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Impact Evaluation of the Agricultural Insurance Program of the PCIC on Agricultural Producers in Central Visayas

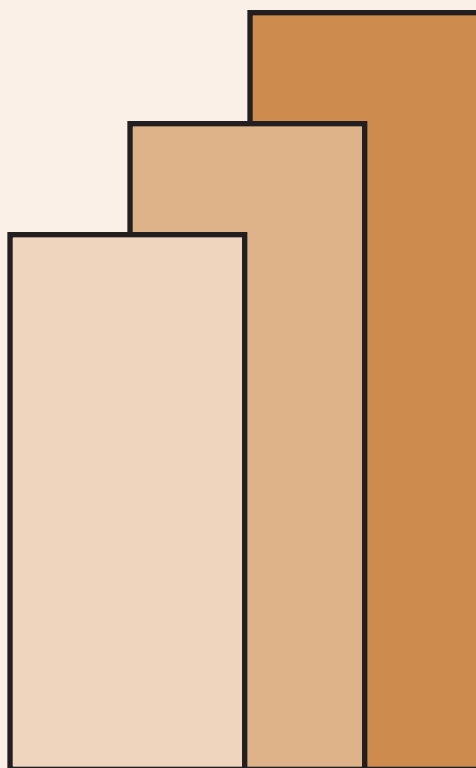
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Impact Evaluation of the Agricultural Insurance Program of the Philippine Crop Insurance Corporation on Agricultural Producers in Central Visayas (Region VII)

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ABSTRACT

This study evaluated the impact of the agricultural insurance program on agricultural producers in Central Visayas (Region VII) on the premise that agricultural crop insurance is a potential risk mitigating tool. Agricultural insurance, through the Philippine Crop Insurance Corporation, is seen as a mechanism which can be used by farmers to manage risks and improve their well-being. In support, the Cebu Provincial government through its Special Comprehensive Insurance to Agri-Fishery Stakeholders program has fully subsidized insurance premium to include accident insurance since 2009. The Cebu Provincial government allocated 8M in 2015 and 10 million in 2016 for agricultural insurance. The corn farmers need only to comply with the administrative requirements to enjoy the benefits of agricultural insurance.

Data were gathered through on site observation and a survey instrument designed by PIDS in collaboration with the regional partner Universities. For Central Visayas, 510 corn farmers listed in either the PCIC client list or the RSBSA were randomly chosen from the municipalities in the region. They were categorized into three types corresponding to the treatment and control groups of the study. Treatment group 1 were corn farmers who had crop insurance and received indemnity claims from PCIC from October 2013 to September 2015. Treatment group 2 were corn farmers who had crop insurance but did not receive payment for indemnity claims during the same period. The comparison group consisted of corn farmers who did not avail of crop insurance and had similar characteristics as those of treatment samples.

Findings showed that 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 relevant for farmers with 0.5 hectare to 1hectare farmlands.

Six variables were found to have significant impacts to availment of agricultural insurance by corn farmers. These were membership in farmers' organization; size of farmlands; educational attainment of the farmer; location of the farmer's household relative to the PCIC Office; status of land tenure; and accessed to community-level facilities. The distance of the farmer's household relative to PCIC Office was used as an instrumental variable for the availment of PCIC insurance.

Given the importance of the agricultural sector and its positive impact to corn farmers in Central Visayas, what is important to address how corn farmers can be motivated to avail themselves of agricultural insurance and enjoy its benefits.

PCIC and LGU can advocate for the promotion of the recommended/standard package of technology not just the use of hybrid and Open Pollinated Variety (OPV) corn varieties, but also the application of the right amount of fertilizer, pesticides and other farm inputs. Once convinced and motivated, the farmers can find ways to finance the standard package of technology needed. They have credit availment practices, which indicate that they know where fund sources are.

