Prospects of Crop Insurance as a Risk management tool among the Banana Farmers of Kanchanpur District, Nepal

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Abstract— *Out of 60 household literacy percentage of study area was found to be 80% which is above the national average. Major occupation of sampled household was agriculture (63.33%) which is nearly equal to the national scenario. Nearly 50% of total land was covered by banana cultivation. Between selected site of study, Punarbas municipal farmers were more likely to adopt insurance than Krishnapur municipal. Almost all insured farmer were aware about insurance before adopting crop insurance but only 3/4th of non insured farmer were aware about insurance and government policy related to insurance. Insured farmer motivation towards adoption of insurance was due to awareness provided by the insurance company and capacity to paying premium while some farmers were reluctant to adopt insurance due to untimely payment of claim and no faith in insurance company. The 80% of total insured farmers were reimbursed after bearing loss. While taking about continuity insurance if the government reduce the subsidy scheme, more than 90% insured farmers were willing to continue crop insurance but less than 1/4th of insured farmers were ready to continue insurance after complete withdrawal of subsidy scheme. About 60% of banana farmers will read to pay 3% premium rate if the government reduce the subsidy or without subsidy support. Adoption of insurance (100%) and price setting before harvesting (56.67%) were the main strategy to recover the loss by insurer farmers whereas crop diversification, crop management practices and price setting before harvest were the main strategy to minimize the loss by the non insurer farmers.*

Keywords— *crop insurance, government subsidy, insurance premium, non-insured farmer, willingness to pay.*

I. INTRODUCTION

Agriculture continues to be extremely important business which contributes more than 60% to the total national export (CBS, 2014). The Nepalese agriculture sector is based on the production of basic staple food grains. Very few farmers, who have stepped towards the HVC and other commercial crops, are not confident about the future because of the lack of credit, appropriate infrastructure and weather vagaries. 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. It is being developed since time immemorial in home yards for home utilization in Nepal (Gautam & Dhakal, 1994). Banana positioned third in production and fifth in territory among fruit crops in Nepal (CBS, 2014). Banana has great potential for income generation, enterprise development and job creation for the people.

Agriculture is directly exposed to the natural climate and weather. Banana having a weak fleshy pseudo stem and more weight at the top of plant is more prone to weather problems. Banana farmers in Nepal are facing many risks in their farming activities, the major being the windstorm. Banana farmers in Nepal are facing many risks in their farming activities, the major being the windstorm. The frequency of recurring windstorm is creating fear, anxiety and loss of production in banana farmers. To solve the issue to some extent National crop insurance directive was promulgated in 2013, but it's appropriate implementation and regulation has not been practiced intensively till date. The indigenous coping strategies such as crop diversification, irrigation maintenance and off-farm

strategies are not found effective anymore in this changed scenario. 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.

In these situations this research helps to identify the perception of farmers toward crop insurance particularly in banana and determine their willingness to join and pay for it identifying the principle factors affecting the adoption of insurance schemes and would be helpful in policy recommendations to increase the farmers' participation in crop insurance schemes in near future.

There is great need to work in this sector and develop the future road map of the insurance scheme and banana farmers in Nepal. This research tries to identify the motivational factors for the farmers to adopt banana insurance.

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. In this aspect crop insurance becomes most essential in our contest. To solve the issue to some extent National crop insurance directive was promulgated in 2013, but it's appropriate implementation and regulation has not been practiced intensively till date.

The National crop insurance policy also doesn't have much research base to proceed further effectively. To reduce this gap research is designed to achieve the following specific objectives; identify the risk involved in banana production in Nepalese context; evaluate the most important factors that influence farmer's decision for crop insurance and willingness to pay as crop insurance premium; assessing farmer's perception on crop insurance; assess farmer's willingness to adopt crop insurance as a risk management tool. This research would be quite helpful in policy recommendations to increase the farmers' participation in crop insurance schemes in near future.

II.   MATERIALS AND METHODOLOGY

2.1. Study area

The study was conducted in Kanchanpur districts of far western of Nepal as it is one of the main banana producing districts. Punarbas and Krishnapur Municipality were purposively selected for the study with the consultation of the community level and district level organizations. These settlements are occupied by Brahmin, Chhetri, Dalit, Tharu, Janajati & others.

