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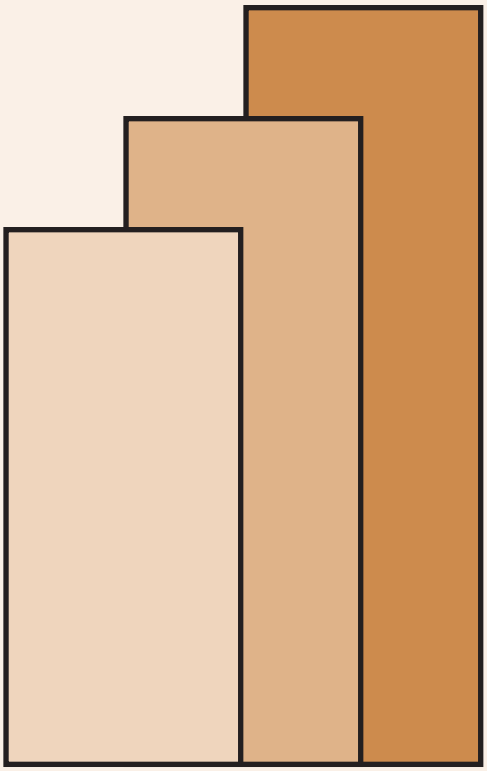
DISCUSSION PAPER SERIES NO. 2017-39



December 2017

For comments, suggestions or further inquiries please contact:
The **Research Information Department,** Philippine Institute for Development Studies
18th Floor, Three Cyberpod Centris – North Tower, EDSA corner Quezon Avenue, 1100 Quezon City, Philippines
Tel Nos: (63-2) 3721291 and 3721292; E-mail: publications@mail.pids.gov.ph
Or visit our website at https://www.pids.gov.ph

Crop Insurance Program of the Philippine Crop Insurance Corporation (PCIC): Integrative Report from the Five Case Regions in the Philippines

Celia M. Reyes, Adrian D. Agbon, Christian D. Mina and Arkin Arboneda[1]

Risk is a daily reality especially among agricultural producers in developing countries thus agricultural insurance is of interest to farmers, policy makers, insurance companies, and development finance institutions. From a survey data of 2,512 farmers, this paper sheds light on the possible factors affecting insurance availment among the farmers in five selected regions in the Philippines. The farmers' reasons for availing of crop include; encouraged by neighbors, friends, relatives and because of the agricultural technicians in the LGU. Farmers also shared that insurance is a requirement for getting a loan. Among the possible factors for insurance uptake; level of education, farming experience and membership in farmer organization are significant factors in the availment of crop insurance from PCIC. Increasing coverage rate of crop insurance among farmers remains to be a challenge in a highly-subsidized crop insurance program of the Philippines.

Key words: crop insurance, poverty, risks and shocks in agriculture, Philippine Crop Insurance Corporation

1. Introduction

As many of the world's poor households are living in environments where risk is a daily reality, agricultural insurance is reemerging as a topic of interest to farmers, policy makers, insurance companies, and development finance institutions. These risks particularly affect agricultural production from year to year due to unforeseen weather, disease/pest infestations, and/or market conditions causing wide swings in yields and commodity prices. Farmer's livelihood is highly susceptible to weather and price variability. As a result, it adds to their already vulnerable conditions of loss of income and hinders the poor rural households from investing more on social capital thus perpetuating the cycle of poverty.

In the Philippines poverty has always been an agricultural phenomenon. A recent poverty study (Reyes et al. 2012) [2] estimated that poverty incidence among agricultural households (57%) is thrice than that of the non-agricultural households (17%). More so, food poverty or subsistence incidence among agricultural households is about five times greater than those among non-agricultural households. Ironically, agricultural food producers are food-poor. Thus, it is important that part of the poverty alleviation programs to track movements in and out poverty.

[1] Senior Research Fellow, Supervising Research Specialist and Research Analyst at PIDS. The authors gratefully acknowledge the research assistance of Ronina Asis, and Blesila Mondez. The usual disclaimer applies.

[2] Reyes, C. et al. 2012. Poverty and Agriculture in the Philippines: Trends in Income Poverty and Distribution. PIDS Discussion Paper Series No. 2012-09. Makati City: Philippine Institute for Development Studies.

Using the matched sample of FIES data from 2003, 2006 and 2009, Reyes et al. (2010)[3] estimates that among those households engaged in agriculture, 33% are never poor, 26% are always poor and 41% are sometimes poor. Of those who were poor in 2009, 55% are chronic poor while the remaining 45% are transient poor. Risk and its connection to poverty are crucial to an understanding of poverty reduction among agricultural households. Household welfare is affected by its level of vulnerability to negative shocks over time. As cited by Muraka and Miyazaki (2014)[4] past studies have defined "household vulnerability" as the ability of the household to protect its consumption from income fluctuations causes by various shocks, both idiosyncratic and/or covariate (Townsend 1994; Udry 1995; Glewwe and Hall 1998; Jalan and Ravallion 1998; Dercon and Krishman 2000; Murdoch 2003).

As underscored in the Rural Poverty Report (2011)[5] of the International Fund for Agricultural Development, shocks are the major factor contributing to impoverishment and remaining in poverty. Thus, avoiding and managing risk is crucial for the poor to get out of poverty. Given the risks faced by the poor agricultural households today, such as natural resource degradation, climate change, greater volatility of food prices, ill-health, breakdown of social and community safety nets due to increased resource scarcity, and insecurity of land access, among others, innovative programs and policies are needed to address these risks. Wenner (2005) argued that agricultural insurance is reemerging as a topic of interest, especially in light of the need to improve agricultural competitiveness in increasingly integrated commodity markets. With this, is a strong rationale for providing public support to poor households on both equity and efficiency grounds. By increasing access to assets and to provide transfers when shocks occur, social protection programs can play an important role in insuring poor households (Hill and Torero, 2009). However, the challenge is how to overcome obstacles and deliver efficient and sustainable agricultural insurance products. The principal obstacles include lack of high quality information, inadequate regulatory frameworks, weak supervision, lack of actuarial expertise, lack of professional expertise in designing and monitoring agricultural insurance products, a mass of low-income, dispersed clients, who may not be willing or able to pay actuarially sound premiums for multiple peril products, and the tendency of governments to undermine market development through inappropriate use of subsidies and disaster relief funds.

In the Philippines, the Philippine Crop Insurance Corporation (PCIC) is the government organization mandated to provide insurance protection to agricultural producers in the Philippines against losses of crops and non-crop agricultural assets due to natural calamities, pests and diseases, and other perils. It implements and manages various agricultural insurance programs of the government. Under the auspices of the Department of Agriculture, the PCIC operates as a government-owned and controlled corporation, with its operations decentralized up to the regional level.

[3] Reyes, C. et al. 2010. Chronic and Transient Poverty. PIDS Discussion Paper Series No. 2010-30. Makati City: Philippine Institute for Development Studies.

[4] Murata, Akira and Suguru Miyazaki. (2014) Ex-Post Risk Management Among Rural Filipino Farm Households. JICA-RI. Working Paper No. 67, March 2014. Shinjuku-ku: Japan International Cooperation Agency Research Institute.

[5] International Fund for Agricultural Development (IFAD). 2011. Rural Poverty Report: New Realities, New Challenges, New Opportunities for Tomorrow's Generation. Rome: IFAD.

The objective of this paper is to discuss the results of the survey conducted in Cagayan Valley, (Region 2); CALABARZON (Region 4A), Western Visayas (Region 6); Central Visayas (Region 7) and Davao (Region 11). Specifically, this paper aims to;

1. Describe the socio-economic characteristics of the farmers in the five case regions;
2. Shed light on the issues of low awareness of crop insurance among farmers, credit access and their coping strategies when hit by calamities;
3. Discuss the possible factors affecting the enrollment in the crop insurance; and
4. Propose some improvements to enhance crop insurance scheme.

The following sections of the paper are structured as follows; the second section presents a brief overview of the literature on crop and agriculture insurance. Section 3 describes the methodology; section 4 presents the results of the survey including the discussions on the possible factors that will affect the enrollment of crop insurance among farmers. Section 5 provides the summary and policy implications.

2. Literature review

The few studies on agricultural insurance are concerned with farmer characteristics that influence availment, rather than the actual impact of agricultural insurance to the farmer and his/ her household. Using rider questions in the Rice-Based Farm Household Questionnaire of PhilRice, Bordey and Lapurga (2013) found out that 67% of rice farmers interviewed in Nueva Ecija, Iloilo and Leyte did not avail of agricultural insurance from 2007-2011, primarily because of limited understanding of crop insurance, lack of funds and added cost[6]. In a survey conducted by Rola and Aragon (2013) [7], 40 farmers availing of agricultural insurance and 40 farmers not insured located around the municipalities surrounding Laguna Lake were interviewed. Farmers' decision to participate in rice insurance programs is significantly affected by program awareness, tenure status, and distance of farm from the lakeshore. They also found that indemnity payments significantly affect net farm income loss.

One interesting study by Gunnsteinsson (2014)[8] studied asymmetric information in crop insurance in the Philippines using a randomized field experiment involving 839[9] rice farmers in Camarines Sur. Given free insurance premiums, and the choice of what plot to insure, farmers tend to choose the plot with the highest probability of damage. Because of this, farmers tend to use less fertilizer in the plots that are insured freely.

[6] Bordey, FH and MG Lapurga.2013. Improving the Agricultural Insurance Program to Enhance Resilience to Climate Change. Philippine Rice R&D Highlights 2013. Philippine Rice Research Institute: Science City of Muñoz.

[7] Rola, AC and C Aragon.2013 "Crop Insurance Participation and Their Impact on Net Farm Income Loss in the Lakeshore Municipalities of Laguna, Philippines". Paper presented in the Annual Meeting of the Philippine Economic Society, Intercontinental Hotel Manila, November 15, 2013.

[8] Gunnsteinsson, S. 2014. Experimental Identification of Assymetric Information: Theory and Evidence on Crop Insurance in the Philippines. Revised version of dissertation at the Deparment of Economics, Yale University.

[9] A total of 839 farmers were enrolled in any of the three experimental seasons (counting repeat enrollees multiple times).

In other countries, there are already existing impact evaluation studies of agricultural insurance on farm household production and welfare. For purposes of this paper, only rigorous evaluations of the impact of agricultural insurance are included.

Radermacher et al (2009) discusses several channels where insurance in general can impact both ex-ante and ex-post risk management strategies. Insurance is expected to alter farmers' risk-taking behavior through increased technology adoption, higher input use and overall farm investment. It is also likely to reduce the perverse effect of risk-coping strategies such as the sale of productive assets.

There are various impact evaluation studies that has proven the positive effect of agricultural insurance in technology adoption and crop production. Cai (2012)[10] used the household panel dataset of the largest rural financial institution in China from 2000-2008, covering 12 tobacco-producing counties of Jiangxi province, to estimate the impact of agricultural insurance in farm household production and financial decisions. Using difference-in-difference estimation (and also DDD), the study finds that insurance provision increases tobacco production by 22%, increases investments in tobacco production by 25% (by increase in loans) and decreases product diversification by around 29% (by focusing more on the insured crop). Interestingly, the study also finds that in the short-term, insurance provision has a negative effect on saving.

Elabed and Carter (2015)[11] derived a similar result. They estimate that provision of insurance increases the area planted to cotton of cotton farmers by 15% and increases expenditure in seeds by 14%, by implementing a randomized control experiment offering index insurance to cotton farmers in Mali involving 87 cooperatives.

The study of Cole, Gine, and Vickery (2014)[12] on financial innovation of small Indian agricultural producers found out that while insurance provision has little effect on total agricultural investments, it significantly shifts the composition of investments towards riskier production activities. In particular, treated households increase production of the main cash crops grown. The authors also discussed that effects of insurance on behavior are concentrated among educated farmers, measured either by years of schooling or an indicator variable for whether the farmer is literate. Among literate farmers, assignment to the insurance treatment group increases the likelihood of investing in cash crops by 15 percentage points; in contrast, for illiterate farmers, the treatment effect is close to zero. This result is consistent with the view that new financial products predominantly assist more-advantaged households with low costs of accessing the financial system or higher financial literacy.

[10] Cai, Jing. 2013. The Impact of Insurance Provision on Households' Production and Financial Decisions. University of California Berkley

[11] Elabed G. and Carter, M. 2015. Ex-ante Impacts of Agricultural Insurance: Evidence from A Field Experiment in Mali. Mathematica Policy Research.

[12] Cole, S., Gine, X., and Vickery, J. (2010). How Does Risk Management Influence Production Decisions? Evidence from Field Experiment. Accessed from: http://www.hbs.edu/faculty/Publication%20Files/13-080_138f3c30-b5c2-4a97-bf56-9821f89fcbd3.pdf Date of access: December 15, 2015.

3. Methodology[13]

This study conducted a household-level survey to collect on sample farmers and their households in Cagayan Valley (Region 2), CALABARZON (Region 4A), Western Visayas (Region 6), Central Visayas (Region 7), and Davao Region (Region 11). The primary data collection was done by partner local higher educational institutions in the regions mentioned. The partner institutions are; Cagayan State University, Tuguegarao City; University of the Philippines in Los Banos; University of the Philippines, Iloilo; University of San Carlos, Cebu and University of Southeastern Philippines, Davao.

3.1 Coverage

Taking into account the distribution of enrollees and claimants in 2014 and 2015 from the Philippine Crop Insurance Corporation's data base, the study team decided to focus only on crops to ensure that there would be enough treatment and comparison samples for the study. Table below shows the distribution of PCIC farmer-clients who have been enrollees and have claims of the PCIC.

Table 1. Distribution of PCIC farmer-clients who have been enrollees and claimants, Philippines, by product lines, 2014 and 2015

Product line	No. of enrollees		No. of claimants	
	2014	2015	2014	2015
Rice	312,749	147,725	49,745	16,946
Corn	84,588	40,315	11,619	3,339
High-value crops	58,529	29,418	979	137
Livestock	70,527	68,663	349	201
Non-crop agricultural asset	89	8,331	89	90
Term insurance package	192,385	192,385	10	102

Source of basic data: 2014 and 2015 PCIC lists

The study specifically focused on four (4) major crops[14] that are being insured by the PCIC, namely: rice, corn, banana, and coconut. Rice and corn are the major staple crops in the Philippines. These are also the main product lines of the PCIC as these have accounted for 88.4

[13] The discussions on the section except for the econometric model on factors that may affect in the availment of crop insurance also appear on another paper (forthcoming) by Reyes et al. on, "Is Agricultural Insurance in the Philippines an effective safety net?

[14] : i.e., "major" in terms of coverage, using both enrolment and claims data

percent of the total premium collections and 94.9 percent of the total claims payments. All types of crop, including the high-value crops (HVCs), accounted for a total of 94.9 percent of the total premium collections and 96.4 percent of the total claims payments.

The study population was limited to four (4) types of crops and five (5) regions[15] based on the PCIC enrolment and claims rates in 2014 and 2015. Since rice and corn are the major product lines of the PCIC, the study selected two regions to focus on rice and another two on corn. One region was selected to focus on coconut and another one on banana. The two regions with the largest number of insured rice farmers—Central Luzon and Western Visayas—were selected to cover rice; but like what was mentioned earlier, survey in Central Luzon did not push through. Cagayan Valley and Central Visayas, which have ranked second and third in terms of the total number of insured corn farmers, were selected to focus on corn. Because of security considerations, Zamboanga Peninsula was not considered. The primary consideration in selecting the study regions that would focus on coconut and banana was the number of claimants so as to ensure enough number of treatment samples for those crops. Apparently, almost all claimants for banana insurance are located in Davao while the majority of claimants for coconut insurance are found in CALABARZON.

3.2 Eligible population and treatment groups

The eligibility requirements of the RSBSA program superseded those of the regular and all other special programs of the PCIC. Thus, the eligible population for this study comprises farmers, specifically crop farmers, who are beneficiaries of the said program either in 2014, 2015 or both. Specifically, those crop farmers should have been included both in the 2014 and/or 2015 lists of PCIC clients and in the Registry System for Basic Sectors in Agriculture (RSBSA) list, and who experienced any of the risks covered by the PCIC such as natural calamities, pests and diseases, among others. Since there is no readily available list of farmers who have been affected by any of the aforementioned shock for the past two years, the study team used the list of areas where there are claimants and was termed as the 'PCIC risk areas'. However, since there have been reported cases of leakages and exclusions in the RSBSA list, eligible farmers should be actual tillers of crop farms.

There are three treatment groups in the study. Treatment group 1 consists of crop farmers who have availed of an agricultural insurance in 2014 and/or 2015, are located in the PCIC risks areas, and have received an indemnity claims payment from the PCIC. Treatment group 2 are crop farmers who have availed of an agricultural insurance in 2014 and/or 2015, are located in the PCIC risks areas, but have not received an indemnity claims payment from the PCIC during the covered period.

Treatment group 3, also known as the comparison group, are crop farmers who did not avail of crop insurance in 2014 and 2015 but are found in PCIC risk areas. This latter set of farmers should be as much as possible similar to the treatment samples in terms of the following farm-related variables, namely: area devoted the specific crop assigned to a particular study region; farm location; agrarian reform beneficiary (ARB) status; access to irrigation; and, tenurial status.

[15] initially, it was 6 regions with Region 3 but due to some administrative issues survey was not conducted in the region.

If possible, the treatment and comparison sample farmers should also be similar in terms of age group and educational level, although matching using these two factors would not be too strict.

3.3 Sample size determination

In this study, the impact of agricultural insurance has been hypothesized to vary across geographical location, type of crop as well as farm size. Thus, analysis of heterogeneity of impact of agricultural insurance on farmer's welfare is necessary. The following factors were considered: (a) treatment group (as defined earlier); (b) regional location (Regions 2, 4-A, 6, 7, and 11); (c) type of crop (rice, corn, banana, and coconut); and, (d) farm size (0.5 ha. & below, > 0.5 to 1 ha., > 1 ha.). Their estimated main and interaction effects on farmer's welfare would be measured. Note, however, that the project team would only be interested in interaction effect of treatment group w.2 *ith* other factors. Thus, there would only be three interaction effects in addition to the four main effects.

The project team wanted to include more factors but was constrained by the availability of the information on certain factors. The factors considered in sample size determination in this study were only those found in the RSBSA list, which was the sampling frame for the study.

In the absence of earlier estimates, a small effect size of 0.10 was used in the calculation of sample size for this study.

Cohen's (1988) sample size determination for a factorial design was used in sample size determination. In the absence of prior estimates of the impact of agricultural insurance on any measure of farmer's welfare, the smallest effect size (0.10) for main and interaction effects (which was recommended by Cohen (1988)) was used, together with the default level of statistical significance (0.05).