Keywords: Agricultural Crop Insurance, Central Visayas, Corn, Philippine Crop Insurance Corporation, Impact Evaluation

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1. INTRODUCTION

In Central Visayas, the agricultural sector was the highest generator of employment at around 30 percent in 2013 to 2015 but the least contributor to the Gross Regional Domestic Product (GRDP) estimated at 7.81 percent. This paradox between employment and income (GRDP) may be attributed to the challenges the sector faced. In the 2014 report of National Economic and Development Authority (NEDA) of Region VII, agricultural sector in the region faced these challenges: susceptibility to natural calamities such as typhoons and earthquake; inadequate infrastructure to support the connectivity of those in the sector; inadequate sustainable farming and fishing methods aggravated by weak government support; limited investment on high-value agricultural commodities in which the region has a comparative advantage; and inability to meet the demand of the manufacturing industry related to agro-fishery production (NEDA, 2014).

The poor performance of the agricultural sector in Central Visayas in 2015 was partly due to the aftermath of super typhoon Yolanda that struck Eastern Visayas and Northern Cebu in the latter quarter of 2013 and the unfavorable impact of the El Niño on agriculture. The crops sub-sector that accounted for 36 percent of agricultural production was the main culprit and pulled down the sector's performance in 2015. The decrease in crop production was attributed to insufficient soil moisture during the vegetative and reproductive stages of corn and prolonged dry spell caused by El Niño. Poverty incidence in the country was recorded 26.1 percent high in 2015.

In the 2015 Regional Economic Situationer of NEDA Region VII, the El Niño was expected to create a negative impact on the region's agricultural sector in 2016 since its intense effect in the region has been forecasted to last until middle of 2016. Most provinces declared a state of calamity following reports of dry spells and droughts in the wide areas of Central Visayas.

Corn is the second most important crop in the Philippines, next to rice. White corn is the staple of 20 percent of the Philippine population and is extensively planted in Central Visayas, among others. In 2013, 53 percent of corn production came from Cebu province, 37 percent from Negros Oriental, 7 percent from Bohol and 3 percent from Siquijor. Corn is mostly grown in the upland areas of Central Visayas.

In 2015, approximately 71,000 hectares of farmlands in Cebu were planted with corn where 97 percent were of the white corn variety and 3 percent yellow corn. The same pattern is true for Bohol, Siquijor and Negros Oriental. White corn is generally used for consumption (milling plants) and yellow corn is used for animal feeds. The preference of white is due to its higher selling price compared to yellow corn.

In an interview last May 17, 2014 by The Freeman, Assistant Regional Director for Operations of the Department of Agriculture (DA) Region VII, Marina Hermoso, claimed that Cebu has the lowest corn yield in the country with an average corn yield of below one ton or approximately 0.81 metric ton per hectare. Aside from the weather and incidence of pests and diseases on corn farmlands, a major setback is the type of soil of the region – denuded soil and marginal in quality. Corn farmlands are solely dependent on rain as water source.

However, the insistence to plant corn stems from the fact that Visayans are corn-eating people. The regional experience of the Department of Agriculture (DA) showed that there was a high demand for white corn for food (milling plants) and yellow corn for animal feeds (feed mills), yet the sector suffers from supply gap. The farmers could not meet the corn demand in the market from 2013 to 2015.

As part of the Region's post Yolanda rehabilitation effort, the DA pushed for enhanced corn production in 2014. Corn technology packages were available to farmers in the form of farm assistance from seeds, fertilizers and training in farm technology management. There were tractors sent from Mindanao with fuel subsidy from DA.