Kanchanpur District in the Mahakali Zone is Nepal's most western district in the Terai and shares its southern and western borders with India. The latitude and longitude of

the region is 280 32″- 290 8″ and 800 3″- 800 33″ respectively. The maximum & minimum temperature of this area is 30.50 0C and 17.50 0C respectively and the annual rainfall is 1422.71 ml. The headquarters of this district is Mahendranagar, covers an area of 1610 km2 and has a population of 451,248 according to census 2011. The predominant language of this area is Nepali, Tharu, Rana Tharu, Doteli and Tamang.

2.2. Sampling size, sampling procedure and selection of the respondent

All the farmers from these two settlements were the target population for this study. During the selection of the respondents, only age of above 30 years and at least 15 years of settlements within locales were included in the sample, with the hope to make available of the valuable and useful information regarding the past trends of crop insurance in banana. Careful attention was paid to make the sample more inclusive. All together 60 households (30 insured & 30 non-insured) were selected purposively for the study from both Municipality.

2.3. Research instrument

Research instrument includes the semi-structured questionnaire which was pre-tested to nullify the errors present in the questionnaire. The research period lasts from 3rd march- 15th of April 2017. the housleholds selected for pre-testing were not selected during survey. Key informant interview was conducted and one focus group discussion to triangulate the information collected and also to aware farmers about the pros and cons of insurance and further recommendations and strategy.

2.4. Data collection

Both the primary and secondary informations were collected. Primary information was collected from the field survey and secondary informations were collected from the past literetures and most relavant study. For the collection of secondary information national and intersnational journal articles were used, ministry reports, websites and various national conferences papers were traced.

2.5. Data analysis

Both the descriptive and inferential statistics were used for analyzing data. Data analysis was done by using Ms- excel 2010 and IBM SPSS V.16. ranking was done by using the index of importance. This indexing technique was used to calculate the constraints associated with potato production in the Terai region (Subedi et al. 2019a) and wheat production (Subedi et al. 2019b). Similarly, Joshi and Kalauni (2020) and Shrestha and Shrestha (Shrestha & Shrestha, 2017) used this technique for ranking of

marketing problems in large cardamom and seed production & marketing constraints in maize respectively.

The index of importance was computed by using the formula:

$$\text{Iimp} = \sum \frac{Sifi}{N}$$

Iimp = index of importance

∑ = summation

Si = Ith scale value

Fi = frequency of ith importance given by the respondents

N = total number of respondents

III.   RESULTS AND DISCUSSIONS

3.1. Characteristics of banana growers

In case of families adapting banana insurance, 51.67 percent were male and 48.33 percent were female with 86.67 percent of household were headed by male and remaining 13.33 percent were headed by female members. While in case of families not adapting banana insurance, 51.63 percent were male and 48.37 percent were female with 93.33 percent of household were headed by male and remaining 6.67 percent were headed by female members. From the descriptive statistics, age distribution of the banana farmers with insurance in the study area ranged from 22 years to 55 years with active population (15-60) representing 64.31 percent and mean age was 37.87 years. Similarly, the age distribution of the non-insurers ranges from 24 years to 46 years with active population (15-60) representing 64.63 percent and mean age was 34.17 years (table 1).

The average land holding of insurers was 8.513 ha among this banana had been cultivated in 4.163 ha. But in case of non-insurer the average land holding was 5.93 ha in which banana had been cultivated in 2.73 ha. Out of total cultivated land area 1.46 ha mean (60.58%) land was owned and 0.95 ha mean (39.42%) was taken in leased-in, among this mean land for banana cultivation was 1.15 (47.72%).

Table1. Characteristics of banana growers in the study area

Parameters	Insurers	Non-insurers
Gender		
Male	51.67	51.63
female	48.33	48.37
Head of family		
Male	86.67	93.33
female	13.33	6.67
Education		
Illiterate	20	20
Literate	45	45
Below SLC	16.67	16.67
PCL	16.67	16.67
University	1.67	1.67
Occupation		
Agriculture	63.33	63.33
Wage/Labor	41.67	41.67
Business	23.33	23.33
Service	16.67	16.67
Remittance	20	20
Average land holding		5.93
Own land		2.73
Lease land	4.83	1.15
Banana cultivated area	3.68	
	4.16	

3.2. Banana Insurance

3.2.1. Status of banana insurance

Table.2. Status of insurance by place of residence

Place of residence	NON –INSURED	INSURED
PUNARBAS	11(47.80)	12(52.2)
KRISHNAPUR	19(51.4)	18(48.6)
Total	30	30

Source: Field Survey (2017)