Using Cohen's (1988) set of formulas for sample size determination for a factorial design, assumptions on the effect size and level of significance, and other information such as the level of factors to be considered, the minimum sample size requirements were calculated for different main and interaction effects and for different levels of power (0.80, 0.90, 0.95, and 0.99).

The maximum values obtained for each level of power were the minimum required sample sizes that would correctly detect all main and interaction effects. The table displays these array of estimated sample size requirements for different levels of power. For 80 percent power, the sample size requirements range from 1,008 to 1,880, and these requirements increase with the level of power. Larger sample size is required to get a higher level of power. Larger sample size is also required if the assumed minimum detectable effect is smaller. In social science, researchers aim for a power of at least 80 percent; allowing for 20 percent probability of committing a type II error, which is the failure to reject an incorrect null hypothesis. In order to ensure that small effects would be correctly estimated and a higher level of power would be achieved, the study team decided to set the total sample size of 2,500, which falls between 0.90 and 0.95 percent level of power. Thus, each study region should have a total sample size of 500.

3.4 Sample selection

The study adopted a stratified random sampling in selecting the sample farmer-respondents. As mentioned earlier, the study population was limited to five regions and four

types of crop (rice, corn, banana, and coconut) based on PCIC claims and enrolment rates in 2014 and/or 2015 (i.e., regions and crops with highest number of farmer-enrollees and farmer-claimants).

Within each study region, further stratification was done based on treatment group. Thus, each stratum is a combination of geographical location (region), crop and treatment group. The required sample size of 500 per study region was equally divided between the treatment group (Treatment groups 1 and 2) and the comparison group. Since each treatment sample should be paired with a comparison sample, Treatment groups 1 and 2 should each have a total sample size of 125 and the Comparison group should have a total of 250 samples.

Within each stratum, samples were further divided into three sub-groups based on three farm size categories. The following farm size categories were considered primarily because the distribution of observation across category is good since the sample size of the smallest group is at least 20 percent of the size of the largest group: 0.5 ha. & below; >0.5 to 1 ha.; and, >1 ha.

Samples under Treatment Groups 1 and 2 were selected using simple random sampling and using the combined lists of PCIC clients in 2014 and/or 2015 and of the RSBSA as the sampling frame. The matches of these treatment samples, those without agricultural insurance in 2014 and/or 2015, were then searched from the RSBSA list taking into account the following matching variables: area devoted the specific crop assigned to a particular study region; farm location; agrarian reform beneficiary (ARB) status; access to irrigation; tenurial status; age; and, educational attainment (although matching in terms of the last two factors was relaxed).

Although validation was carried out before the actual survey operations, enough number of pairs of treatment and comparison samples was drawn to give allowance for non-response and refusal, among others. The enumerators were provided with a lot of replacements, whose identification numbers were based on the order of their selection. In the list of samples, each treatment sample can have more than one potential matches from the comparison group. In case the enumerator finds out that the first potential match differs from the treatment sample in terms of at least one matching variable (e.g., treatment sample is an ARB but the potential comparison samples is not), he/she still has other possible replacements in the list that are located within the community. In addition, the enumerators were also provided with more than the required number pairs of treatment and comparison samples. The purpose of this is to provide the enumerator with possible replacements in case the selected treatment sample has to be replaced for any reason.

3.5 Econometric model for crop insurance availment

The farmers' participation in crop insurance program is studied by employing the probit analysis. Probit models are certain types of regression models in which the dependent or response variable is dichotomous in nature. The probit technique allows the testing of the effects of a number of variables on the underlying probability of the response variable. Hence, probit analysis is employed to determine the factors that significantly affects the decision of the farmers to avail crop insurance. The general form of probit regression model is given as:

$$P(Y = 1 \mid X) = \Phi(Z) \qquad (1)$$

where:

P = denotes probability of a choice
Y = 1, if the farmer avails the crop insurance, 0 otherwise
X = vector of independent variables
β = vector of estimated coefficients corresponding to *X*
φ = cumulative distribution function of the standard normal distribution
Z = z score

In this study, the empirical model to determine the z score of the probability that the farmer avails the crop insurance given a set of independent variables is given as:

$$Z_i = \beta_0 + \beta_1 year_i + \beta_2 shock_i + \beta_3 sex_i + \beta_4 age_i + \beta_5 age^2{}_i + \beta_6 hs_i + \beta_7 col_i + \beta_8 \exp_i + \beta_9 org_i + \beta_{10} hsize_i + \beta_{11} dratio_i + \beta_{12} hhasset_i + \beta_{13} agriasset_i + \beta_{14} indem_i + \beta_{17} own_i + \beta_{18} flood_i + \beta_{19} \ln nfarm_i + \beta_{20} area_i + \beta_{21} prio_i + e_i \quad (2)$$

where:

β_0	*= intercept*
β_i *(i = 1 to 20)*	*= coefficients of independent variables*
$year_i$	*= 1 if 2015, 0 if 2014*
$shock_i$	*= 0 if crop loss (expected harvest less total harvest) is 10% or less; 1 if loss is more than 10% and below 90%; 2 if loss is 90% or above*
sex_i	*= 1 if male; 0 if female*
age_i	*= age of the farmer, in years*
$age^2{}_i$	*= square of age of the farmer*
hs_i	*= 1 if high school (secondary) graduate; 0 otherwise*
col_i	*= 1 if college (tertiary) graduate; 0 otherwise*
exp_i	*= number of years of farming experience*
org_i	*= 1 if the farmer is a member of any farmers' organization/credit cooperative; 0 otherwise*
$hsize_i$	*= average number of household members*
$dratio_i$	*= proportion of household members aged below 15 and above 64*
$hhasset_i$	*= index of household assets (i.e., housing unit and/or lot, appliances)*
$agriasset_i$	*= index of productive agricultural assets (i.e., farm equipment/machineries and livestock/poultry)*
$indem_i$	*= amount of indemnity claim received by farmer*
own_i	*= percentage of land owned by farmer*
$flood_i$	*= 1 if the farm is situated near a river; 0 otherwise*
$lnnfarm_i$	*= log of non-farm income of farmer*
$area_i$	*= total area planted (in hectares)*
$prio_i$	*= 1 if the PCIC regional or provincial extension office is located within the province where the farmer's farm or house is located; 2 if located within the municipality or city; 3 if located within the community (barangay)*
e_i	*= error term*

3.6 Questionnaire modules: General Description

The survey questionnaire is composed of eleven modules. For each module, data for two years or four cropping seasons are gathered. The questionnaires cover information on the household, social protection programs the household has availed, housing and productive assets, accessibility and availment of physical infrastructure in the barangay, including economic support and agricultural services. Parcel-level data on farm characteristics, farm practices, farm inputs and production for each crop in question are also covered. Credit availment practices and data on different sources of income of the household are also included. To understand how farm households, cope with risk, data on shocks experienced by the farming household, their coping strategies and risk mitigation practices in crop production are covered. Farmers' awareness on agricultural insurance and utilization of indemnity claim payment are also included. Willingness-to-pay questions are also covered. Please see Appendix for the questionnaires per crop of interest.

Table 2 summarizes the questionnaire modules; the information collected in each module and the source where some of the questions were lifted.

Table 2. Questionnaire Modules: General Description

Modules	Description	Question Sources
I: Household Information	Contains socio-demographic information per household member for the past two years; schooling and education for the past two years, occupations, nature of work, and class of worker for the past two years, and membership in community organizations for the past two years. Also contains questions on social protection programs that each household member has availed or is a member of for the past two years	Questions on education, schooling, occupation and worker status are lifted from the Annual Poverty Indicators Survey, 2008 version with modifications Questions on availment and access to social protection programs come from the Community Based Monitoring System: Household Questionnaire, 2007 version, with modifications
II. Housing, Household and Productive Assets	Contains questions on characteristics of housing unit, utility services, the household assets owned including the year purchased, the productive assets owned including the year purchased, and livestock owned	Questions on characteristics of the housing unit and household assets owned are lifted from the Annual Poverty Indicators Survey, 2008 version, with modifications Questions on productive assets come from the Agrarian Reform Communities 2 Baseline Survey Questionnaire with slight variations of the research team Questions on water and sanitation services come from the Core Questions on Drinking Water and Sanitation for Household Surveys, WHO-UNICEF 2006
III. Access to Physical Infrastructure, Economic Support and Agricultural Services	Contains questions on access and availment of existing physical infrastructure, economic support and agricultural services available to the farming household at the barangay level, for the past two years	Questions on agricultural facilities come from the Agrarian Reform Communities 2 Baseline Survey Questionnaire and the Community Based Monitoring System: Household Questionnaire, 2007 version, with modifications Questions on agricultural extension services, input dealers and credit facilities are lifted from the Community Based Monitoring System: Household Questionnaire, 2007 version, with modifications
IV. Farm Characteristics, Production and Farm Income	Contains parcel-level data for the past two years; list of parcels cultivated for the past four cropping seasons or two years, characteristics of each parcel including tenurial status and irrigation, crops planted in each parcel for the past four cropping seasons, area planted to crop, insurance, damage if any and claims received, use of planting materials, fertilizers, pesticides and labor per cropping season, cost of planting materials, fertilizers, pesticides and labor,	Questions on irrigation, tenurial status, topography and parcel location are lifted from the Farm and Household Survey Questionnaire of the PIDS-ACIAR project “Bridging the Gap Between Seasonal Climate Forecasts and Decision Makers in Agriculture”. Questions on labor utilization was lifted from the Agrarian Reform

	production outputs of crops, total units sold, crop utilization, gross income	Communities 2 Baseline Survey Questionnaire with modifications Other questions were crafted by PIDS and implementing partners
V. Credit Availment Practices	Contains questions on credit availment for the past two years; including loan amounts, creditors, loan utilization, agricultural insurance as a requirement, reasons for loan availment, loan nonrepayment, non-approval of loans	Questions were crafted by PIDS
VI. Income and Other Receipts	Contains questions on each income source of the farm household for the past two years; salaries and wages, net share of crops etc produced by other households, family sustenance activities, cash receipts from abroad and domestic sources, rentals, interest and dividends, pension, entrepreneurial activities, wholesale and retail trade, manufacturing, community and personal services, transportation storage and communication, mining and quarrying, other receipts	Questions were lifted in toto from the Annual Poverty Indicators Survey 2008
VII. Shocks and Coping	Contains questions on natural and manmade disasters experienced during the past two years; occurrence of the shock, effects of the shock, and enumeration of coping strategies implemented by the farm household to deal with the shocks, magnitude of changes in consumption items before and after the shock, compared to now	Questions were lifted in toto from the CBMS Shocks and Coping Module, except for questions on consumption, which was crafted by PIDS
VIII. Risk Mitigation Strategies in Crop Production	Contains questions on risk mitigation strategies employed by the farmer during dry and wet seasons	Questions were crafted by PIDS and implementing partners
IX. Awareness on Agricultural Insurance	Contains awareness questions on agricultural insurance and related topics, first availment of agricultural insurance, reasons for availment, source of premium payments, ranking of product and service characteristics of PCIC	Questions were crafted by PIDS and implementing partners
X. Utilization of Indemnity Claim Payment	Contains questions on utilization of indemnity claim, amount received	Questions were crafted by PIDS and implementing partners
XI. Willingness to Pay for Agricultural Insurance	Contains description of insurance program currently being offered by PCIC (rice, corn, HVCC), and willingness to pay quoted bids as percentage of actual premium to be charged to farmer	Questions were crafted by PIDS and implementing partners

3.7 Survey Areas

The survey areas for Region 2, Cagayan Valley are; Nueva Vizcaya, Cagayan, Isabela, Quirino and Batanes. For Region 4A, CALABARZON, the provinces are; Rizal, Cavite, Laguna, Batangas and Quezon. For Region 6, Western Visayas, the survey areas are; Capiz, Aklan, Antique, Iloilo, Guimaras, and Negros Occidental[16]. For Region 7, the survey areas are; Cebu, Bohol, Siquijor and Negros Oriental[17]. For region 11, Davao region, the survey areas are; Davao Oriental, Compostela Valley, Davao del Sur, Davao Occidental and Davao del Norte. Figure 1 below shows the survey areas per region of coverage.

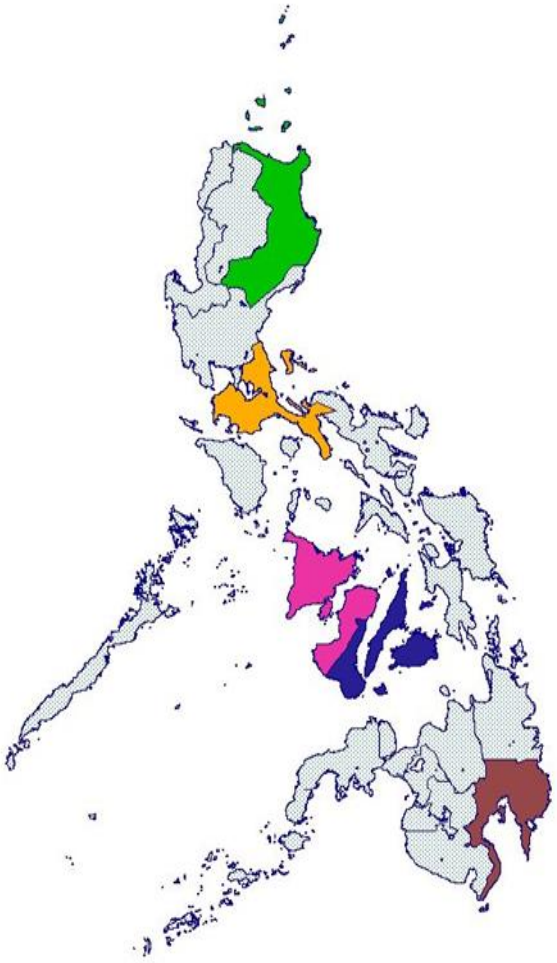


Figure 1. Regions where surveys were conducted

The survey operations for this project are implemented by the regional partners. Each regional partners were given list of potential respondents randomly selected from the listings of the PCIC for insured farmers and from the RSBSA for the matched farmers. The partners

[16]Negros Island Region, Region 18 for the new classification by virtue of the Executive Order 183 dated August 13, 2015 but for this project we retain the old regional classification.
[17] Ibid

validated the lists given to them by the PIDS team. The validation of the list is to ensure that potential respondents are somehow matched in terms of the variables identified by the PIDS team.

4. Survey Results and Discussions

This section presents the results of the survey conducted in 2016 for the five regions. Discussions on characteristics of the farmer respondents, some descriptions of the farm, availment of insurance and loans, utilization of indemnity and coping strategies are the general themes in the proceeding discussions. These discussions will hopefully shed light on the possible factors that may affect in the availment of crop insurance.

Farmers' Profile

For the five regions in the Philippines, a total of 2,512 sample farmers covering rice (Region 6), corn (Regions 2 and 7), banana (Region 11) and coconut (Region 4A) were interviewed in this study. A total of 2,094 male and 418 female farmer respondents The average age of farmers in all five regions is 52 years old and had been farming for half of their lives or about 22-24 years of farming *(see figure 2 below).* Please see table 3 below.

Table 3. Sex of farmer respondents, by crop and respondent type

Region & Crop	With Insurance	%	Without insurance	%
Region 2- Corn				
Male	152	80.00	264	85.16
Female	38	20.00	46	14.84
Total	190	100.00	310	100.00
Region 4A- Coconut				
Male	114	81.43	272	76.40
Female	26	18.57	84	23.60
Total	140	100.00	356	100.00
Region 6- Rice				
Male	200	86.96	238	86.23
Female	30	13.04	38	13.77
Total	230	100.00	276	100.00
Region 7- Corn				
Male	210	82.35	215	84.31
Female	45	17.65	40	15.69
Total	255	100.00	255	100.00
Region 11- Banana				
Male	213	86.59	216	85.04
Female	33	13.41	38	14.96
Total	246	100.00	254	100.00
All regions				
Male	889	83.79	1205	83.05
Female	172	16.21	246	16.95

Total	1061	100.00	1451	100.00

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

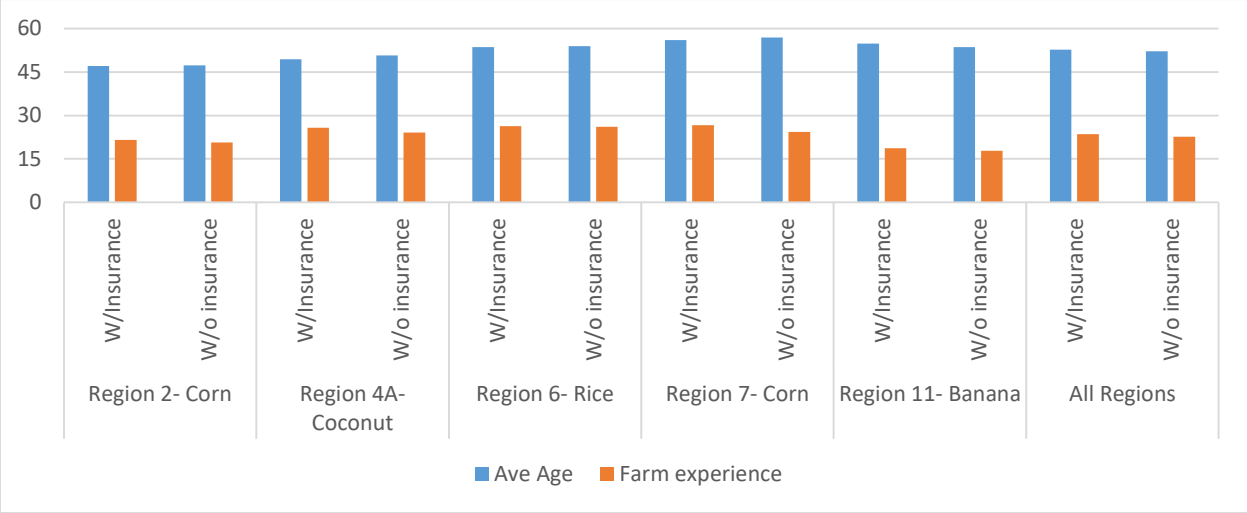


Figure 2. Average age of farmers and farming experience

Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Most of the farmer respondents in the five regions are married, 81.72% of those with insurance and 76.64% among those without insurance. Among the corn farmers in region 2 90.53% of the with insurance farmers are married and 83.23% are also married among those without insurance group of farmers. Most of the coconut farmers in region 4A are also married, 86.43% and 75.84% for with and without insurance respectively. The same trend can be observed among rice farmers in region 6, corn farmers in region 7 and banana farmers in region 10. Please see table 4 for details.