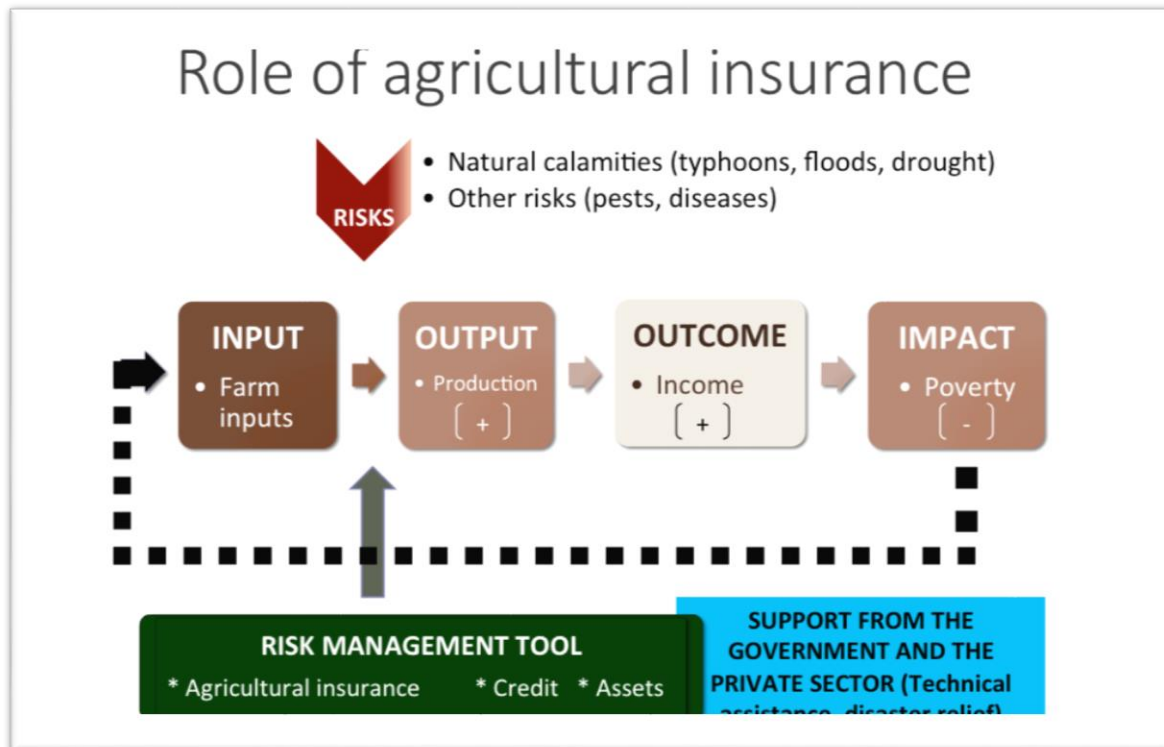
Given the uncertainties faced by the corn farmers and the income opportunities in the region, there is a need to develop ways of coping and managing risks to improve the lives of the corn farmers. A farm safety net is important to help farmers mitigate risk. Once done, the interests and investments of local farmers and industry players in the agricultural sector of the Philippine economy can be safeguarded.

One of the efforts of the Philippine government that provides a safety net that farmers can use against the many perils that the agricultural sector faces is the agricultural insurance program, initiated by the Philippine Crop Insurance Corporation (PCIC).

Agricultural insurance is seen as a mechanism that farmers can use to manage the risks inherent in agriculture and at the same time, a collateral to encourage lending institutions to extend credit to farmers. Crop insurance could be an effective safety net that can significantly reduce poverty among agricultural households.

Figure 1 depicts the intended role of agricultural insurance. Shocks such as natural calamities, pest and diseases create negative effects on production output and consequently reduce farm income. To arrest the situation, the proposal is to introduce risk-mitigating tools such as agricultural insurance to access to credit and additional farm assets. These tools, can create positive effects on production output, on income and decrease poverty rate.

Figure 1 Role Of Agricultural Insurance
Source: PIDS



There are government-sponsored programs that provide agricultural crop insurance at zero cost to farmers with PCIC as the implementing arm. There is the Agrarian Reform Beneficiaries Agricultural Insurance Program (DAR ARB AIP) of the Department of Agrarian Reform that started in 2013. Beneficiaries get 100 percent free insurance for those planting rice, corn, high valued cash crops (HVCC), livestock, and term insurance.

In 2014, farmers listed in the Registry System for Basic Sectors in Agriculture (RSBSA) are eligible for free agricultural insurance in rice, corn, livestock, non-crop agricultural assets, fisheries and HVCC, subject to cover limits.

At the same time, local government units have their own free agricultural insurance programs for their constituent farmers. Since 2009, the Cebu Provincial government, through its Special Comprehensive Insurance to Agri-Fishery Stakeholders program has fully subsidized insurance premium to include accident insurance. The Cebu Provincial government has allocated 8M in 2015 and 10 million in 2016 for agricultural insurance.