In case of families adopting banana insurance, 52.2 percent of banana farmers of Punarbas area were found to

be engaged in insurance but in case of Krishnapur area 48.6% banana farmers were adopting insurance which is minimum than Punarbas area (Table 2). It might be there were more access of Insurance Company & I/NGOs from both side (from Kailali and Kanchanpur) and also the farmers of Punarbas were most actively involved on commercial farming. Many I/NGOs might also focus on that region than Krishnapur. Similarly 47.80 % farmers of Punarbas and 51.4 % farmers of Krishnapur were not adopting insurance. Similar to our study half of the un-

insured farmers were selected for the willingness to pay in chitwan district (Pant, Dutta, Kattel, & Dhungana, 2019). Since the insurance of agricultural commodity is newly introduced in Nepal and with reference to far-west region still many are unaware about it. (Budhathoki, Lassa, Pun, & Zander, 2019) reported that most of the farmers were positive regarding their crops in future to receive premium returns under losses.

3.2.2. Awareness about Insurance

Table 3. Awareness about insurance of banana by type of farmers

	Insured farmers		Non-insured farmer	
Awareness	F	Percentage	F	Percentage
About insurance	30	100	23	76.67
Insurance subsidy provided by government	30	100	23	76.67

Source Field Survey (2017)

All Insurers farmers were awared about the insurance and insurance subsidy scheme before adoption of crop insurance which was provided by government. More than 2/4th of non-insurers farmers 76.67 percent (23 out of 30) were awared

about both of the scheme even they do not adopt insurance (Table 3).

3.3.3 Source of Information about Insurance Scheme

Table 4. Source of information on scheme by type of farmers

	Insured farmers		Non-insured farmer	
Source	F	Percentage	F	Percentage
Insurance company or agent	15	50.00	9	39.13
DADO	7	23.33	13	56.52
Media	0	0.00	1	4.35
Cooperatives and I/NGOs	8	26.67	0	0.00

Source: Field Survey (2017)

The source of information on insurance scheme by insurer farmers was Insurance Company i.e. 50 percent then followed by Co-operatives and I/NGOs (26.67%), and DADO (23.33%). No any farmers among insurers do not get information from media (Table 4). Similarly in case of non-insurer farmers' maximum percentage i.e. 56.52 percent of information were obtained from DADO then followed by Insurance Company or agent (39.13%) and Media (4.35%). But non-insurers farmers do not get information from NGOs & INGOs or Cooperatives. Farmers group and DADO was the main source of information regarding crop insuance (Ghimire et al., 2016).

3.2.4. Reason for not adopting crop Insurance

Table 5. Reason for no adoption of insurance by non-insured farmer-

Reasons	INDEX VAULE	RANK
Awareness of INS	0.73	IV
Capacity of paying premium	0.56	VI
Documentation difficulty	0.74	III
Faith in INS company	0.90	II
Timely payment of claim	0.93	I
Access of INS Companies	0.70	V

Source: Field Survey (2017)

Among the major hindrances for not adopting crop insurance by the farmers; not timely payment of the claim ranked first followed by lack of faith in insurance company then Documentation difficulty, awareness of insurance, access of insurance companies and capacity of paying premium ranked lastly. The ranking scale for reason for no adoption of insurance by non-insurer farmers is ranges from 1 to 4 in which 1 denotes the higher ranking and 4 denotes lower ranking for no adoption of insurance (Table 5). In case of non-insurer farmers if the index value is high then it's ranking as first but it is reverse in case of insurer farmers.

3.3.5. Motivation factors towards Insurance

Table 6. Motivation factors toward insurance to insured farmers

Factors	INDEX VAULE	RANK
Awareness of INS	0.26	I
Capacity of paying premium	0.27	II
Documentation	0.93	VI
Faith in INS company	0.53	III
Timely payment of claim	0.71	V
Access of INS Companies	0.69	IV

Source: Field Survey (2017)