Table 4. Civil status farmer respondents, by crop and respondent type

Region & Crop	With Insurance	%	Without insurance	%
Region 2- Corn				
Single	4	2.11	19	6.13
Married	172	90.53	258	83.23
Widowed	10	5.26	26	8.39
Divorced/Separated	2	1.05	5	1.61
Common law/Live-in			2	0.65
Unknown/No answer	2	1.05		
Total	190	100.00	310	100.00
Region 4A- Coconut				
Single	6	4.29	26	7.30
Married	121	86.43	270	75.84
Widowed	7	5.00	29	8.15
Divorced/Separated	3	2.14	7	1.97
Common law/Live-in	2	1.43	18	5.06
Unknown/No answer	1	0.71	6	1.69

Total	140	100.00	356	100.00
Region 6- Rice				
Single	19	8.26	22	7.97
Married	190	82.61	215	77.90
Widowed	16	6.96	30	10.87
Divorced/Separated		0.00	1	0.36
Common law/Live-in	4	1.74	8	2.90
Unknown/No answer	1	0.43		
Total	230	100.00	276	100.00
Region 7- Corn				
Single	7	2.75	5	1.96
Married	185	72.55	179	70.20
Widowed	55	21.57	66	25.88
Divorced/Separated	1	0.39	1	0.39
Common law/Live-in	7	2.75	4	1.57
Total	255	100.00	255	100.00
Region 11- Banana				
Single	9	3.66	13	5.12
Married	199	80.89	190	74.80
Widowed	31	12.60	38	14.96
Divorced/Separated	3	1.22	4	1.57
Common law/Live-in	4	1.63	9	3.54
Total	246	100.00	254	100.00
All Regions				
Single	45	4.24	85	5.86
Married	867	81.72	1112	76.64
Widowed	119	11.22	189	13.03
Divorced/Separated	9	0.85	18	1.24
Common law/Live-in	17	1.60	41	2.83
Unknown/No answer	4	0.38	6	0.41
Total	1061	100.00	1451	100.00

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

In terms of educational attainment, most of the respondent farmers are elementary undergraduate, 31.89% to those who are with insurance and 31.22% to those who do not have insurance. It appears that in percentage form there are more high school graduates among coconut farmers with insurance (32.14%) than those without insurance (20.11%) from the same type of farmers. On the other hand, among rice farmers in region 6, there are more high school graduates in without insurance (24.64%) group than compared to with insurance group at 16.52%. In region 7, most corn farmers are also elementary undergraduate for both type of farmers, 62.35% for the with insurance and 60.78% among the without insurance. Interestingly, most banana farmers in region 11 are high school graduates, 30.89% and 30.71 % for the with and without insurance respectively. See table 5 below for details.

Table 5. Educational attainment of farmer respondents, by crop and respondent type

Region & Crop	With Insurance	%	Without insurance	%
Region 2- Corn				
No Schooling	2	1.06	5	1.61

Elementary Undergraduate	70	37.04	102	32.90
Elementary Graduate	30	15.87	58	18.71
High School Undergraduate	26	13.76	49	15.81
High School Graduate	26	13.76	57	18.39
College Undergraduate	19	10.05	24	7.74
College Graduate	16	8.47	14	4.52
Post-Graduate/MA/PhD		-	1	0.32
Total	189	100.00	310	100.00
Region 4A- Coconut				
No Schooling	2	1.43	21	5.95
Elementary Undergraduate	34	24.29	89	25.21
Elementary Graduate	29	20.71	109	30.88
High School Undergraduate	16	11.43	41	11.61
High School Graduate	45	32.14	71	20.11
College Undergraduate	10	7.14	18	5.10
College Graduate	3	2.14	3	0.85
Post-Graduate/MA/PhD	1	0.71	1	0.28
Total	140	100.00	353	100.00
Region 6- Rice				
No Schooling	3	1.30	1	0.36
Elementary Undergraduate	43	18.70	65	23.55
Elementary Graduate	50	21.74	61	22.10
High School Undergraduate	35	15.22	35	12.68
High School Graduate	38	16.52	68	24.64
College Undergraduate	43	18.70	33	11.96
College Graduate	17	7.39	10	3.62
Post-Graduate/MA/PhD	1	0.43	3	1.09
Total	230	100.00	276	100.00
Region 7- Corn				
No Schooling			1	0.39
Elementary Undergraduate	159	62.35	155	60.78
Elementary Graduate	54	21.18	57	22.35
High School Undergraduate	16	6.27	14	5.49
High School Graduate	17	6.67	25	9.80
College Undergraduate	6	2.35	2	0.78
College Graduate	3	1.18	1	0.39
Total	255	100.00	255	100.00
Region 11- Banana				
No Schooling	1	0.41	3	1.18
Elementary Undergraduate	32	13.01	41	16.14
Elementary Graduate	35	14.23	47	18.50
High School Undergraduate	33	13.41	44	17.32
High School Graduate	76	30.89	78	30.71
College Undergraduate	36	14.63	28	11.02
College Graduate	33	13.41	13	5.12
Total	246	100.00	254	100.00
All Regions				
No Schooling	8	0.75	31	2.14
Elementary Undergraduate	338	31.89	452	31.22
Elementary Graduate	198	18.68	332	22.93
High School Undergraduate	126	11.89	183	12.64
High School Graduate	202	19.06	299	20.65

College Undergraduate	114	10.75	105	7.25
College Graduate	72	6.79	41	2.83
Post-Graduate/MA/PhD	2	0.19	5	0.35
Total	1060	100.00	1448	100.00

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Membership in organizations possibly provide better and relevant information for the farmers. These organizations are farmer's organizations, cooperatives and being an Agrarian Reform Beneficiary. Majority of farmer respondents in five regions are not members[18] (72.94%) in any of the organizations previously mentioned, only 680 or 27% of the farmer respondents answered that they are members of any of those organizations mentioned *(table 6 below).* Moreover, among those who have insurance, 18.3% reported that they are members of a cooperative and those who do not have insurance but still members of cooperatives are 17.4% of the farmer respondents. Some of the farmer respondents are also members of a senior citizen's organization, with insurance (6.25%) and without insurance (7.3%). Only 1.8 percent of the farmers reported that they are Agrarian Reform Beneficiaries (ARB). See table 7 below.

Table 6. Membership in organization of farmer respondents, by crop and respondent type

Region	Members in Organization	%	Non members	%	Total farmers	%
Region 2- Corn	40	8.00	460	92.00	500	100
Region 4A- Coconut	54	10.87	442	89.13	496	100
Region 6- Rice	241	47.63	265	52.37	506	100
Region 7- Corn	201	39.41	309	60.59	510	100
Region 11- Banana	144	28.80	356	71.20	500	100
All Regions	680	27.06	1833	72.94	2512	100

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Table 7. Farmers' membership in organization, by type of organization (%)

All Regions and Types of Organization	With Insurance			Without Insurance	Total
	With Claims	Without Claims	Total		
Cooperative	15.7	20.0	18.3	15.9	17.4
Farmer's association	75.6	71.7	73.3	66.3	70.8
ARB organization	1.5	2.1	1.8	1.8	1.8
Women's organization	1.0		0.4	0.7	0.5
Political group	0.5	0.3	0.4		0.3
Faith-based organization	0.5		0.2	0.4	0.3
Senior Citizen's organization	6.1	6.2	6.2	9.4	7.3
Others	1.5	2.1	1.8	5.8	3.3
Total	100.0	100.0	100.0	100.0	100.0

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

[18] The survey did not ask for the reasons for membership nor the reasons for non- membership.

Asset ownership is another possible indicator of economic status of the household and thus may affect the household's ability to cope with shocks that adversely affect them. Table 8 below shows ownership of household durable assets of the farmer respondents across the five regions. It is not surprising that cellular phone ownership is the most common type of asset owned by the all type of farmers, 75.1% of all the farmer respondents. Seventy-eight percent ownership among those with insurance while 72.8% ownership to those farmers who do not have crop insurance. Television set ownership is also very common among the farmer respondents, 71.4% of all farmer respondents reported to have television set at home. And 73.5% ownership among those farmers who have crop insurance while 69.9% among the without crop insurance farmers. Looking further at the table above, motorcycle and tricycle ownership seems to be necessity among many farmer respondents. The motorcycle and tricycle is not only used for transporting their farm produce to market but also as an alternative livelihood and or a source of income *(habal-habal or for rent motorcycle)* to many of the interviewed farmers. Among those with insurance, 38.5% declared that they own motorcycle and or tricycle while 35.1% among those farmers who have no crop insurance own this type of asset.

Table 8. Distribution of household assets, by region (%)

Household Assets	Region II	Region IV-A	Region VI	Region VII	Region XII	All Regions
Car, jeep, van	4.0	5.0	4.0	0.6	12.2	5.1
Motorcycle, tricycle	36.8	30.9	36.4	14.5	58.4	35.3
Motorized boat, banca	0.6	3.0	0.4	1.8	0.0	1.2
Air conditioner	2.2	2.2	2.8	0.6	8.0	3.1
Washing machine	15.2	14.3	10.3	2.0	26.6	13.6
Stove with oven, gas range	31.4	12.0	11.3	1.8	31.2	17.5
Refrigerator, freezer	20.0	19.9	38.1	6.5	58.0	28.4
Personal computer	5.8	7.8	6.3	1.6	8.2	5.9
Cellular phone	77.0	64.5	86.2	66.7	81.2	75.1
Landline, wireless phone	0.6	3.4	0.4	0.0	0.6	1.0
Audio component, stereo	10.8	7.8	8.7	2.9	14.0	8.8
Karaoke, videoke	4.2	5.4	4.0	2.2	7.8	4.7
CD/DVD/VCD player	28.0	22.1	28.9	15.9	37.8	26.5
Television	78.8	70.1	80.4	42.0	86.4	71.4
Radio cassette player	28.4	16.1	46.8	57.8	44.2	38.8
Others	13.6	0.8	12.6	0.6	2.6	6.0

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Asking the farm assets of the farmer respondents reveal that more than half of the total farmers interviewed or 52.7% said that they have raised chickens mainly for consumption and in some cases also for sale when the need arises for cash. Among those with insurance farmers, 54.7% reported to have been raising chicken while slightly lower at 51.3% to those farmers who do not insurance. Among the livestock, raising pig is the most common farm animal raised by the farmer respondents (30.4%). Pigs accordingly can be raised for important family occasions and also as a form of savings due to its cash value when sold. *Carabao* ownership is also

common farm asset owned by the farmer respondents (26.6%), another is cow ownership (15.1%) and then goat and sheep raising (14%). Please see table 4 below for details.

Table 9. Distribution of agriculture farm asset, by region (%)

Agricultural Assets	Region II	Region IV-A	Region VI	Region VII	Region XII	All Regions
Farm equipment & storage						
4 wheel tractor	0.4	1.8	0.6	-	0.2	0.6
Hand tractor	8.2	2.8	24.5	-	0.0	7.1
Truck	0.4	0.0	1.2	-	1.8	0.7
Mechanized planter/transplanter/dryer	0.2	1.0	0.4	-	-	0.3
Copra dryer	-	1.8	-	0.4	-	0.4
Tapahan	-	14.5	-	0.6	0.8	3.1
Thresher/sheller	3.4	1.0	11.7	-	-	3.2
Plow	48.4	15.3	28.9	9.4	0.8	20.5
Storage/bodega	2.8	0.2	3.2	1.6	2.6	2.1
Jetmatic pump	9.2	0.0	14.6	0.0	5.4	5.8
Cart	24.0	0.0	4.7	0.4	-	5.8
Other agricultural asset	0.4	24.5	9.9	0.2	7.8	8.5
Livestock						
Carabao	49.4	31.1	31.0	18.2	3.4	26.6
Cow	12.4	20.9	14.6	25.3	2.0	15.1
Goat/sheep	2.2	7.4	10.1	45.7	3.8	14.0
Pig	28.4	32.9	31.8	45.3	13.2	30.4
Chicken/other poultry	56.8	29.5	74.1	75.1	27.4	52.7
Gamecock	2.4	5.4	7.7	13.1	4.6	6.7
Other	3.8	12.7	7.1	-	2.2	5.1

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Source of income among farmer respondents were also asked by the research teams, table 10 below shows the percentage distribution of income by sources. Expectedly, majority or 73.1% of the farmer respondents derived their income from crop production. Comparing both type farmers, 76.3% among those with insurance respondents reported that their primary source of income is from crop production while 73.1% to those farmers who do not have crop insurance. Salaries and wages from employment is the second (15.7%)reported source of income among farmer respondents. Apparently, this type of income is reportedly higher among the farmers who do not crop insurance (17.1%) than those farmers with insurance (13.8%). Please see table 10 for details.

Table 10. Source of income of farmer respondents in 2014-2015 (%)

Income Sources	With Insurance			Without Insurance	Total
	With Claims	Without Claims	Total		
All Regions					
Crop Production	79.1	74.9	76.3	70.6	73.1
Salaries and Wages from Employment	13.4	14.0	13.8	17.1	15.7

Received Net Share	0.3	1.1	0.8	3.4	2.3
Family Sustenance Activity	0.8	-0.2	0.2	0.6	0.4
Cash Receipts from Abroad	1.2	2.9	2.3	1.6	1.9
Cash Receipts from Domestic Sources	1.8	3.4	2.9	2.5	2.7
Rentals	0.1	_	_	0.4	0.3
Pension	_	0.3	0.2	0.6	0.4
Livestock and Poultry Raising	2.4	1.3	1.7	1.4	1.5
Fishing	0.2	0.3	0.3	0.2	0.2
Forestry and Hunting	0.3	0.1	0.2	0.4	0.3
Wholesale and Retail Trade	0.2	1.3	0.9	0.6	0.8
Community, Social, Recreational and Personal Services	_	0.3	0.2	0.1	0.1
Transportation, Storage and Communication Services	_	0.1	0.1	0.1	0.1
Construction	0.3	_	0.1	0.3	0.2
Other	_	0.1	0.1	0.1	0.1

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Farm Characteristics

These section provides description of the farms cultivated by the farmers. We hypothesized that farm size, it's topographical location and farm management practices potentially affects the farmers' ability to cope with risks inherent to agricultural production. There is no difference between the average size of the farms of the respondents, 1.3 hectares for both with crop insurance and those farmers who do not have crop insurance. In terms of number of parcels, the average for those with insurance is slightly higher (1.2 hectares) compared to those without insurance, 1.1 hectares. It can also be said that most of the farmer respondents practiced mono-cropping method of farming, 56.2% to those who do not crop insurance and 43.8% of those who have insurance. Apparently, intercropping method of farming is more common among those farmers with no crop insurance (66%) while 34% only to those farmers with crop insurance. It can also be safely said that most of the farmer respondents without insurance planted in both cropping seasons (83.3%) during the survey reference period. Irrigation system is also crucial to the production among the farmer respondents, communal irrigation system is more common among farmers without crop insurance (56.2%), while combination of irrigation systems is more prevalent among those farmers with crop insurance (63.6%). Another farm characteristic is the topography, the farmers with no crop insurance described their farm location as hilly and rolling (62.3%) while to those farmers with crop insurance described that their farms are located in a combination of the three types namely (54.5%); river/flood plain, hilly/rolling. In terms of tenurial status, the without crop insurance group of farmers has a higher ownership of the land that they are cultivating (59.3%) than to those with crop insurance group (40.7%). Tenanted status (55.4%) is also higher among farmers without crop insurance than compared to those who have crop insurance (44.6%). The same is true also to rented/leased tenurial status, higher for those who do not crop insurance (61.7%) than those with insurance (38.3%). Please see table 11 for details.

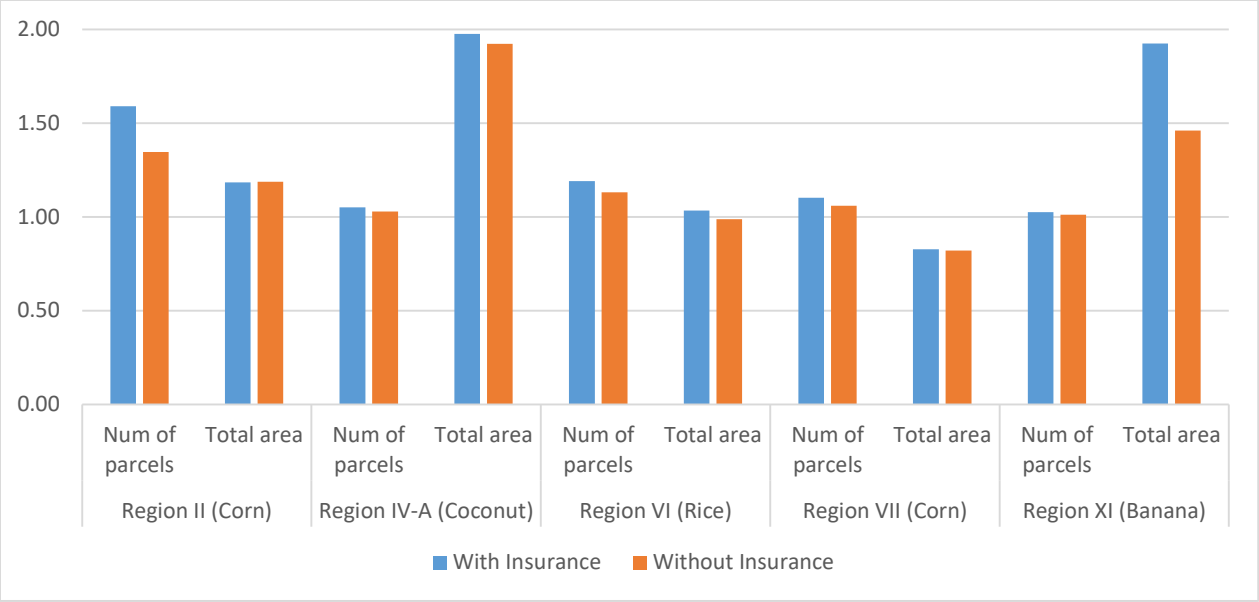


Figure 3. Average number of parcels and total farm area, in hectares
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