The maximum insurance coverage is for P 10,000 per hectare. To qualify, their corn farmlands must be at least $\frac{1}{4}$ up to one (1) hectare in size; farmers are bonafide members of farmers' organization and plant the OPV or hybrid corn variety, in addition to PCIC standard requirements for eligibility. Organizational membership is a critical factor in determining insurance availment

for it is a gauge of commitment and perseverance to participate on community-based activities. It is also an avenue to be updated and learn new things, particularly on farming technology.

PCIC Cebu admitted, though, that they have relaxed the rule on the type of corn variety planted in consideration of the high production cost that Open Pollinated Variety (OPV) and hybrid varieties entail. They have allowed farmlands with traditional corn varieties eligible for crop insurance. The Cebu Provincial government has allocated 8M in 2015 and 10 million in 2016 for agricultural insurance.

The corn farmers only need to comply and submit the administrative requirements to enjoy the benefits of agricultural insurance.

1.1 PCIC and the Corn Crop Insurance Program¹

PCIC is a government-owned and controlled corporation created by virtue of PD 1467 on June 11, 1978 as the implementing agency of the agricultural insurance program. Its corporate mandate is to provide insurance protection to the agricultural producers against loss of crops and/or non-crop agricultural assets due to natural calamities, plant diseases and pest infestation. PCIC had seven major product lines: rice, corn, high-value agricultural commodities, livestock, fishery, non-crop agricultural asset, and term insurance packages, which include life, accident and loan repayment plan.

Established in 1981, PCIC regional office for Central Visayas is in Cebu City. In 2016, there is an influx of applications for membership and indemnity claims. Last October 31, 2016, PCIC has put on hold the processing of crop insurance application because the corresponding fund sources have been maximized. The promise of the release of indemnity claim of 20 days from date of receipt could not be met. Instead, it now takes 58 days.

The corn crop insurance program covers all corn varieties accredited for production by the National Seed Industry Council. The following are eligible to the program: any borrowing farmer or group of farmers who obtains production loans from any lending institution participating in the government-supervised corn production program and government-sponsored credit programs and any self-financed farmer/farmer organization/people's organization or group of farmers who agrees to place himself/themselves under the technical supervision of PCIC-accredited agricultural production technician.

The object of insurance will be the standing corn crop planted on the farmland specified in the insurance application and which the assured farmer has an insurable interest on. The amount of insurance covered will be the cost of production inputs per farm plan and budget, plus an additional amount of cover (at the option of the farmer) of up to a maximum of 20 percent to cover portion of the value of the expected yield. The amount must not exceed the prescribed cover ceilings: hybrid varieties P 40,000 per hectare and open-pollinated varieties P 28,000 per hectare.

¹General Information on the Corn Crop Insurance brochure, Philippine Crop Insurance Corporation, Department of Agriculture

There are two options of insurance cover to choose from. First option is the multi-risk cover, a comprehensive coverage against crop loss caused by natural disasters (i.e., typhoon, flood, drought, earthquake, and volcanic eruption) as well as pest infestation and plant diseases. Second option is the natural disaster cover, a limited coverage against crop loss caused by natural disasters.

The period of cover shall be from planting up to harvesting; the starting date will be from the date of issuance of the Certificate of Insurance Cover (CIC) or the date of emergence of the first leaf of corn plant, whichever is later.

The covered risks are as follows: natural disasters including typhoons, floods, drought, earthquakes, and volcanic eruptions; plant diseases, e.g., stalk rot, banded leaf and sheath blight; pest infestation by any of the following major pests: rats, locusts, armyworms/cutworms and corn borers.

The following risks are excluded from the coverage: losses arising from fire; theft and robbery, pillage, sequestration, strikes or other commotion, war, invasion, acts of foreign enemies, hostilities (with or without declaration of war), civil war, rebellion, revolution, insurrection, military or usurped power, radio-active contamination (whether controlled or uncontrolled); any measure resorted to by the government in the larger interest of the public; avoidable risks emanating from or due to neglect of the assured/non-compliance with the accepted farm management practices by the assured or person authorized by him to work and care for the insured crop; strong wind and heavy rain not induced by typhoon; and any cause or risk not specified in the covered risks.