Similarly as in non-insurer farmers the ranking scale ranges from 1 to 4 but if the index value is lower it prioritize as ranking first and for higher value of index it is ranked as last. Here in the above table 6, among the major motivational factors towards insurance by the farmers; Awareness of Insurance ranked first followed by capacity of paying premium, faith in insurance company, access of insurance companies, timely payment of claim and documentation ranked last. Insured farmers have to good access to pay for the premium needed to pay after premium and were also found to pay more than 75% average (Budhathoki et al., 2019).
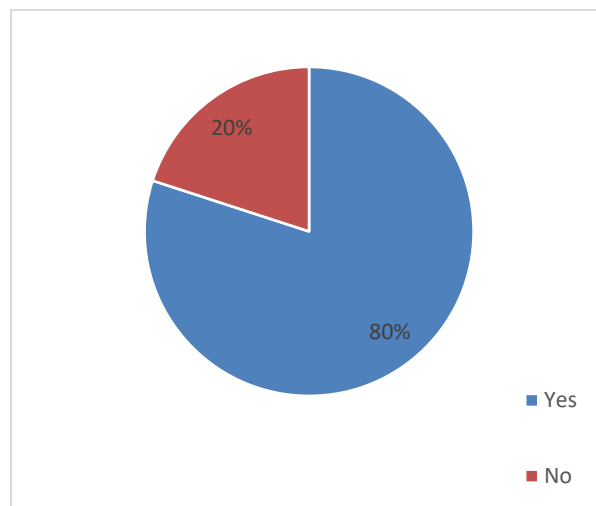
3.2.6. Reimbursement of claim loss

Fig.1: Reimbursement of claim loss

Among the total claimed of crop loss by banana farmers about 80 percent insurer farmers get reimbursement within 3 months to 10 months and only 20 percent farmers will not get reimbursement of claim (fig. 1.

3.2.7. Continuity of Insurance

Table 7. Continuity of insurance in study area

Continuity	Reduce subsidy		Withdrawal subsidy	
	F	%	F	%
Continue	28	93.33	7	23.33
Discontinue	2	6.67	23	76.67

Source: Field Survey (2017)

If the government reduce the subsidy provided to farmers for insurance, maximum number of farmers about 28 (93.33%) out of 30 were ready to adopt insurance and only 2 (6.67%) were discontinue the insurance. But if the government completely withdrawl the subsidy provision almost 76.67 percent of farmers were discontinue the insurance and only 23.33 percent farmers were ready to continue insurance (Table 7). The main reason regarding discontinuation of insurance is due to the insufficient amount of subsidy and even unfair policy regarding the payment for damaged crop and area.
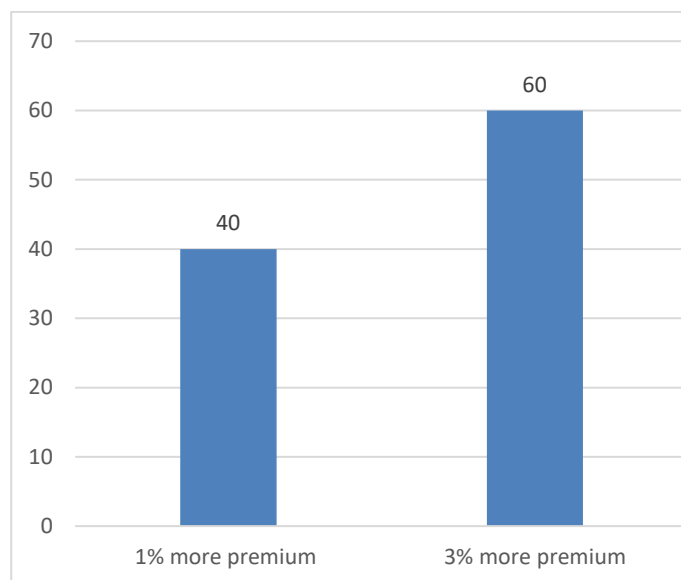
3.2.8. Willingness to pay

Fig.2: Willingness to pay premium rate

The 40 percent insurer farmers were ready to pay maximum extent rate at the rate 1% more if the government reduce the subsidy or without subsidy support and about 60 percent insurer farmers were ready to pay 3% more premium rate with reduce subsidy or without subsidy support (fig 2). Similar to our findings was reported by(Pant et al., 2019).

3.2.9 Strategy to recover loss

Table 8 Means to recover loss (Strategy to recover losses)

Strategy	Insured farmer		Non-insured farmers	
	F	Percentage	F	Percentage
Adoption of insurance	30	100.00	NA	
Do nothing	NA		8	26.67
Crop management practice	8	26.67	13	43.33
Price setting before harvest	17	56.67	11	36.67
Change the variety	2	6.67	5	16.67
Crop diversification	11	36.67	21	70.00

Source: Field Survey (2017)

To recover the crop losses multiple activities were found which was done by the farmers adopting insurance and not adopting insurance. For recover the loss from banana farming, farmers adopt insurance (100%), Price setting before harvest ranked first (56.67%) followed by Crop diversification (36.67%), crop management practice (26.67%), and change the variety (6.67%) ranked as last (Table 8). The amount of premium paid for the insurance of crops was determined by the nature of crop (Budhathoki et al., 2019) and even in some conditions change of firm under losses was adopted.