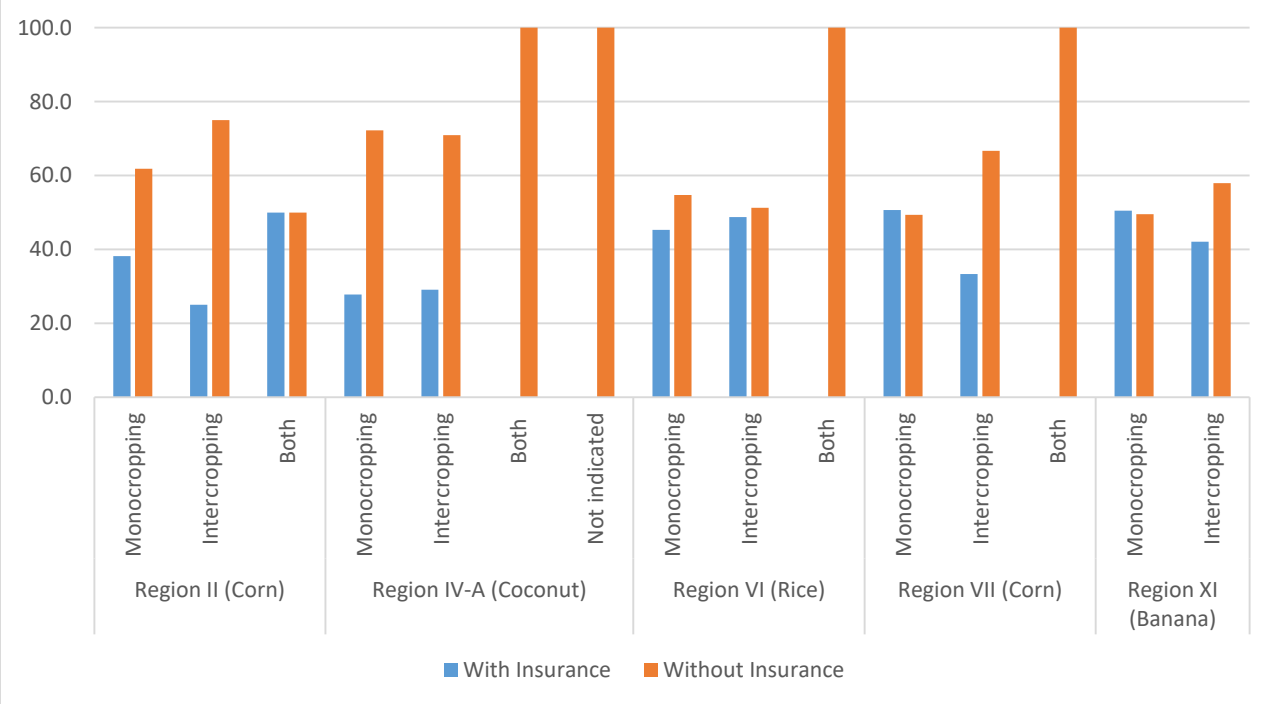


Figure 4. Farmers' cropping system
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

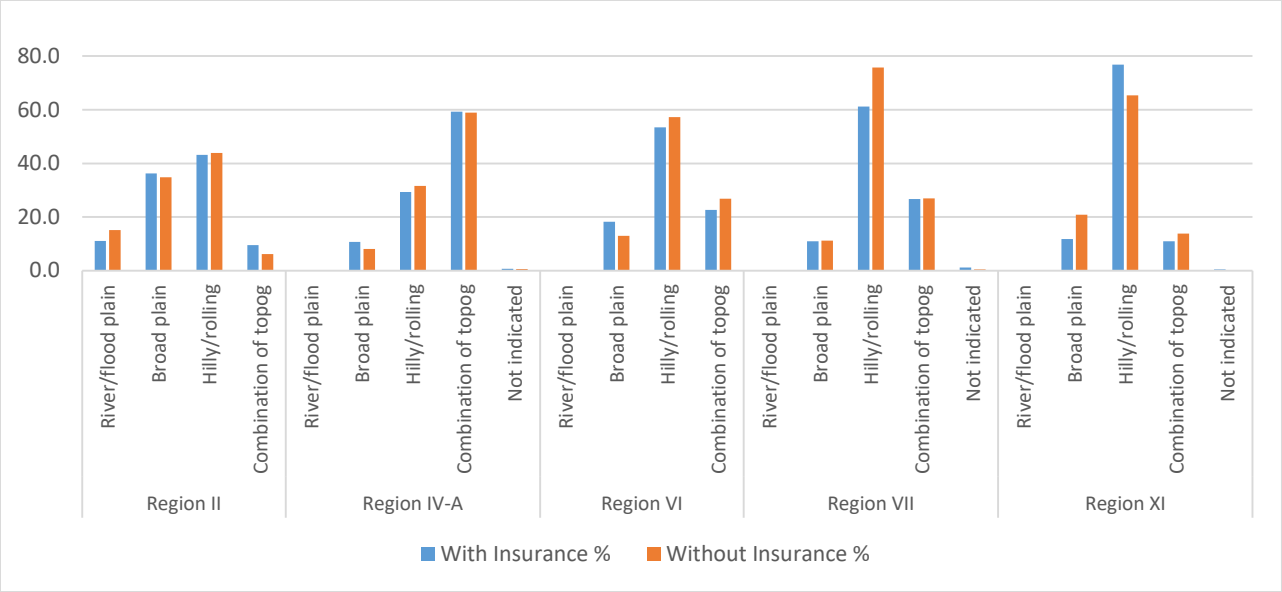


Figure 5. Farm location

Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Table 11. Type of irrigation systems, by region

Irrigation system	W/ Insurance	%	W/o Insurance	%
Region II (Corn)				
National	1	0.5	3	1.0
Communal		0.0	2	0.6
Other irrigation system		0.0	2	0.6
Combination of irrigation systems	3	1.6	1	0.3
None/Rain-fed	186	97.9	302	97.4
Total	190	100.0	310	100.0
Region IV-A (Coconut)				
National	3	2.1	3	0.8
Communal		0.0	13	3.6
Individual	2	1.4		0.0
Other irrigation system	1	0.7	3	0.8
Combination of irrigation systems		0.0	1	0.3
None/Rain-fed	134	95.7	335	93.6
Not indicated			3	0.8
Total	140	100.0	358	100.0
Region VI (Rice)				
National	37	16.1	49	17.8
Communal	37	16.1	36	13.0
Individual	21	9.1	18	6.5
Other irrigation system	12	5.2	2	0.7
Combination of irrigation systems	11	4.8	6	2.2
None/Rain-fed	112	48.7	165	59.8
Total	230	100.0	276	100.0
Region VII (Corn)				
None/Rain-fed	255	100	255	100
Region XI (Banana)				
National	9	3.7	3	1.2
Communal	7	2.8	5	2.0
Individual		0.0	1	0.4
Other irrigation system	1	0.4	1	0.4

None/Rain-fed	229	93.1	244	96.1
Total	246	100.0	254	100.0

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

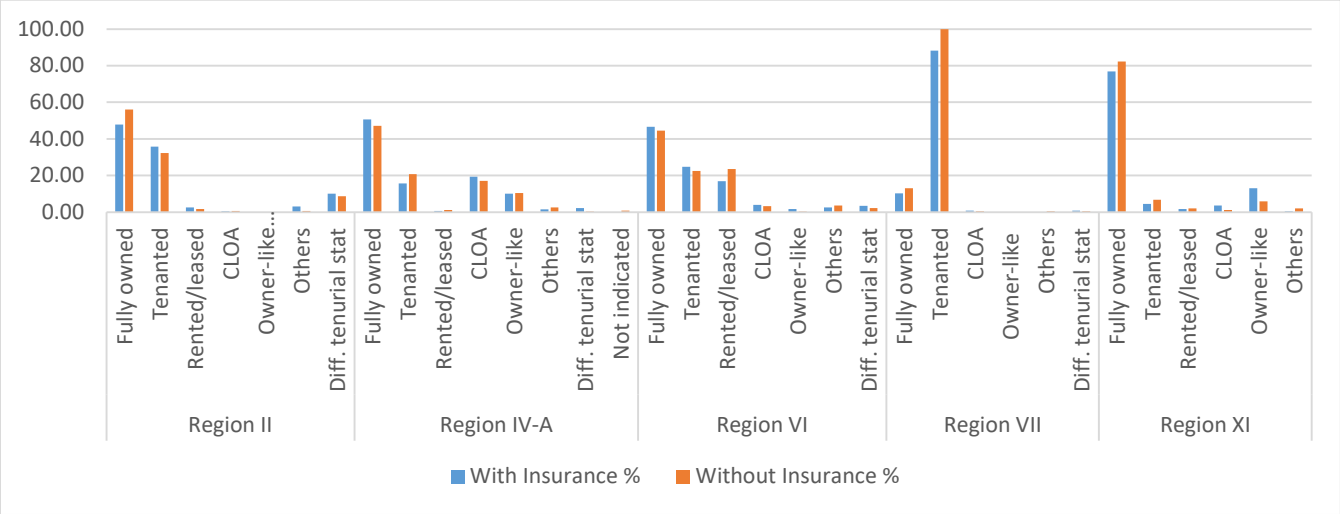


Figure 6. Tenurial status

Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Table 12 below accounts for the percentage distribution of parcels by crop which were included in the survey. Corn covers two regions, Cagayan Valley or region 2 and Central Visayas or region 7. These two regions accounted for 36% of the total farmers interviewed in this study. Of this, 37.1% had availed of crop insurance and 35.3% were without insurance during the survey period. Region 6 or Western Visayas was the area for rice farmers and they accounted for 20.5% of the total farmers interviewed. Twenty-two percent were with insurance while 19.3% did not have crop insurance at the survey period. Coconut farmers from Region 4A or the CALABARZON were also interviewed in this survey, and they accounted for 18.2% of the total farmers interviewed for this project. Among the four major crops, coconut farmers are the least insured (12.2%) compared to other farmers in other regions. About 23% of the coconut farmers who were interviewed did not have crop insurance. Another major crop in the study is banana and the farmers interviewed in this study are from region 11 or Davao region. Davao region is known for large plantations of banana for exports. About 21 percent of the banana farmers interviewed said that they have insurance while 16 percent did not have crop insurance. Please table below for details.

Figures 6 to 11 show the awareness and or existence of facilities in the respective barangay in all study areas. The presence of these facilities could help improve farmers' productivity and efficiency in their farm operations. Cooperatives (55.4%) and the presence of microfinance (49.2%) organizations are mostly present in the study areas according to the farmers with insurance. Fertilizer dealers, banks, pesticide dealers are also common in the areas. Traditional sun drying or pavement was also mentioned by the farmers with insurance.

Similarly, for the without insurance farmers, the presence of cooperatives, microfinance institutions, banks and fertilizer dealers are also common according to them. Overall, the presence of cooperatives accounts for more 50 % in all the study areas.

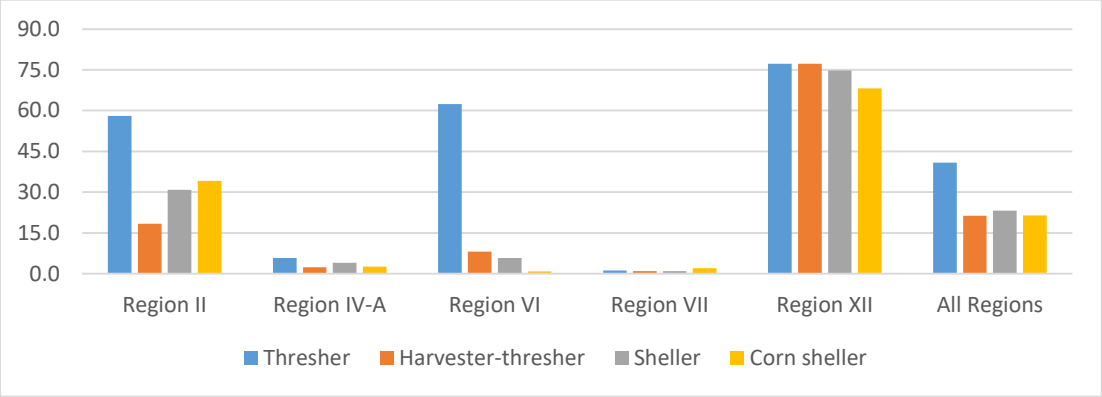


Figure 6. Presence of harvest related equipment
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

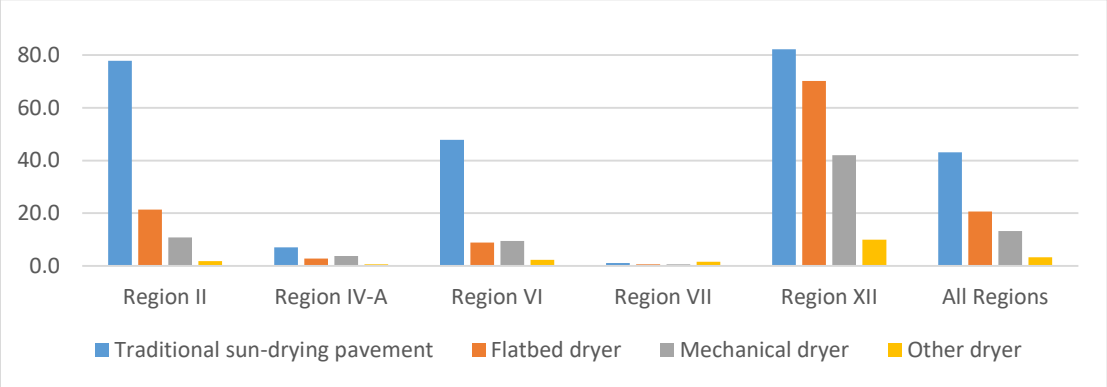


Figure 7. Availability of drying facilities
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

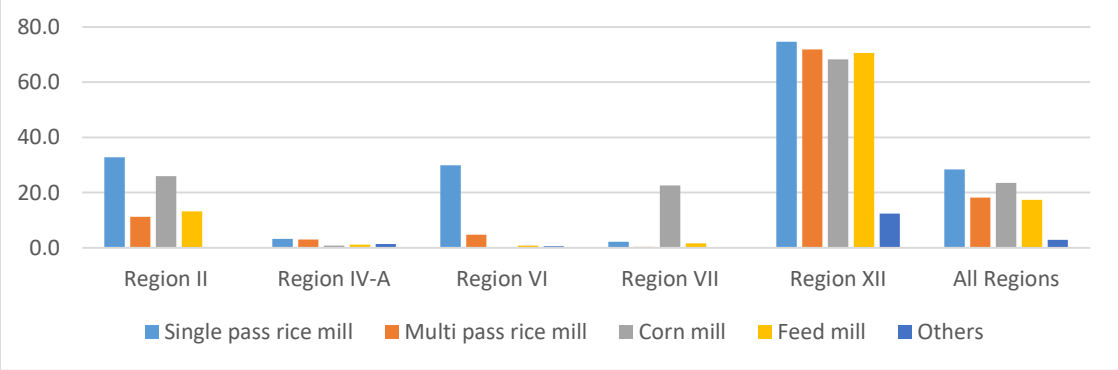


Figure 8. Availability of milling facilities
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

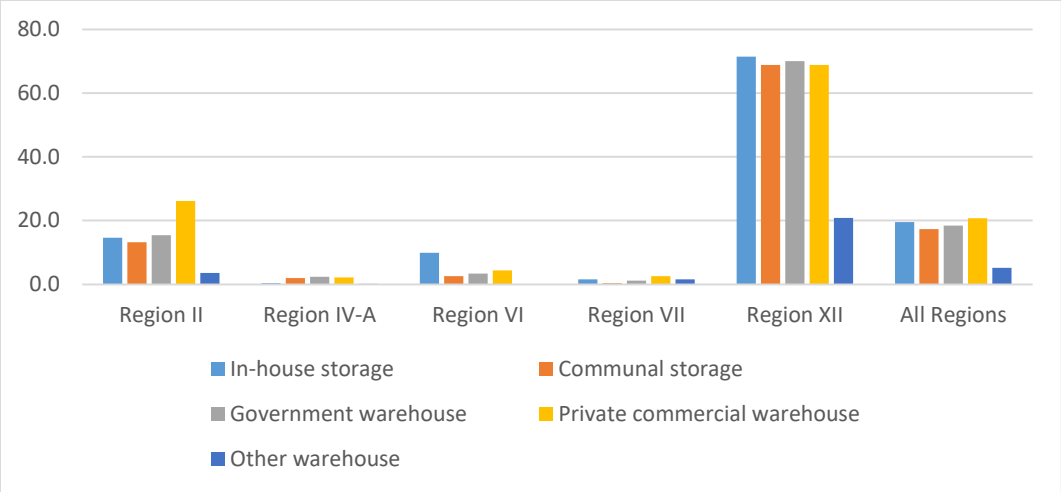


Figure 9. Availability of storage facilities
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

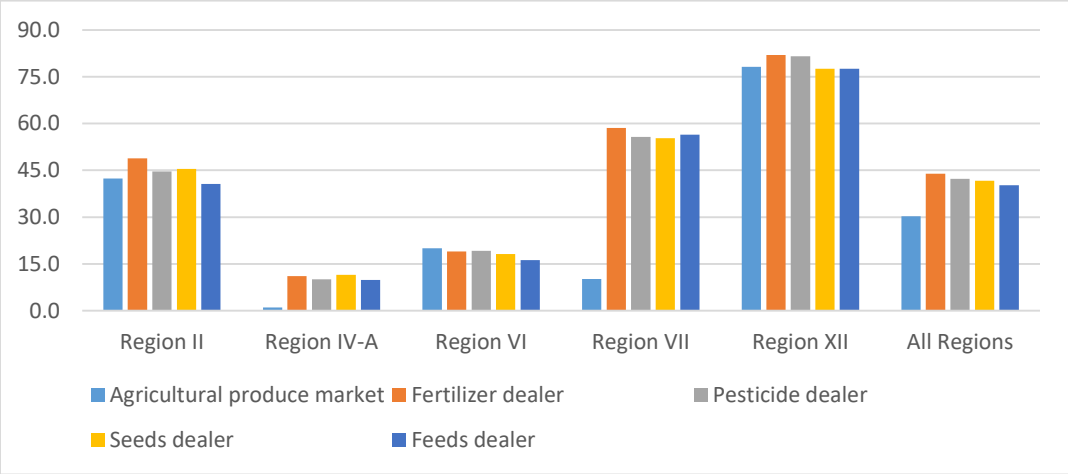


Figure 10. Presence of market and inputs dealer
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

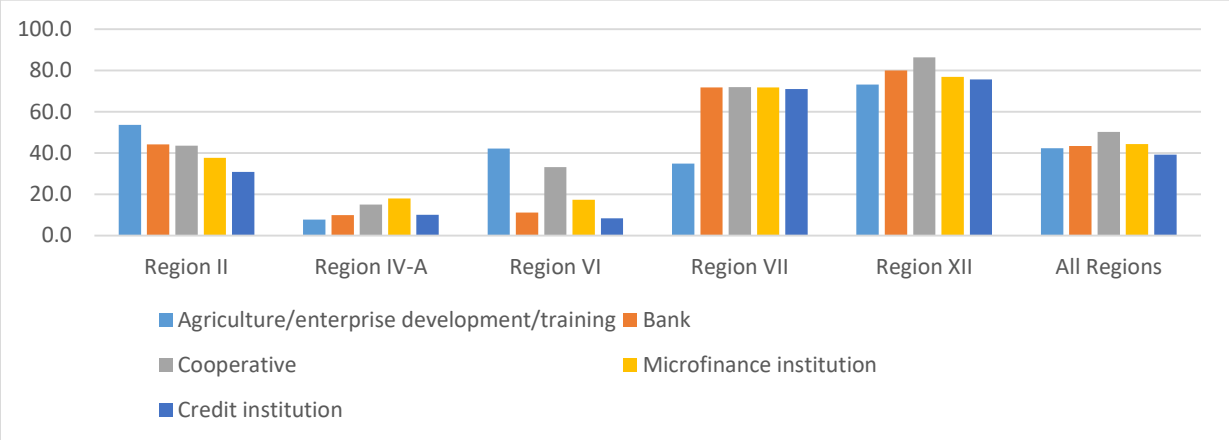


Figure 11. Presence of financial institutions
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Availment of Crop Insurance[19]

In terms of availment of crop insurance, there were more farmers who were without claims (65.4%) than those with claims (34.6%) during the survey reference period. Among those with claims, corn farmers from region 7 or Central Visayas had the highest claim (51%). This was due to the fact that these areas were hit by super typhoon Yolanda and these farmers also were beneficiaries of the same program including the free premium subsidy given the provincial government of Cebu. The least claims of crop insurance are from banana regions of Davao with only 27.6%. On the other hand, the among those without claims, corn farmers from Cagayan Valley or Region 2 had the highest percentage of without claims (76.3%). Please see table 12 below for details.