A farmland is eligible for the program if it has any of the following characteristics. The farm must not be part of a riverbed, lakebed, marshland, shoreline or riverbank; have an effective irrigation and drainage systems; be accessible to regular means of transportation; suitable for production purposes in accordance with the recommended package of technology, e.g., not more than 15 degrees slope, except for those farmland with contour structure using the Sloping Agricultural Land Technology and its location must have generally stable peace and order condition and not hazardous to health.

In the application of insurance cover, the following documents are required for individual farmer applicants: application for production loan which serves as application for crop insurance; farm plan and budget - showing schedule of farm activities, e.g., date of planting and harvest; location sketch plan/control map- showing landmarks and names of adjoining lot owners.

For farmers borrowing as a group, the following documents are required: list of borrowers-containing the names and addresses of the borrowers, the farm area, location, planting schedules, variety, amount of loan and signatures of borrowers; standard farm plan and budget; control map.

For Self-financed Farmers, the following documents are required: application for crop insurance; farm plan and budget; location sketch plan /control map.

Applicant farmers can file their application for coverage in any of the following: Lending institution where farmers obtained their production loans; PCIC Regional Offices / PCIC

authorized underwriting agents. Filing of coverage can be any day before the date of planting up to fifteen (15) calendar days after planting.

In the event of loss arising from risks, a written notice of loss must be sent to the PCIC Regional Office within ten (10) calendar days from occurrence of loss and before the scheduled date of harvest. In cases where the cause of loss is due to pest infestation, disease or drought and where the effect of damage is gradual or the full extent thereof is not immediately determinable, the notice of loss shall be filed upon discovery of loss. In no case shall this be later than twenty (20) calendar days before the scheduled date of harvest. The notice of loss shall at least contain the following information: name of the assured farmer, CIC number, lot number, time of occurrence of loss, stage of cultivation, nature, cause and extent of loss.

The assured farmer or any immediate member of his family shall file the Claim for Indemnity (PCIC Indemnity Form) with the concerned PCIC Regional Office within forty-five (45) calendar days from occurrence of loss. A team of adjusters composed of two (2) members, one from PCIC and the other from either the DA/DILG or DAR or NIA, shall verify the claim. The amount of indemnity shall be based on the following: stage of cultivation at time of loss; actual CPI (per FPB) already applied at time of loss; percentage of yield loss.

On the part of PCIC, a claim should be settled as soon as possible not later than sixty (60) calendar days from submission. Farmers who have not filed claims for preceding three (3) insured crop seasons could enjoy a no-claim benefit equal to 10 percent of his net premium share paid.

There is a built-in death benefit component of the insurance package for corn crop equivalent to Php 10,000.00 per assured farmer who may suffer death within the term of coverage; provided said farmer is not more than 75 years of age at the inception of insurance.

1.2 Objectives of the Project

This study was an attempt to evaluate the impact of the agricultural insurance program on agricultural producers in Central Visayas (Region VII) on the premise that agricultural crop insurance is a potential risk mitigating tool.

Specifically, it has the following objectives.

1. To examine and evaluate the design of the agricultural insurance scheme vis-à-vis the objectives of the program
2. To assess how the program is being implemented
3. To look into the financial sustainability of the program
4. To evaluate the impacts on farmers, particularly in managing risks and their well-being
5. To make an inventory and examine the schemes being implemented in other countries to identify best practices
6. To propose improvements to enhance the agricultural insurance scheme

The Philippine Institute of Development Studies (PIDS) spearheaded the evaluation and assessment of PCIC and its programs. The findings can be used in policy recommendations to further assist PCIC in the successful implementation of its vision and mission.

2. METHODOLOGY

2.1 Conceptual Framework of the Study

This study used the Theory of Change to explain the process of change brought about by the causal linkages of desired outcomes. Six (6) outcome pathways were identified and the logical relationships among them were mapped out with arrows that depict causality (Refer to Figure 2). The study assumed that outcomes along the pathways are preconditions to outcomes after/above them. This is done to identify and evaluate the impact of agricultural insurance program on agricultural producers.

