature of the farmers drive towards the scheme. To make the scheme more effective in the future, documentation should be made easy, alternatives for land ownership certificate should be harnessed and compensation should be based on output not on the cost of production.

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