Table 12. Distribution of farmers who availed of crop insurance, by region

Region	With Insurance	%	Without insurance	%	Total
Region II (Corn)	190	17.91	310	21.4	500
Region IVA (Coconut)	140	13.20	356	24.5	496
Region VI (Rice)	230	21.68	276	19.0	506
Region VII (Corn)	255	24.03	255	17.6	510
Region XI (Banana)	246	23.19	254	17.5	500
All Regions	1061	100	1451	100	2512

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Reasons for availing of agricultural insurance were also elicited from farmer respondents. Various reasons were cited from the farmers; corn farmers from region cited that they were encouraged by their neighbors, friends, relative (22.2%) to avail of the insurance. For region 2 corn farmers, the most cited reason is because of the agricultural technician in the LGU (57.3%) that they have availed of the crop insurance. On the other hand, banana farmers from Davao region mentioned that since the crop insurance is a requirement for getting a loan (79.8%) then they availed of the crop insurance.

[19] Agriculture insurance is interchangeably used with crop insurance in this paper.

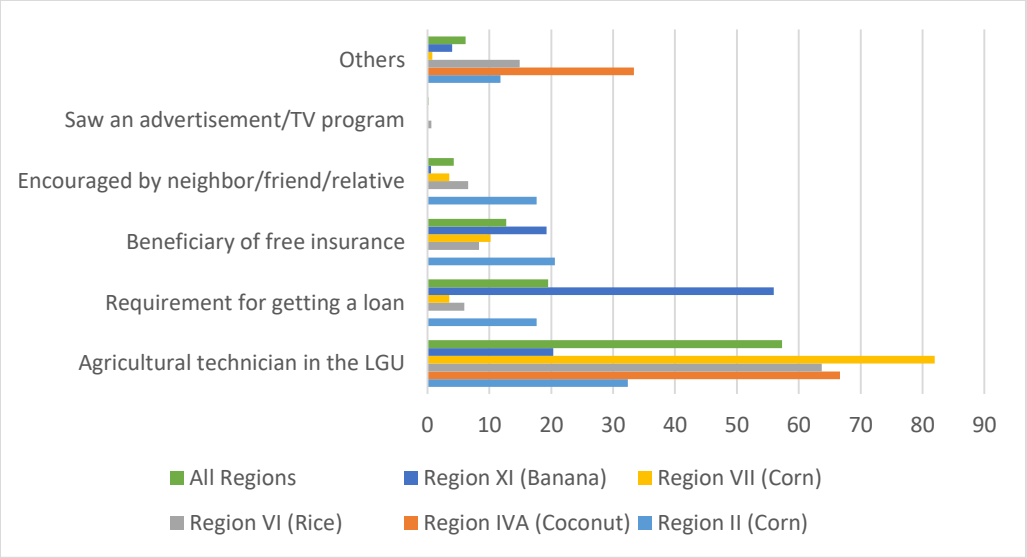


Figure 12. Reasons for availment of crop insurance
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

We are also looking at the possible reasons for non-availment of the agriculture insurance. The reasons for non-availment vary across regions. For corn farmers in region 2, they cited that documentary requirements are difficult to comply (47.5%) while not aware of crop insurance (28.9%) is the top reason for non-availment according to coconut farmers in region 4A. The rice farmers in region 6 cited that they are not aware on the ways (32.3%)of availing the crop insurance is the main reason for having no insurance at all. For corn farmers in region 7, not a requirement for obtaining credit (52.9%) is the main reason why they did not avail of crop insurance. Banana farmers from Davao region cited that they are not satisfied with the amount of cover (44.3%) is the main reason why did not avail of the crop insurance. Please see figure below for details.

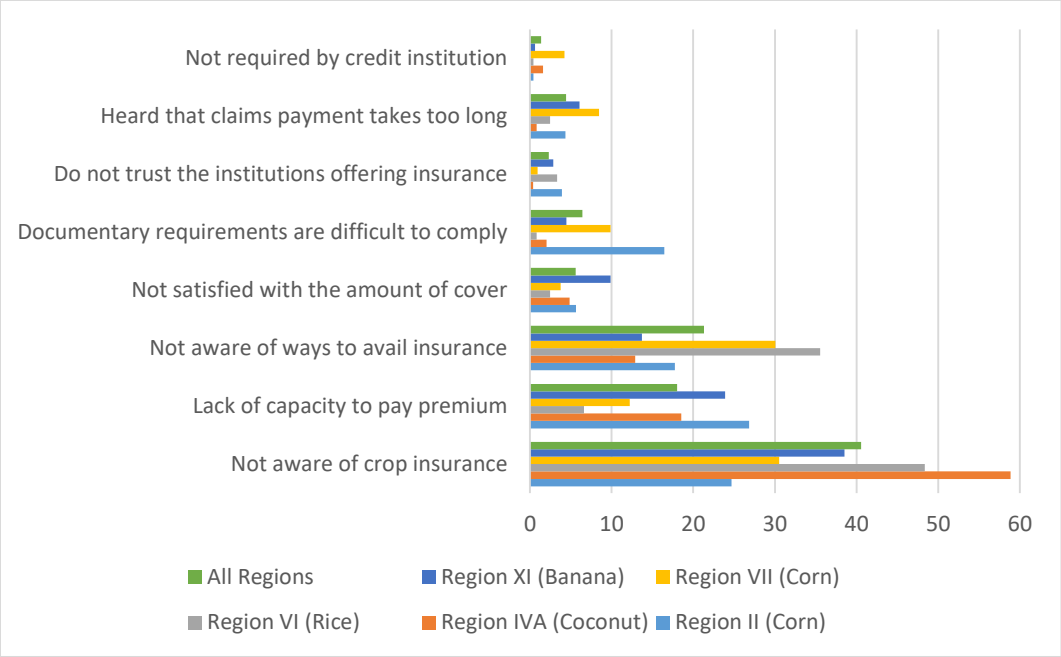


Figure 13 Reasons for non-availment of crop insurance
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Figure 14 below indicates the source of premium payment for the farmers interviewed in this study. Among those farmers with claim, the source of the payment for insurance premium is part of the loan (48.2%) and for those without claims, they also cited that the source of payment for premium is part of the loan (51.8%). Interestingly, those without claims also mentioned that they pay the insurance premium from their own pocket (77.2%). There were also farmers with claims (45.4%) and without claims (54.6%) cited that the source of their premium payment is from free insurance program of the government. Please see table below for details.

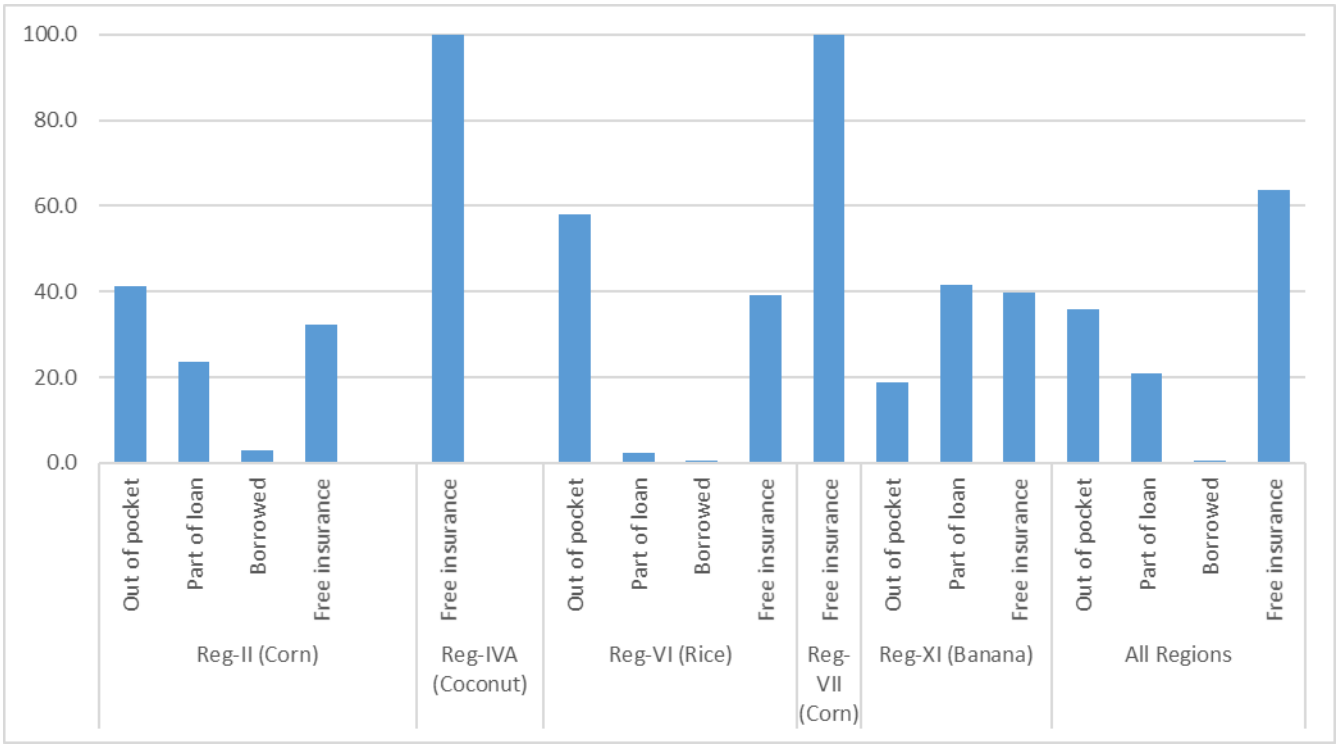


Figure 14. Source of premium payment for crop insurance
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

The survey also identified the type of government insurance program the farmers availed of from various government programs. In 2013 to 2014, most of the farmers who had claims were insured under the local government (LGU) program (44.44%). In which case, some LGUs in the study areas provide a premium subsidy to the farmers under their jurisdiction. This is followed by farmers who are under the Department of Agrarian Reform's beneficiaries (25.36%). The same trend can be observed in 2014 to 2015, most of the farmers enrolled or with insurance and were able to claim were also under the LGU program (46.81%). This is followed by farmers under the DAR program (25.53%).

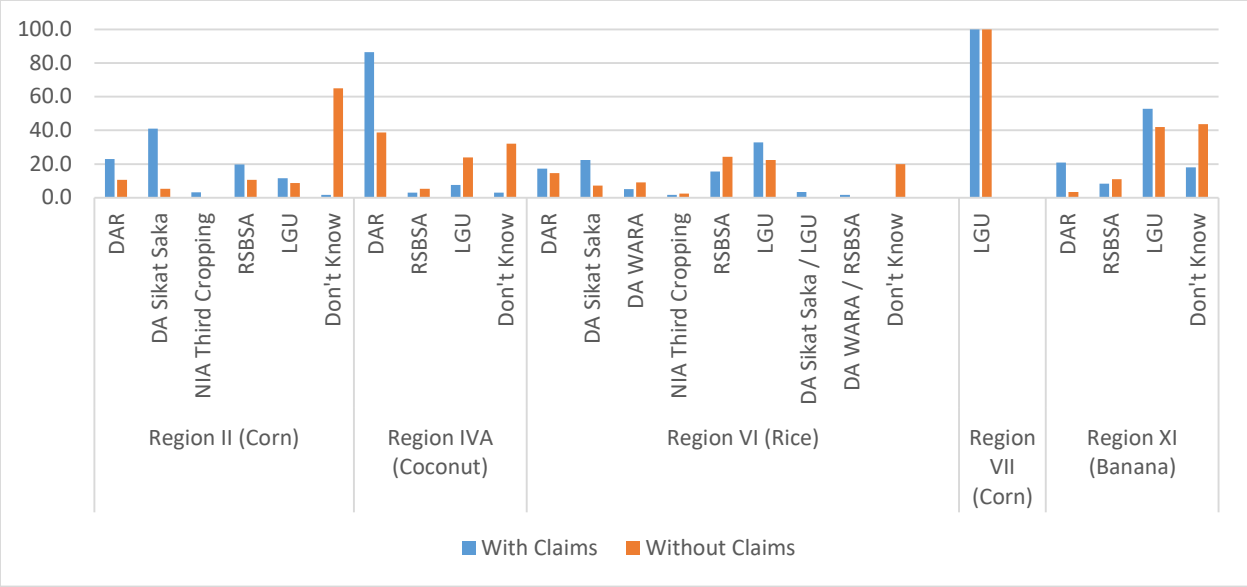


Figure 15. Crop insurance by type of government program
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

In year 2013 to 2014, the highest average indemnity received were for banana farmers in region 10. For 0.5 hectares below, the amount was 37,500 pesos, 44,739.35 pesos for farmers with 0.5 to 1 hectare and 93,499 pesos for farmers with more than 1 hectare of banana farm. The same trend can be observed for years 2014 to 2015, the highest indemnity is for banana farmers. It also be observed that the lowest average indemnity is for coconut farmers which ranges from 1,204 pesos in 2013-2014 to 1,142.75 pesos in 2014-2015. Please see table below.

Table 13. Average amount of indemnity per hectare (PHP), by farm size, by region, 2013 to 2015

Farm Size	Region II	Region IV-A	Region VI	Region VII	Region XI	All Regions
2013-2014						
0.5 ha and below	8,000.00	2,674.08	10,600.00	6,365.42	37,500.00	7,127.91
0.5 ha to 1.0 ha	3,839.04	1,472.73	3,265.47	6,247.91	44,739.35	12,683.83
more than 1.0	5,406.33	830.97	3,574.92	1,881.48	93,449.99	19,063.31
Total	5,032.51	1,204.07	3,904.12	4,293.97	74,138.20	15,974.02
2014-2015						
0.5 ha and below	8,000.00	2,674.08	5,578.95	6,361.40	37,500.00	6,389.96
0.5 ha to 1.0 ha	2,269.69	1,442.42	2,869.07	6,153.05	43,141.51	12,275.72
more than 1.0	5,457.82	747.94	3,523.40	1,527.80	93,449.99	19,581.88
Total	4,670.35	1,142.75	3,506.30	4,104.96	73,108.50	16,004.85

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

The indemnity paid to farmers or the main reason for payment of insurance to the farmers is due to typhoon and flood this accounts for 84.34% from the years 2013 to 2014. The same trend can also be observed for years 2014 to 2015, typhoon and flood accounted 78.79% as cause among the farmers in the survey. Drought is the second reason, which in 2013 to 2014 accounted for 16.37% of the farmers surveyed. But in 2014 to 2015, it can be noted that

drought as reason for loss among the farmers has increased to 31.82%. Please see table below for details.

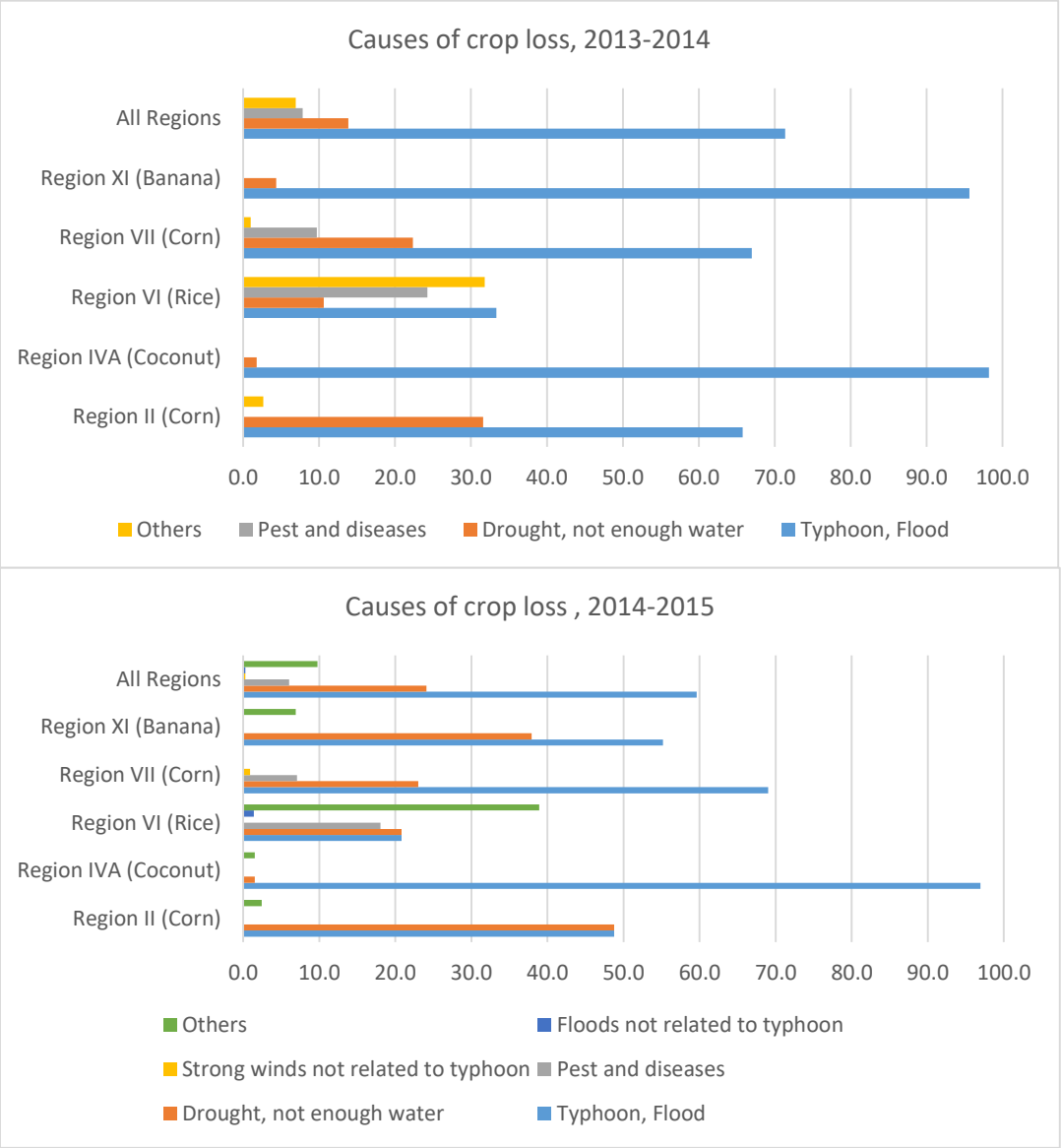


Figure 16a and 16b. Causes of loss connected to claim
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

The utilization of indemnity claim was also asked during the survey. For the five regions, the indemnity claim was used for farm production inputs (62.67%). The farmers also used it for food consumption (15%) and for loan payment (14%). Other utilization of indemnity payment includes; educational expenses (3.81%), clearing for the farm debris (3%) and medical bills (2.18%). Please see figure below.