The pathway starts with the inputs necessary to make agricultural insurance available to corn farmers. This is the first outcome and has two indicators to determine implementation. First is capitalization of PCIC to cover personnel and operating expenses, aggregate budget for government premium subsidy, PCIC personnel. There is regular and sufficient allocation of budget for program implementation. Second is an adequate number and easily accessible PCIC offices to agricultural producers and PCIC regional and provincial extension offices. Emphasis is made on the adequate number of competent PCIC personnel (i.e., underwriters, adjusters, actuarial staff).

The second outcome includes the activities necessary to ensure relevance of the program and proper implementation of the program. The list includes the following: the appropriate design of agricultural insurance products to cater to the needs of the farmers; the identification of eligible agricultural producers (the farmers) which called for a comprehensive and accurate list of eligible agricultural producers; the partnership of PCIC lending institutions, LGUs and other stakeholders and capacity-building among PCIC partners. All these necessitate good rapport between PCIC and partners.

The third outcome is the output –the availability of the agricultural insurance to eligible agricultural producers. Farmers enrolled in the program are called ‘assured’ or ‘with insurance’. The farmers are assured of the partial income if affected by a shock because his farm is insured. The corn commodity, as in the case of Central Visayas region, is the one being insured and not the farmer. The focus of the study is on the insured corn farm of the farmer, and not really on the insured farmer (via term insurance package).

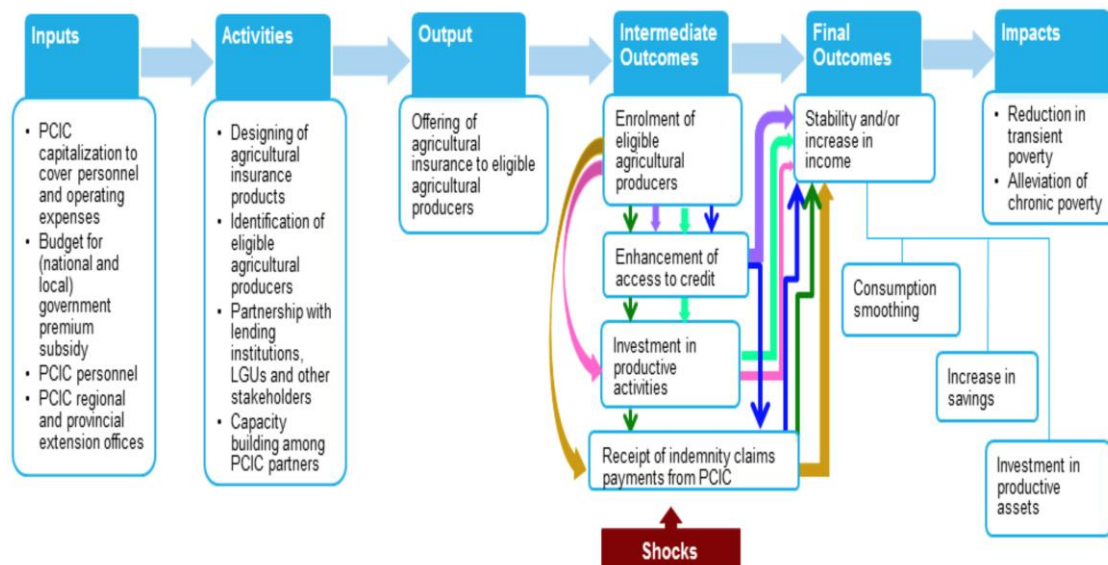
Once the farmers have availed themselves of agricultural insurance, they can have other benefits. Agricultural insurance enrolled agricultural producers to venture into more productive activities. The basic premise is that agricultural producers are profit-maximizing agents. With their Certificate of Insurance Cover, they now have access to credit; the capacity to invest in productive activities where loan proceeds are hopefully used in productive agricultural activities. In case of shocks, they can manage these risks as they are covered by PCIC. The farmers can claim indemnity from PCIC. PCIC has enough funds to pay for indemnity claims. Indemnity payments can help

agricultural producers recover from shocks since money received can be used for productive activities. These intermediate outcomes are important measures of progress, however, they do not generate impacts.

The final outcome of the agricultural insurance program is to enable farmers who have managed risks to have stable and increasing income. This stability may imply that farmers have increased saving, increase number of productive assets owned and smoothened consumption patterns. This is based on the assumption that lending institutions (formal) accept agricultural insurance as collateral. It is recognized that credit is a significant source of funds for production operations.