3.3.10 Stage of Insurance in banana

Most of the farmers insured the banana at early stage of growing and few numbers of farmers insured the banana before fruiting. The damaging stage of banana crops is before fruiting, early stage of fruiting and during harvesting. So farmers should insure their banana in early stage of growing.

3.3.11 Basis for Evaluation

Evaluation should be carried out by plant per hectare basis and premium per hectare basis. The amount of premium paid by banana farmers was higher than that of reported by (Budhathoki et al., 2019), this might be due to the premium payment under different crops. Basis on evaluation 5% premium should be paid, out total premium paid 75% premium was paid by government and only 25% premium was paid by the banana insurer farmers. The premium rate per plant was calculated by following ways:

Premium paid = Premium rate per plant * plant per hectare

$$= 2.5*2700$$

$$= Rs. 6075$$

Frequent re-evaluation will also be conducted by insurance company or agent.

3.3.12 Risky stage of banana production

The risky stage of banana cultivation was found to be during fruiting stage and before harvesting stage or fully matured stage.

3.3.13 Reason for insuring banana

➢ Banana more risky than other crops.

➢ Start Commercial farming only in banana.

➢ Newly started business

➢ If crop loss, destruction percentage will be more than other crops.

3.3.14 Reason of not insuring for the total crop area

➢ Remaining area shouldn't be used for banana cultivation.

➢ Done for trial purpose only.

➢ Due to less faith in insuring company.

➢ Due to unavailability of money during insuring time.

3.3.15 Basis for valuation of claim settlement

Field visit by DADO agent, ASC, insurance company agent, Police (Anju, 2018).

3.3.16 Improvement needed in the existing valuation and premium payment provisions for banana insurance.

The valuation should be done on the field during destruction and percentage of reimbursement of claim should also announced at that time.

➢ If increase in premium rate, there should be provision of full payment on time.

➢ The loss percentage should be fully recovered.

➢ Made easy assessment of claim settlement.

➢ Timely and easy access of documentation and service delivery.

➢ No need to increase the government subsidy but made the claim procedure easy, timely provision of payment, full recovery of loss, etc.

3.3.17 Reason for not going other crops and livestock insurance

➢ Not done in a commercial way.

➢ No assess of insurance company.

➢ Less chance of losses than banana crops.

➢ Lack of awareness.

➢ Lack of premium paying capacity.

➢ Complex Documentation.

➢ No faith in the scheme/agency.

3.3.18 Benefits of having Insurance agent in the community

➢ Easy in Documentation.

➢ Timely provision of reimbursement of the claim for the crop losses.

➢ Easy in claim payment.

➢ Easy in premium payment.

➢ Easy in claim procedure and valuation.

3.3.19 Difficulties of not having Insurance agent in the community

➢ Take long time for loss settlement.

➢ Difficulty in claim procedure.

➢ Low assess of insurance service provider to the farmer's field.

➢ Difficulty in documentation.

➢ Difficulty in searching the insurance agent.

➢ Loss of claim payment due to unavailability of insurance agent during destruction.

➢ Difficulty in valuation process.

3.3.20 Condition for insuring banana crop

➢ If easy access of claim procedure.

➢ If timely reimbursement of claim.

➢ If valuation method made easy.

➢ If easy in documentation.

➢ If easy access of Insurance agent, DADO agent.

➢ If provision of full payment of claim according to losses.

➢ If claim payment is sure and easy in claiming.

➢ If easy access of government subsidy during loss condition.

3.3.21 Suggestions of improving Agricultural insurance

Government should pay full attention on insurance service provider.

➢ Access of insurance agent in their V.D.C.

➢ Provision of losses in time.

Provision of full payment of loss should be given to the farmers.

➢ Documentation process should be made easy.

➢ Direct supervision should be made by Government agency.

➢ Valuation should be done in the field by government agency during loss occurs.

➢ Exact valuation of loss should be done in time and made valuation easy.

➢ Equally treated to all farmers i.e. no biasness in between farmers.

IV. CONCLUSION

Female household heads were more likely to adopt insurance. Access of source of information as more influences factors for adopting insurance if government provided premium subsidies. Timely payment of claim, faith of Insurance Company and documentation of insurance had negative attitude towards crop insurance among farmers even they incurred loss. Different INGOs and NGOs, Insurance Company should have collaboration with government agency will increase the adoption of crop insurance.

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