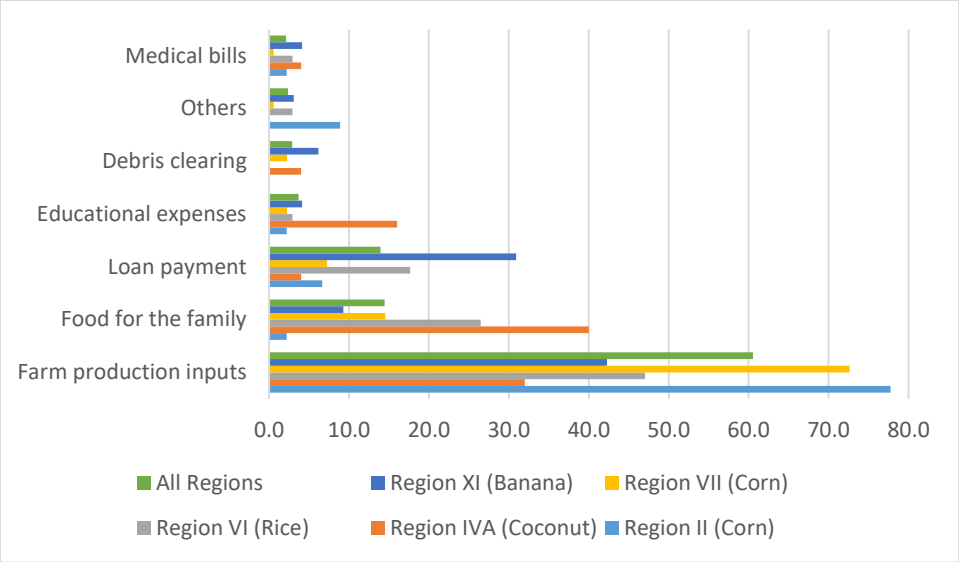


Figure 17. Utilization of indemnity
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Loan Availment and Utilization

With regard to type of creditor, banana farmers from Davao region (98.48%) avail of loan from formal sources like banks and microfinance companies. It can be noted that most banana farmers availed of crop insurance because this is a requirement in obtaining a loan, the same can be said for Region 7, 80% obtain their loans from formal sources. On the other hand, most of farmers from other regions obtained loan from informal sources; 83% in Cagayan Valley and 85 % in Western Visayas. Over-all, 75% of the farmers obtained their loans from informal sources. Please see figure 18 below for details.

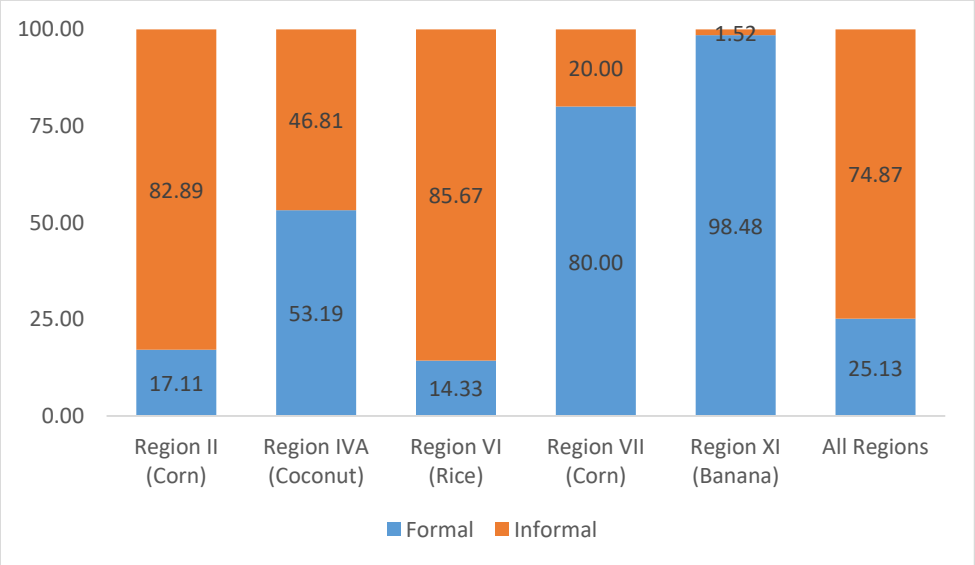


Figure 18. Source of credit, 2014-2015
Source of credit: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Exploring further the source of credit by type of farmers reveal another interesting point. It can be said that most of the farmers who are without insurance availed of credit from informal sources during the years 2013 to 2015 or for the past two cropping seasons in the case of rice and corn farmers. Generally, more than 80% of the farmers who are without insurance availed of credit from informal sources. This availment from the informal sources is relatively higher than those with insurance which varies from 56.1% in the first cropping of 2013 to 2014, 71.4% in the second cropping of the same years. Even for the two cropping periods in 2014 to 2015, the without insurance farmers availment from informal creditors are still higher, 83.6% and 81.6% respectively than those with insurance, 69.8% and 67.1% respectively. Please see table for details.

Aside from availment of loans, the cost of borrowing or interest on loan was also asked during the survey. On average, Central Visayas or Region VII have the highest interest rate ranging from 10.2% to 12.6%. This is followed by Cagayan Valley or Region II ranging from 9.8% to 10.8%. Apparently, the lowest average interest rates which ranges from 5.4% to 8.3% are in Davao region. Please see table below for details.

Table 14. Average interest rate of loans availed by farmers, 2014-2015

Cropping Period	Region II	Region IV-A	Region VI	Region VII	Region XII	All Regions
1st cropping, 2013-2014	10.4	7.5	9.8	10.2	8.3	9.8
2nd cropping, 2013-2014	10.8	5.3	10.2	12.3	5.9	10.3
1st cropping, 2014-2015	10.0	10.1	9.6	12.6	7.7	9.8
2nd cropping, 2014-2015	9.8	10.3	8.7	10.2	5.4	9.3

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Figure 19 below shows the general pattern for the utilization of loans from the farmers from the five case regions are; farm production inputs, farm improvements, and household consumption. During the years 2013 to 2015, farm production inputs accounted nearly 99% of the loan proceeds, farm improvements at 42% and household consumption at 14.3% among those farmers with insurance. The same can be said for the farmers without insurance; 96.1% for farm production inputs, 17.5% for farm improvements and 16.7% for household consumption. It can also be noted that about 5% of the proceeds of the loan are spent on education and medical expenses. See figure 19 for details.

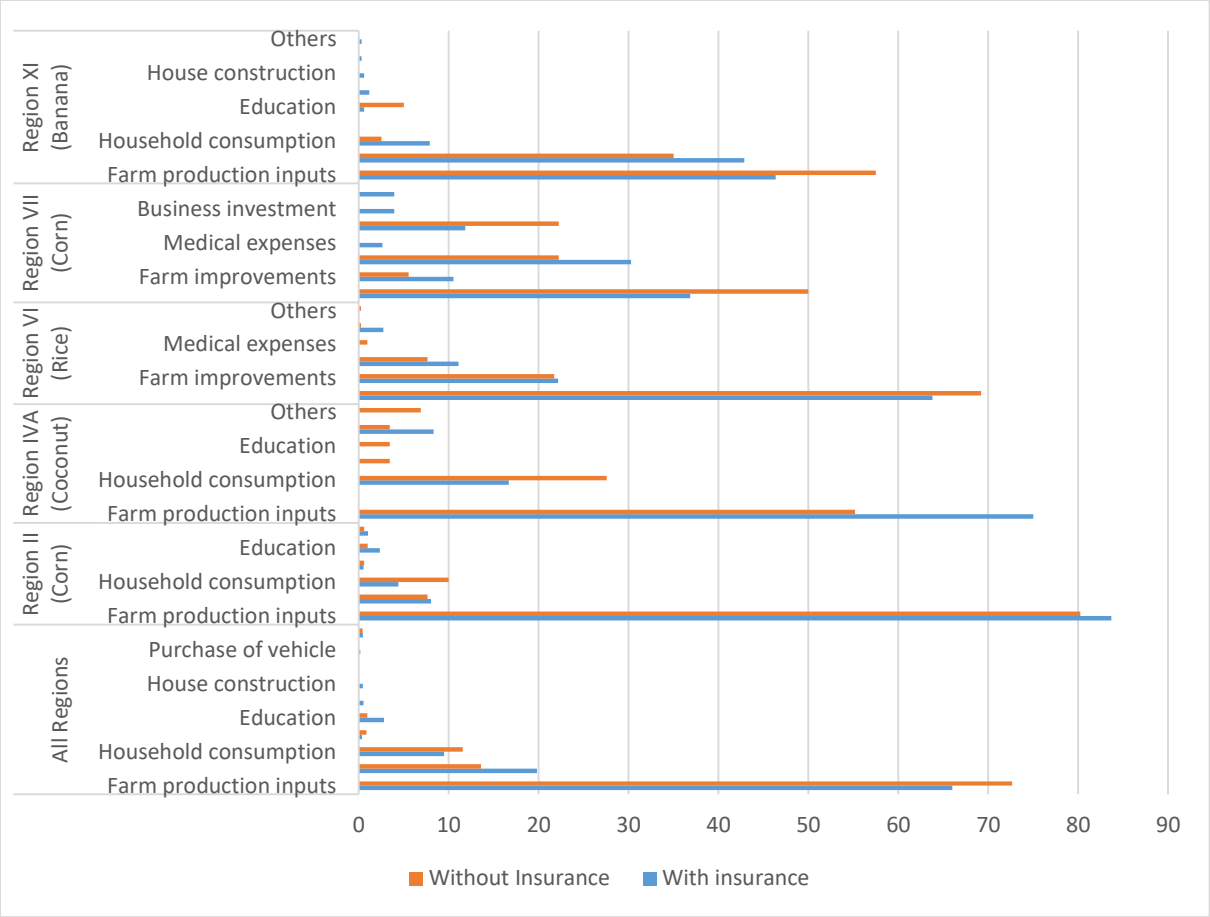


Figure 19. Utilization of loans, 2014-2015
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Shocks and coping strategies adapted by farmers

The adverse weather condition was the most serious problem that the farmers identified in crop production. They confirmed the susceptibility of the agricultural sector to climate conditions, a phenomenon that the sector has to live with. They can only minimize risks. They acknowledged that they adopt coping strategies and adopt risk-mitigating measures to overcome them. When farmers are hit by calamities or shocks it certainly will affect their income and possibly will make them fall into poverty.

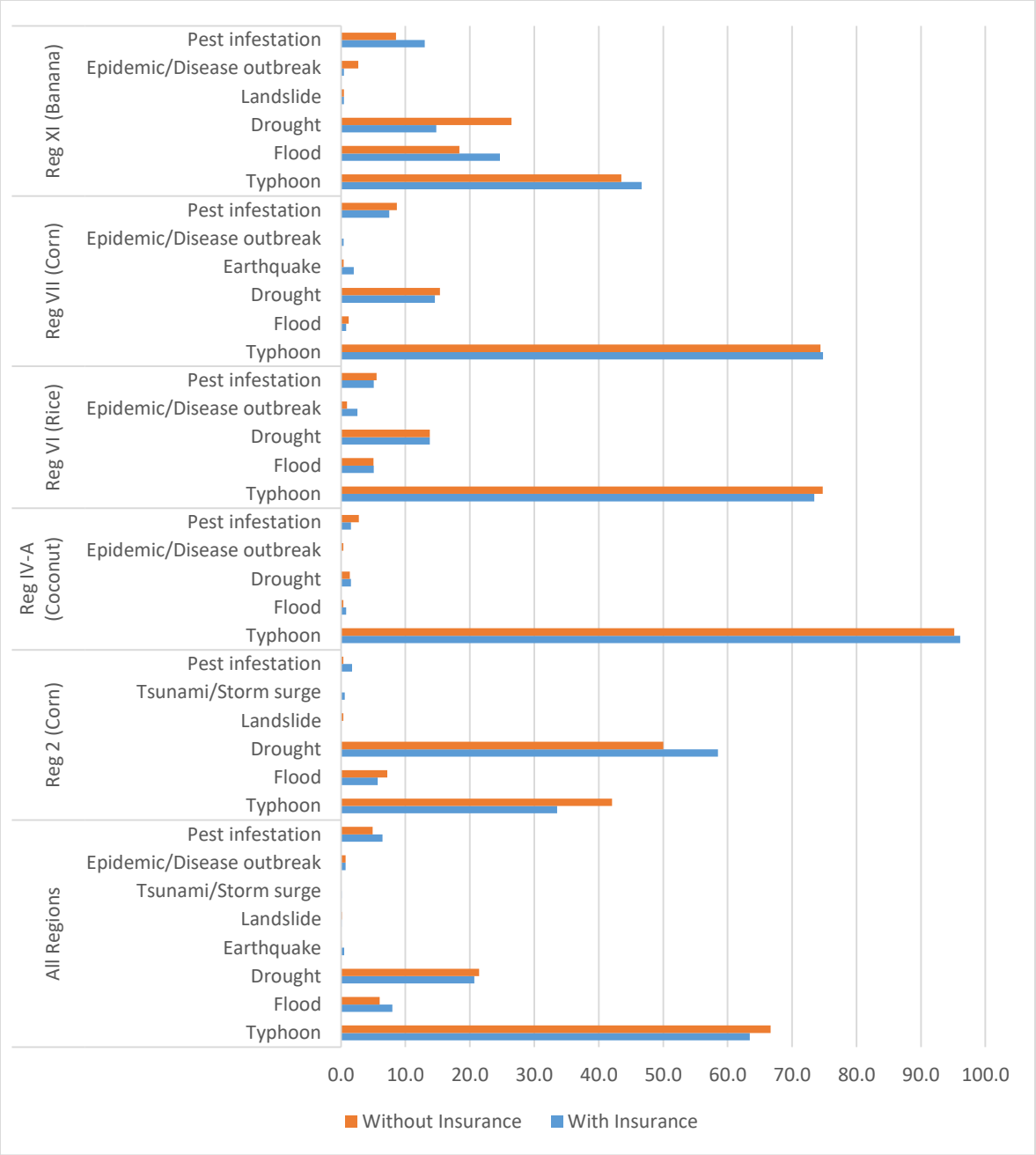


Figure 20. Most severe shocks experienced by farmers from 2014-2015
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Figure 20 above shows the most severe shocks experienced by the farmers in the five regions. Both type of farmers, those with and without insurance expressed that typhoons (65.3%) are considered to be the most severe natural disaster experienced by them. Droughts (49.9%) are also considered to be second severe disaster experienced by the farmers in the five regions. In terms of man-made or man induced disaster, increase in food prices (48.7%) appeared to be the most pressing concern among the farmers in the survey. The second most

severe man-made disaster according to the farmers in the five regions is increase in price of fuel prices (35%).

With shocks experienced by the farmer respondents, it is also relevant to ask for the food related coping strategies adapted by them. Shifting to cheaper food items is considered to be first strategy adapted (80.9%) when farmers are hit by shocks. The second food related coping strategy is relying more on their own produce (72.2%) and third is eating or consuming food that is less is preferred (67.6%). Other food related coping strategy include; consuming staple food only (60.9%), reduced portions (63.4%) and eating more ready to cook food (45.5%). Please figures below for details.