The overall impacts of the project are the reduction in transient poverty and alleviation of chronic poverty. With a more stable income, the farmers can move out of poverty.

Figure 2. Framework For Impact Assessment Of PCIC Agricultural Insurance Programs
Source: PIDS



2.2 Data Source and Methods of Data Collection

Given the objectives of the study, the project was divided into two phases. Phase one was the evaluation of the design and implementation of the agricultural insurance program of PCIC. Phase two was the evaluation of the impact of the agricultural insurance program on agricultural households.

This report covers phase two of the study designed to evaluate the impact of agricultural insurance on the agricultural producers in Central Visayas specifically on farmers with corn as the crop of interest.

Data for phase 2 of the study were gathered through on site observation and a survey instrument designed by PIDS in collaboration with the regional partner Universities (for Region VII, it was with the School of Business & Economics of the University of San Carlos). The survey instrument was divided into 9 modules designed to capture the information on household; housing; household and productive assets; access to physical infrastructure; economic support and agricultural services; farm characteristics; production and farm income; credit availing practices; income and other receipts; shocks and coping; awareness of agriculture insurance and willingness to pay for agricultural insurance. Questions were written in both close-ended format and multiple-choice type of questions. The enumerators used both a tablet-based and paper-based questionnaires while on field.

To help the enumerators, manuals were also prepared containing guidelines on how to ^[11]_{SEP} administer the questionnaires. Training on key concepts and ways to administer the questionnaires as well as the use of Tablet based questionnaires were provided to the trainers and supervisors.

The survey questionnaire was pre-tested in Alegria and Bantayan, Cebu to test the suitability and efficiency of the formulated survey questionnaire to exhaust the collection of the required information.

The research population for Central Visayas were farmers with corn as the crop of interest that meet the following criteria: must be an actual tiller, experienced one of the risks covered by the PCIC and included in the client list of PCIC or the Registry System for Basic Sectors in Agriculture (RSBSA) survey.

For Central Visayas, 510 corn farmers randomly chosen from the municipalities in the region. They were categorized into three types corresponding to the treatment and control groups of the study. Treatment group 1 were corn farmers who had crop insurance and received indemnity claims from PCIC from October 2013 to September 2015. Treatment group 2 were corn farmers who had crop insurance but did not receive payment for indemnity claims during the same period. The comparison group consisted of corn farmers who did not avail of crop insurance and had similar characteristics as those of treatment samples.

To qualify as respondents, a matching process was required. They must be matched according to the following matching criteria: crop of interest, agrarian reform beneficiary (ARB) status, farm location, farm size, tenurial farm status, access to irrigation, age and education level. Farm location requires that their farmlands are located in the same barangay to ensure that they have experienced the same shock. Farm size refers to the three types: 0.5 hectares and below, more than 0.5 hectares to at least one hectare and those with more than 1 hectare. The study was able to match respondents (a control group matched with either treatment group 1 or 2) in at most five criteria.

ARB households are those with household members that have been beneficiaries of PD 27, CARP and RA 9700. Non-ARB Households are non-beneficiaries of PD 27, CARP and RA 9700. Farm location requires that their farmlands are located in the same barangay to ensure that they have experienced the same shock. Farm size refers to the three size types as defined by the study where group 1 consisted of those farmers with 0.5 hectares and below. Corn farms measuring 0.5 were included in this category; those with more than .5 hectares to at least one hectare and those with more than 1 hectare.

Tenurial status refers to the right under which a holding/parcel is held or operated. The status can be any of the following: fully owned, tenanted, leased or rented, rent free, held under Certificate of Land Transfer (CLT) or Certificate of Land Ownership (CLOA) or any other ownership possession of the land.

Enough number of treatment and comparison samples were drawn to give allowance for non-response and refusal, among others. The enumerators were provided with a list 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 match from the comparison group. In case the enumerators find 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), they still have 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.

The actual sample size of the study was 510 farmers with corn as the crop of interest as shown in Table 1.