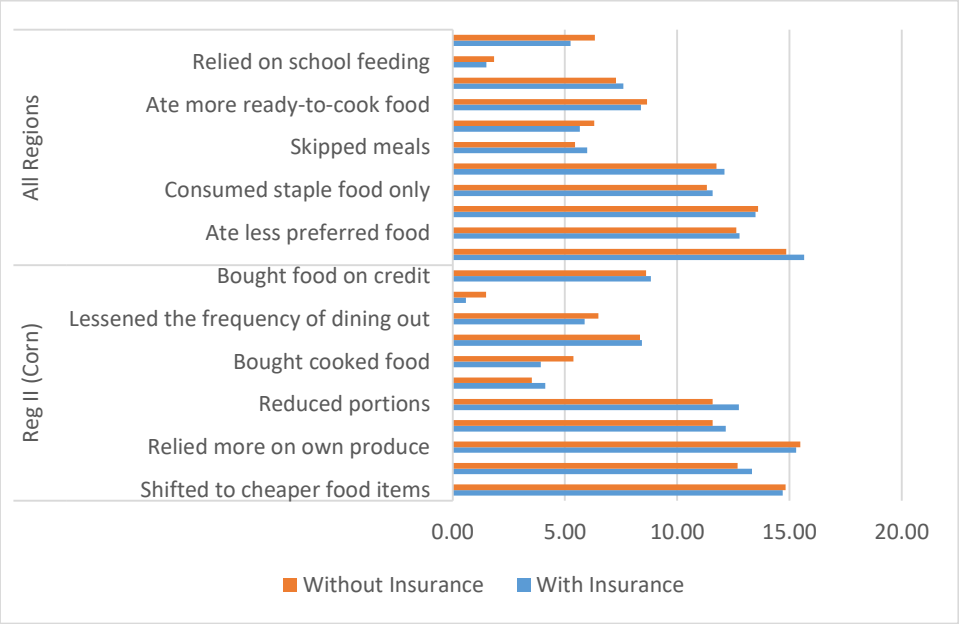


Figure 21a. Food-related coping strategy for most severe natural disaster, all regions and region 2
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

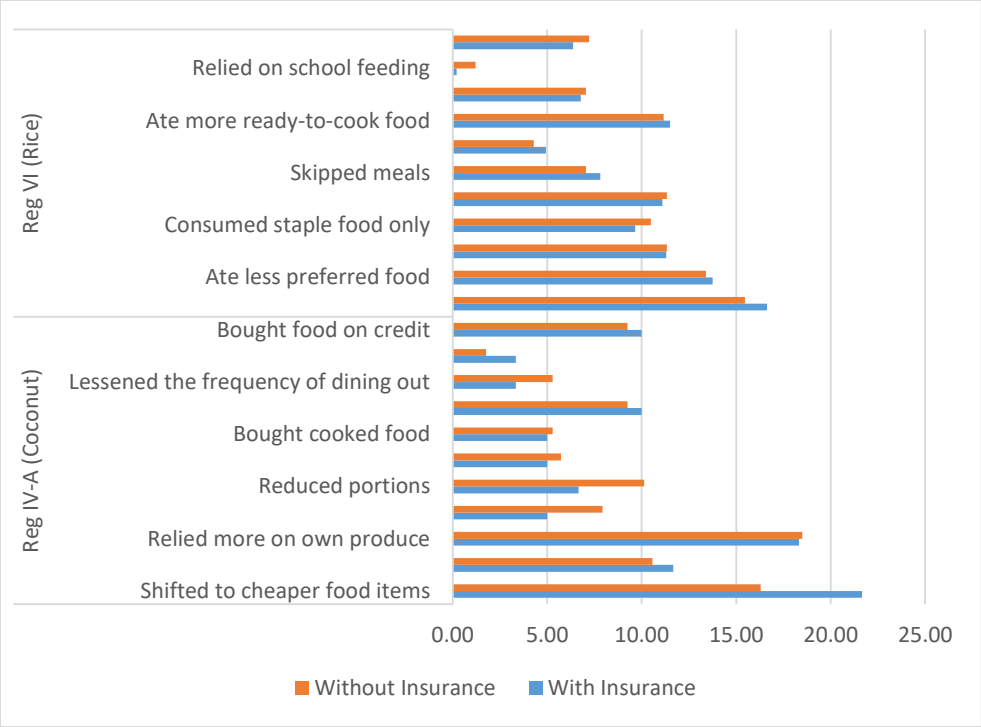


Figure 21b. Food related coping strategy for most severe natural disaster, regions 4A & 6
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

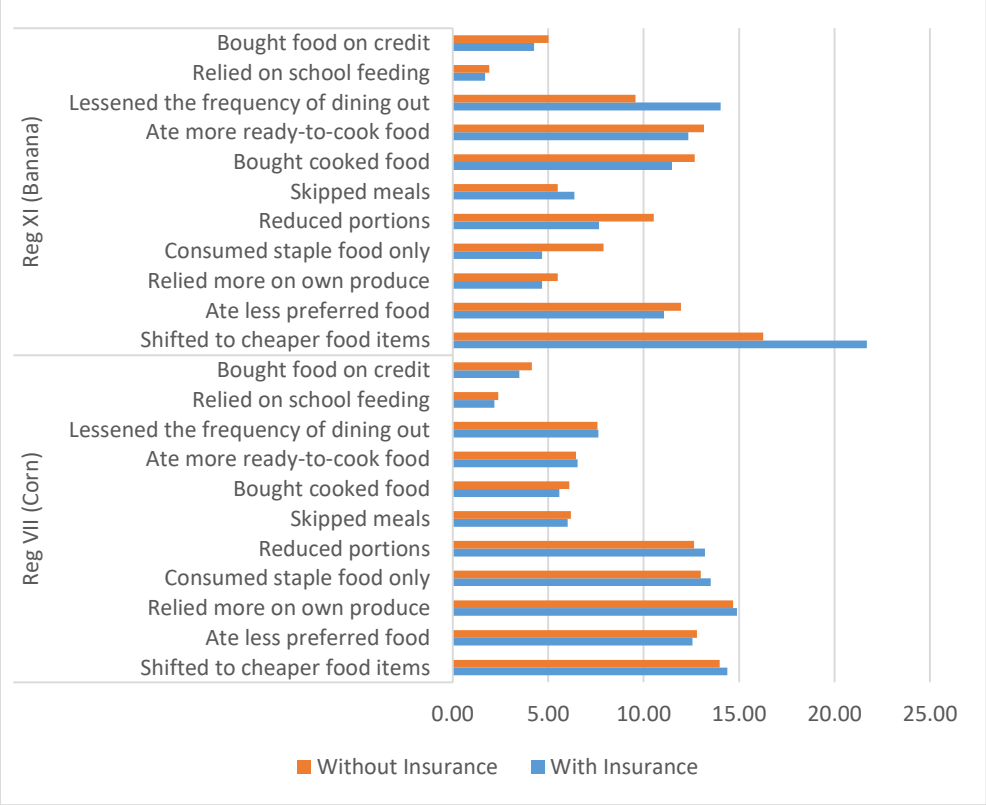


Figure 21c. Food-related coping strategy for most severe natural disaster, regions 11 & 7
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

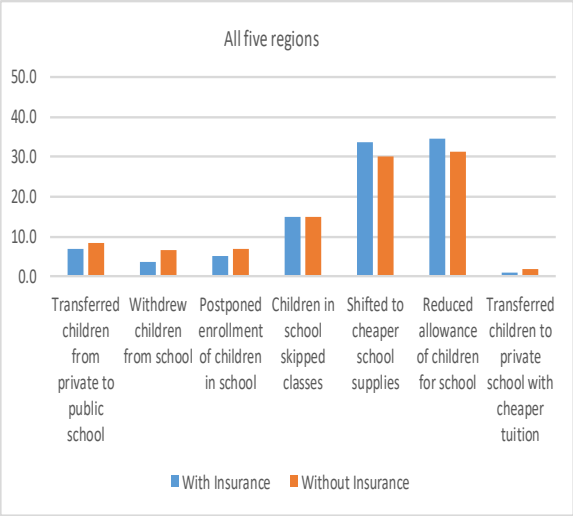


Figure 21a. Education related coping strategy

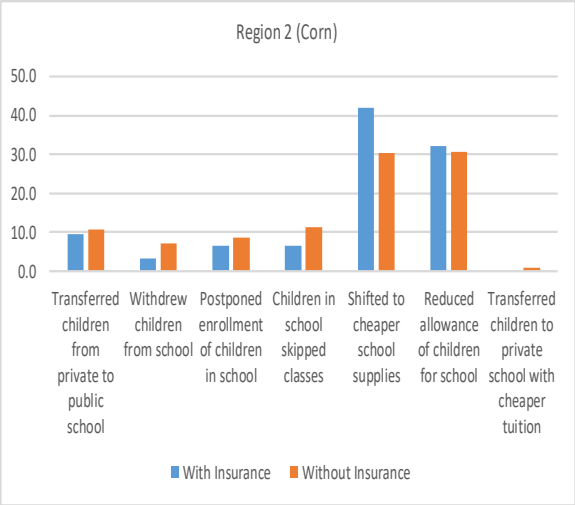


Figure 21b. Education related coping strategy

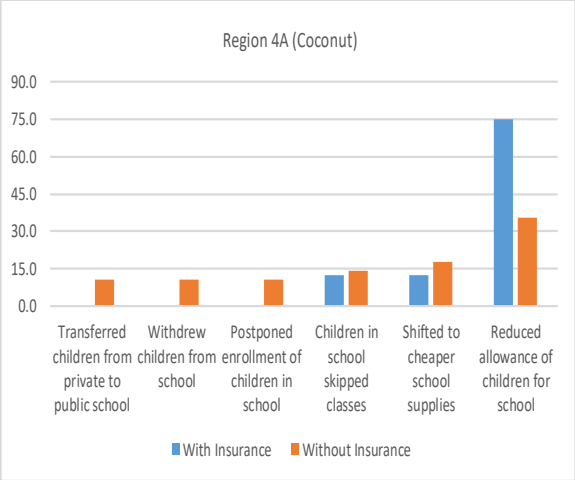


Figure 21c. Food-related coping strategy

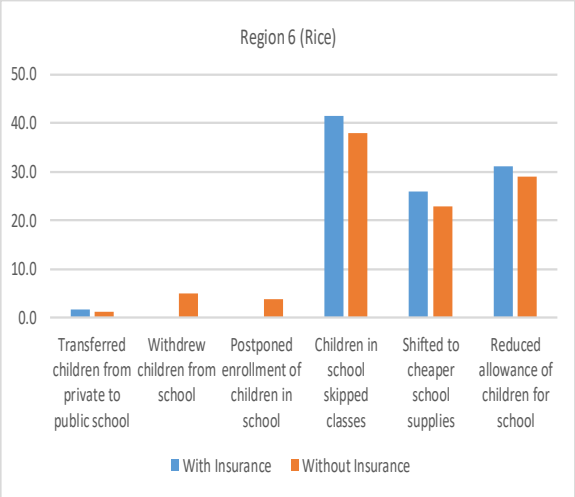


Figure 21d. Food-related coping strategy

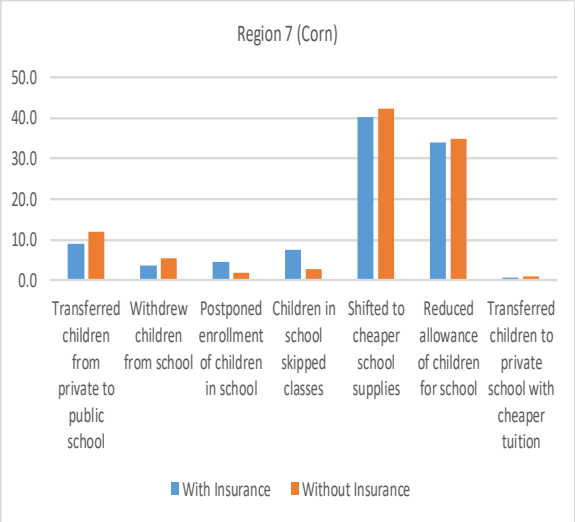


Figure 21e. Education related coping strategy

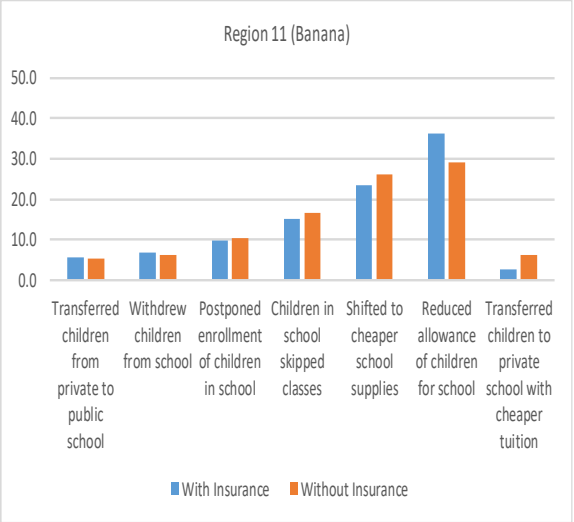


Figure 21f. Education related coping strategy

Figures 21a to 21f shows the education related coping strategy adapted by farmers when they are hit natural disaster. Reduction in the allowance in schooling is seemingly the most common coping strategy (12.2%), followed by shifting or buying to cheaper school supplies at 11.8%. Though relatively smaller percentage, respondents also mentioned of their children skipping classes, transferring from private to public school and postponing enrollment of their children.

The survey also covers the risk mitigation strategies of the farmers in both dry and wet seasons. During dry seasons farmers in different regions have different risk mitigation strategies, for instance corn farmers in region 2 shared that they alter farm management practices (38.96%) while corn farmers in region 7 shared that do product diversification during dry season (85.90%). Among the coconut farmers, 24.68% shared that they do alter farm management practices while banana farmers in Davao region use varieties with high resilience to high temperature and even resistant salinity and drought (39.57%). On the other hand, during wet season banana farmers alter their farm management practices (40.59%). Corn farmers in region 2 adopts earlier planting date (39.41%) while corn farmers in region 7 practices product diversification (89.47%). Coconut farmers use site specific nutrient management (34.92%) and rice farmers in Western Visayas use of varieties with high resilience (40.30%) as their risk mitigation strategies during wet season. Please see figures 22a and 22b below.

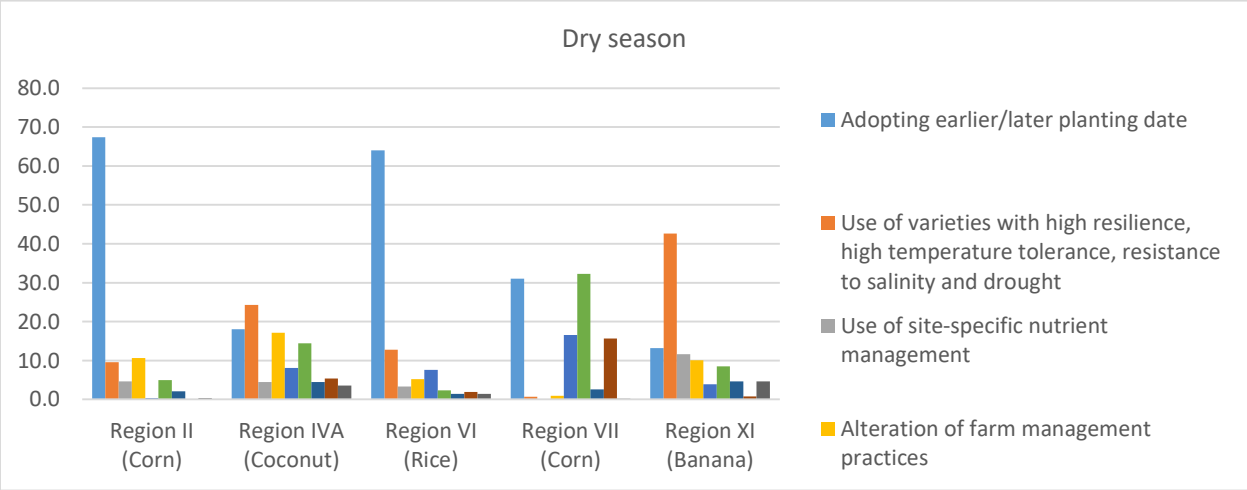


Figure 22a. Risk mitigation strategies in crop production
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

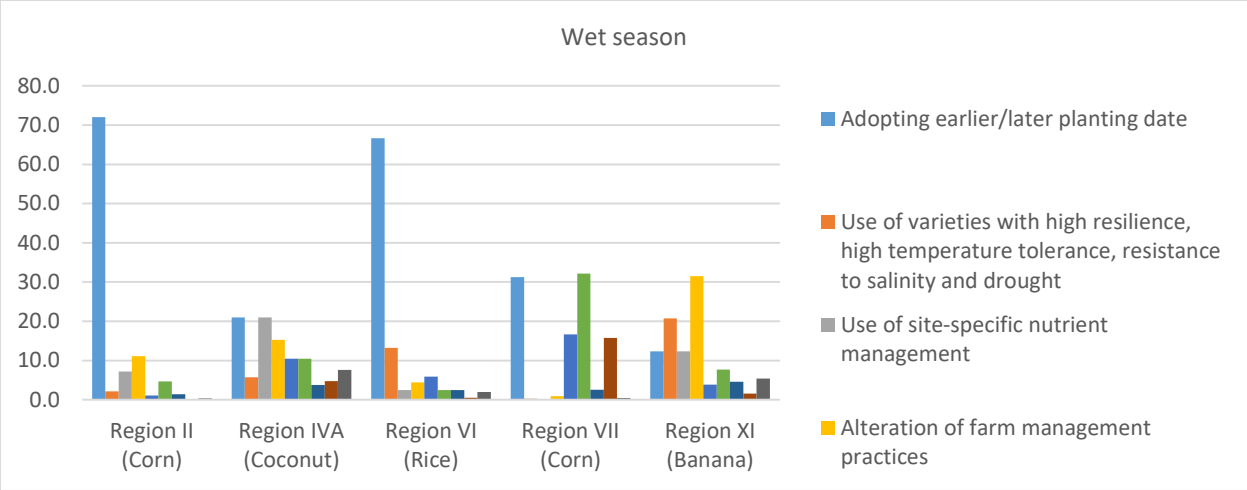


Figure 22b. Risk mitigation strategies in crop production
Source of basic data: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016

Farmers' ratings of PCIC products and services

It is also important to somehow gauge farmers' ratings of PCIC products and services, the highest is 4. Among the five case regions, the highest average rating was given farmers in region 7 at 3.1 while the lowest rating was given by coconut farmers in region 4a at 2.3. In region 2, the highest ratings are in affordability of premium payment and accessibility of payment of channels at 2.9 each. In region 4a and region 6, the highest rated is the affordability of premium payment. The overall satisfaction is above the average at 2.9.

Table 15. Farmers' ratings of PCIC products and services

PCIC Products and Services	Region II	Region IV-A	Region VI	Region VII	Region XII	All Regions
Number of forms to be filled up and ease of accomplishing them	2.8	3.3	3.1	3.3	2.6	3.0
Accessibility of PCIC office	2.7	2.0	2.9	3.3	2.5	2.9
Affordability of premium payment	2.9	3.3	3.2	3.2	2.7	3.0
Accessibility of payment channels available	2.9	2.3	3.0	3.2	2.6	2.9
Sufficiency of risks covered	2.7	2.3	3.0	2.9	2.6	2.8
Adequacy of the amount of cover to be received	2.7	2.3	2.7	3.0	2.5	2.8
Available feedback mechanisms	2.8	2.3	2.8	3.1	2.5	2.8
Procedure in filing indemnity claims	2.6	2.3	2.9	3.1	2.5	2.8
Objectivity of assessment in indemnity claim processing	2.7	2.3	2.8	3.0	2.6	2.8
Sufficiency of actual indemnity claim received	2.4	2.3	2.6	3.0	2.5	2.7
Length of time in processing claims	2.5	2.3	2.6	2.9	2.5	2.7
Overall satisfaction	2.8	2.3	2.8	3.1	2.7	2.9

Source: PIDS Impact Evaluation of Agriculture Insurance Survey, 2016
Note: the highest score is 4

Factors affecting insurance availment

The availment for crop insurance was examined using Probit analysis and the results are presented in Table 16 below. The regression results provide some useful insights on the factors that would possibly affect the insurance take-up or availment of farmers. The explanatory variables are classified into three major categories which are; farmer characteristics, household and farm characteristics, and community level characteristics. It can be said that the level of education has positive and very significant predictive influence for a farmer to take-up crop insurance. Having a college level or college degree increases the chance for a farmer to avail of crop insurance with PCIC. The same trend can be said for banana farmers in Davao region and corn farmers in Central Visayas. Having a secondary education increases the probability of availing crop insurance for rice farmers in Western Visayas. In a general sense, farming experience measured in terms of number of years engaged in farming also increases the chance of availing of crop insurance for rice farmers in Western Visayas and banana farmers in Davao region. Membership in a farmer organization has a strong influence in the availment of crop insurance. This variable is highly significant across all regions, significant for banana farmers in Davao region, corn farmers in Central Visayas and rice farmers in Western Visayas. For household characteristics, household size increases the probability of having a crop insurance and this might be possibly being due to risk aversion of farmers. Thus, having a crop insurance is viewed as part risk mitigation strategy of farmers. Though not statistically significant, having more household assets and agricultural assets decrease the chance that farmers take crop insurance. Non-farm wage of farmers also decreases the chance of farmers taking up of crop insurance. In terms of farm characteristics, total farm area planted has strong predictive influence of farmers' taking-up of crop insurance. The bigger the farm area, the more farmers are encouraged to avail of crop insurance. Planting hybrid varieties also has a positive influence for farmers enroll in crop insurance. Farm located in river flood plain decreases the chance of getting crop insurance while farms on broad plains increases the chance of availing crop insurance. Surprisingly, having experienced past shocks decreases the chance of getting a crop insurance and this is possibly due to some issues raised by farmers when it comes to how indemnity payments are being computed. For community level variables, the presence of post-harvest facilities increases the chance of farmers getting a crop insurance. The presence of input dealers in the community also increases the chance of farmers having a crop insurance. The same can be said for the location of PCIC office which has a positive influence on farmers' availment of crop insurance.

Table 16 Probit estimates on the factors affecting insurance availment from PCIC

Availment of Crop Insurance from PCIC	Region 2	Region 4	Region 6	Region 7	Region 11	All regions
Year	-0.026	0.982***	0.407**	0.294	-0.00304	0.257***
	(-0.21)	(3.91)	(3.04)	(1.36)	(-0.03)	(3.85)
Farmer Characteristics						
Age	0.08	-0.0794	-0.00158	-0.0953	-0.00221	0.00237
	(1.3)	(-0.61)	(-0.02)	(-0.51)	(-0.07)	(0.06)
Square of age of farmer	-0.000775	0.000128	-0.000086	0.000658	0.000279	-0.000103
	(-1.24)	(0.1)	(-0.12)	(0.4)	(0.96)	(-0.27)
Sex (1- Male, 0-Female)	-0.584	0.242	-0.339	-0.939	0.134	-0.223
	(-1.93)	(0.44)	(-0.86)	(-1.40)	(0.86)	(-1.09)

Completed secondary	-0.368	1.589**	-0.0394	-0.435	0.247	0.0887
	(-1.39)	(2.84)	(-0.13)	(-0.53)	(1.89)	(0.49)
At least a college level and graduate	0.526	0.85	0.594	4.512*	1.073***	0.848***
	(1.46)	(0.81)	(1.6)	(2.25)	(6.56)	(3.33)
Farming experience	-0.00555	0.0621*	0.00561	0.0312	0.0107*	0.0179*
	(-0.42)	(2.41)	(0.44)	(1.31)	(2.08)	(2.54)
Membership to organization	0.0727	2.072	1.050***	7.513***	1.484***	2.321***
	(0.16)	(1.91)	(3.85)	(11.58)	(11.64)	(11.54)
Have availed of agri related training	-0.0978	-0.00645	0.166	0.628	0.0477	-0.0674
	(-0.67)	(-0.01)	(1.11)	(1.55)	(0.35)	(-0.62)
Household Characteristics						
Household size	0.0451	0.00706	0.0468	-0.0215	0.144***	0.0797*
	(0.68)	(0.05)	(0.71)	(-0.17)	(5.2)	(2.03)
Household assets	-0.0205	-0.0987	-0.189	-0.436	-0.0195	-0.0813
	(-0.25)	(-0.89)	(-1.69)	(-1.40)	(-0.69)	(-1.77)
Agricultural assets	-0.251*	0.686	-0.0585	0.867	-0.234**	-0.138*
	(-2.44)	(1.9)	(-0.97)	(1.22)	(-3.09)	(-2.45)
Availment of credit	0.0423	-0.0379	-0.167	-0.699*	0.121*	-0.0126
	(0.38)	(-0.14)	(-1.31)	(-2.44)	(1.98)	(-0.18)
Log of non-farm wage	0.00602	0.0445	-0.00527	0.0299	-0.00802	-0.00319
	(0.37)	(1.4)	(-0.42)	(0.9)	(-1.15)	(-0.35)
Log of income from government transfers	0.212*	-0.00478	0.0137	-	-0.0949**	0.0167
	(2.3)	(-0.13)	(0.66)	-	(-3.03)	(1.0)
Farm Characteristics						
Total area planted	0.163**	0.705***	0.621***	4.296***	0.168***	0.508***
	(3.28)	(4.85)	(5.43)	(5.08)	(4.79)	(10.51)
Planted hybrid varieties	3.223***	-5.482*	0.773	1.025	-	1.394***
	(3.3)	(-2.30)	(1.8)	(1.33)	-	(5.41)
Percent of parcels owned	-0.00437	0.0118*	0.00319	-0.0135	0.0022	0.000192
	(-1.75)	(1.97)	(1.19)	(-1.31)	(1.2)	(0.11)
Topography 1 (1-river flood plain)	-0.27	1.353	0.173	-1.042	-0.397	-0.243
	(-0.73)	(1.39)	(0.43)	(-1.02)	(-1.75)	(-0.96)
Topography 2 (1-broad plain)	0.0831	0.299	-0.0749	-1.207	0.572**	0.245
	(0.32)	(0.59)	(-0.25)	(-1.92)	(2.83)	(1.39)
Experienced past shocks	0.0515	1.021	-0.0721	1.12	-0.0147	-0.565***
	(0.2)	(0.66)	(-0.32)	(0.67)	(-0.08)	(-7.40)
Community Characteristics						
Postharvest facilities	0.211**	0.321	0.299*	0.314	-0.0714**	0.0899*
	(2.76)	(1.05)	(2.41)	(0.78)	(-2.62)	(2.35)
Presence of inputs dealers	0.0416	-0.0595	0.00486	0.155	-0.0332	0.0625
	(0.48)	(-0.16)	(0.05)	(0.85)	(-0.48)	(1.08)
Location of PCIC office	-0.0388	-0.985	-0.21	-1.715*	-0.412**	0.0483
	(-0.06)	(-0.54)	(-0.43)	(-2.42)	(-2.75)	(0.31)
Constant	48.68	-1982.1***	-821.8**	-592.5	1.826	-522.2***
	(-0.19)	(-3.92)	(-3.04)	(-1.36)	(-0.01)	(-3.88)
Number of obs	996	966	1,050	1,012	996	4,988
Number of groups	498	483	505	506	498	2,494

Notes: Figures in parentheses are t-statistics. *** significant at 1% level; ** significant at 5% level;
* significant at 10% level
Source: Authors' estimates using the 2016 PIDS Impact Evaluation of Agriculture Insurance Survey

5. Summary and concluding remarks[20]

The proceeding discussions are summary of findings from the surveys conducted in the five regions which represent the major crops namely; corn farmers in regions 2 and 7, rice farmers in region 6, coconut farmers in region 4A and banana farmers in region 11. Moreover, some policy implications are also provided for each regional case.

Region 2 Corn Farmers

The availment of crop insurance tends to be positively correlated with the adoption of hybrid corn variety, farm size and government transfer while negatively correlated with land tenure and distance from/to PCIC offices. Farmers with crop insurance tend to have higher adoption rate of hybrid variety than farmers without crop insurance. The distance of office to farmer is independent from insurance demand. The distance between the PCIC office and the farmer need not necessarily be very close (within the same municipality/city or province) since tie-ups with the Local Government Units (LGU) through the Municipal Agricultural Office (MAO) can be made to reach out farmers through barangay coordinators or officers.

Farmers who do not own the land tend to avail of crop insurance than those who own the land. Logically speaking, farmers take sole responsibility of inputs as well as premiums. If the crop is damaged, the land owner will not have any share of the indemnity. The larger the farm size, the higher the probability of getting insurance for their corn farms. This imply that predicting that calamities occur, farmers with larger farms face greater risks and hence their tendency is to get insurance for their crops. Corn farmers who receive higher government transfers have higher probability of getting agricultural insurance. Having received any government transfer the farmer has the added capacity or has something to use for the purchase of agricultural insurance.

In light of these findings, it is recommended that policies, programs and efforts of the government and the PCIC efforts be directed towards enhancing the factors that increase the availment of agricultural insurance such as discounts to those who do not own their farms and those who use hybrid varieties. The indemnity coverage and assessment of damage to claim indemnity should be reviewed. Intensive awareness campaign and education about the agricultural insurance should be made for farmers to appreciate the importance of insurance. Further study in Region 2 on the farmer's attitudes toward agricultural insurance and other studies that may affect the performance and availment of agricultural insurance in Region 2.

Region 4A Coconut Farmers

During the course of the interviews in the survey itself, the farmers were not aware where the PCIC office was located in their municipality if ever it had one. For increased coverage, it would

[20] This section is taken from the regional reports of the research partners from Cagayan State University, UP Los Banos, UP Visayas, University of San Carlos and University of Southeastern Philippines.

certainly be of advantage if there were more PCIC offices in locations where the farmers are. As it is, the PCIC office in CALABARZON is located in Calamba City in Laguna when about 80% of coconut plantations are situated in Quezon.

Sustained efforts to inform, educate and communicate the farmers on the advantages and benefits of insurance programs should be seriously considered to increase awareness. As was gathered, the farmers are not willing to pay any amount of premium. This poses a challenge for the insurance provider to come up with more attractive packages. Insurance products that incorporate modern technology like weather based indices can be more attractive specially to avoid the problem of crop damage assessment. One of the reasons why farmers do not subscribe to insurance products is the manner of assessment of damage to determine claims. With modern technology, there is a chance for more objective assessment of crop loss and damages.

Multi-peril insurance packages may also be introduced to cover damage caused by biotic and abiotic stresses. More recently, coconut plantations especially in Laguna and Batangas were damaged by *Cocolisap* which even led some owners to have their trees felled.

Region VI Rice Farmers

The rice farmers in Western Visayas with crop insurance were enrolled in the program for two consecutive years. Majority of those who availed of crop insurance for two consecutive years were the ones who received indemnity payments. The most common reason cited by farmers for getting crop insurance is the information given by their agricultural technician from the LGU. Those who did not have crop insurance on the other hand, explained that lack of knowledge about crop insurance or about the process of enrollment prevented them from getting one.

The results of the regression analysis reveal that the likelihood of farmers enrolling their rice farm to crop insurance increases in the year 2015, if the farmer has previous experience of rain shock, receives government transfer and has some college education. Farm characteristics such as access to effective irrigation and being flood-prone have also a positive effect on likelihood of uptake of rice insurance.

Typhoon and drought are the most severe shocks experienced by rice farmers in Region VI in the last two years. The most common farming adaptation method is changing the planting calendar. Coping mechanisms in consumption on the other hand, include shifting to cheaper food items, reducing electricity consumption, letting children skip school and limiting recreational activities. In terms of healthcare, coping strategies are shifting to cheaper medicines or self-medication.
Half of the farmers who received indemnity payments used the money to finance farming operation for the next planting season. Others used it either for food or school expenses.

Risk aversion and experience of peril are compelling reasons why farmers assure their rice farms. Government transfers increases the uptake of crop insurance among farmers. PCIC does not only serve rice farmers who are conveniently located near their offices despite the lack of personnel, they also serve farmers in other provinces and municipalities. Distance from the PCIC office

therefore is not important, farmer's will get crop insurance as long as they are qualified and eligible. The bundling of credit and crop insurance improved the rice farmers' access to credit. Crop insurance have positive impact on the income of rice farmers. Farmers with smaller farm sizes benefitted more from crop insurance compared to bigger farms. The impact of rice insurance on farmers' incomes is negative between those with crop insurance with indemnity claims and those that have no insurance. The losses can be very high that indemnity payments are not enough to cover for these losses

Based on the results and conclusions, the following are the recommendations: One is to increase penetration rate among small farm holders. The municipal farm technicians can be tapped to help in the awareness campaign of crop insurance since they are in constant communication with the farmers. Enhance the impact of crop insurance among bigger farms by designing more crop insurance packages that benefits them. One of the best practices of PCIC crop insurance is the bundling with formal credit. This mechanism not only enhances access to formal credit among farmers but also encourages credit institutions to increase availability of loans to agriculture. It is recommended that this system be expanded to widen the available credit for farmers. It is also recommended that PCIC services be improved particularly the processing and releasing time of indemnity claims. One option is to put up satellite offices in strategic areas so farmers can easily access PCIC services.

Region 7 Corn Farmers

The study showed that for Central Visayas, agricultural insurance has a positive and significant impact on incomes of corn farmers, particularly those with corn farms greater than 0.5 hectare. It is estimated that a one-percent increase in the probability of getting insurance leads to an increase in income from corn production by 2.58 percent to 2.87 percent. The impact is most pronounced for farmers with 0.5 hectare to 1 hectare farmlands.

Given the positive results on the effectiveness of crop insurance as a risk management tool, the study would like to recommend the following;

To improve penetration rate and insurance coverage, LGU can conduct aggressive awareness campaigns on crop insurance programs that farmers can avail themselves from various sources, namely PCIC, RSBSA, DAR ARB AIP and LGU, as with the case of the Cebu provincial government who subsidized the insurance premium. It was evident that farmers with no insurance have inadequate knowledge of the program. Their reasons for non availment were on processing procedures that can be clarified by any LGU in-charge. This is also true for farmers with insurance but without claims. Adequate knowledge would convince them to take advantage of their crop insurance, go beyond the procedural requirements and avail of the benefits. Campaigns can be coursed through farmers' organization for wider penetration.

PCIC and LGU should improve the implementation of the program particularly in making available the explanation for non-receipt of claims for assured farmers in order for them to better appreciate the program and continue to patronize it and make crop insurance an effective risk

management tool. PCIC rules on factors that leads to disapproval of claims are clear and widely disseminated. However, it is important that farmers understand their inefficiencies.

It is suggested that PCIC release an official document on the status of farmers' application and a detailed explanation as to reason for approval or disapproval. The underwriters and solicitors who are tasked to answer to farmers' queries on indemnity claims can use this to support PCIC decisions on claims.

Among the factors that can affect farmers' income, it is the type of crop planted that can be easily addressed. Findings show that adopters of hybrid crop variety have relatively higher income than sample farmers who use traditional variety. It is suggested that PCIC and LGU advocate for the promotion of the recommended/standard package of technology not just the use of hybrid and OPV corn varieties but also the application of the right amount of fertilizer, pesticides and other farm inputs.

Region XI Banana Farmers

Given the results of the Survey and FGDs, several conclusions were made. Crop insurance was able to increase access to credit by farmers, Banana farmers were linked to credit institutions through cooperatives operating under the Banana plantation. Crop insurance is used as repayment assurance instrument "surrogate collateral" in loan availment. PCIC insurance helps to mobilize funds for Banana production. In general, PCIC insurance encourages lending institutions to extend credit to the agricultural sector.

PCIC insurance has low penetration rate due to lack of information to banana farmers. Some of the farmers interviewed even those with insurance are not aware of the agricultural insurance packages of PCIC (not even heard PCIC). This could be attributed to lack of PCIC presence in the municipality level. PCIC only have eleven (11) regular personnel and 25 job orders covering 7 provinces in Davao Region including South Cotabato and Sarangani. PCIC should create satellite offices at least at the municipality level to be more accessible to farmers. It is encouraging to improve information and education campaign to encourage more farmers to avail the insurance packages. Tarpaulin containing PCIC packages should be posted in strategic location in every MAO/FITS Centers.

Farmers seeking for insurance information including application process and indemnity claim application commonly approach the Municipal Agriculture Office (MAO). Surveyed farmers reported that MAO technicians are not responsive to the issues especially on the processing applications. The role of MAO and the guidelines for incentives for them or for the agriculture technicians should be cleared out on the implementation of the insurance scheme to support few manpower of PCIC.

When calamity strikes, farmers were able to receive indemnity claims. Most however, were not aware that they were able to received indemnity due to the "tripartite" agreement signed among Banana corporations, growers and the Land Bank of the Philippines. Most of the farmers are aware but did not understand the nature of this arrangement. In some cases, loaned availed by cooperatives are used for non-production purposes.

Farmers may not receive proceed residuals from the indemnity, since insurance coverage is way below the amount of loan. Loan balance are usually paid from the fraction of income per boxes produce by farms, it is automatically deducted by the growers' organization. Indemnity payments are used to pay credit/loans to the bank.

Indemnity payment in the case of Banana farmers has no impact to smoothing household consumption during calamities. It is only an assurance for loan repayment. It will only have impact on smoothing household consumption after farm rehabilitation and normalization of production. Recovery can be fast-tracked with the assistance of Plantation Company which manages the rehabilitation of the plantation farms with the trade-off of more credit/loan shouldered by the farmers due to renewal of loans. At the farmers' perspective, this makes them more expose to risk from recoil of markets for Cavendish Banana. Market shocks causing reduction of demand for Cavendish Banana may hamper the payment of their loans to the credit institutions.

Non-assured farmers do not availed insurance because they do not feel the need for it, some want it but they were not listed in RSBSA thus do not qualify them to avail free crop insurance premium. Lack of capacity to pay for the premium rate perceived to be high among farmers. Most of them are relying on subsidized insurance from the government.

Finally, PCIC insurance at its present coverage level is not sufficient to create impact on stabilizing income of banana farmers hit by shocks. This could be attributed to low insurance coverage which is only 55% of the production cost of Banana. Without the subsidy of the government, and status quo on coverage and premium rate, crop insurance in the country will not be sustained specially in the case of Banana.

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