Table 1. Distribution of Respondents by Farm Size and Treatment Group, Region VII - Central Visayas

Treatment	Farm Size			Total
	0.5 ha. & below	>0.5 to 1 ha	>1 ha	
With insurance, with claims	42	40	48	130
With insurance, without claims	81	40	4	125
Without insurance	123	80	52	255
Total	246	160	104	510

2.3 Impact Evaluation Design

Given the objectives of the study, the two econometric models were used to assess the impact of agricultural insurance on net income:

Model 1: Income

$$\text{NET INCOME} = \beta_0 + \beta_1 \text{INS} + \beta_2 \text{IND} + \beta_3 \text{SHK} + \beta_4 \text{FPROF} + \beta_5 \text{HH} + \beta_6 \text{FCHAR} + \beta_7 \text{HASSET} + \beta_8 \text{AASSET} + \varepsilon$$

Where:

NET INCOME	- Net Income per hectare
INS	- Insurance
IND	- Indemnity
SHK	- Shock
PROF	- is a vector of Farmers' Profile
HH	- Is a vector of House hold Composition
CHAR	- Is a vector of Farm Characteristics
HASSET	- Household Assets Index
AASET	- Agricultural Assets Index
PROF	- Farmers' profile include sex, age, square of age, educational attainment, marital status, farming experience, membership in organization and / or access to social protection programs
HH	- Farmer's household composition include household size, square of house hold size, dependency ratio
FCHAR	- Crop variety, farm size, tenurial status, topography, river/flood plain, broad plain, hilly/rolling

Net income was derived from three sources: corn farm produce, receipts from other income sources and employment, if any. Insurance premium is seen as an addition to total production cost and indemnity claim an additional production input. It was computed for two periods, 2014 and 2015.

$$\text{Net Income}_{hijt} = \text{TR}_{hijt} - (\text{TPC}_{ijt} + \text{INS}_{hijt}) + \text{IND}_{hijt}$$

Where:

Net Income	- Net Income per hectare from corn production (h) in household (i) at Central Visayas community (j) at time (t)
TR	- Total Revenue from corn production (h) in household (i) at Central Visayas community (j) at time (t)
TPC	- Total Production Cost from corn production (h) in household (i) at Central Visayas community (j) at time (t)
INS	- Insurance Premium

IND	- Indemnity Claim
h	- Type of Crop Planted
i	- Household
j	- Community
t	- Time

Multiple regression was used to estimate Model 1 and results were analysed using test of hypothesis. Manual PSM were performed to determine if there are significant differences among net incomes of farmers from different treatment groups and the control group as well as differences in farm sizes from less than .5 hectare, .5 to 1 hectare and more than 1 hectare.

Manual propensity score matching was also used to match farmers across treatment groups based on farmers' profile. As mentioned, to qualify as respondents, they must meet at least three of the matching criteria: agrarian reform beneficiary (ARB) status, farm location (to ensure that they experience the same shock), farm size, tenurial farm status, access to irrigation, age and education level. This was done in order to weed out differences among farmers and agricultural insurance. Any changes can be attributed to the possession of agricultural insurance.

For Model 2, logit model was used to estimate the probability of the farmer being assured. Odds ratio and signs of coefficients were interpreted.

Model 2: Probability of Being Assured

$$P(\text{assured}) = \Lambda(Y_1 + Y_2\text{PSHK} + Y_3\text{CHAR} + Y_4\text{EXP} + Y_5\text{HH} + Y_6\text{HASSET} + Y_7\text{AASSET} + Y_8\text{FS} + Y_8\text{LOC})$$

Where:

P (assured)	- Probability of corn farmers to avail of agricultural insurance for farmlands
PSHK	- Past Shock
CHAR	- is a vector of Farm Characteristics
EXP	- Farming Experience
HH	- is a vector Household Characteristics
ASSET	- Assets
FS	- Farm Size
Loc	- Location; used as an instrumental variable
FCHAR	- Crop variety, farm size, tenurial status, topography, river/flood plain, broad plain, hilly/rolling
HH	- Farmer's household composition include household size, square of house hold size, dependency ratio
ASSET	- Assets; household (index), agricultural (index)

A correlation analysis between the uses of indemnity claims and characteristics of farmers with claims as well as their farms and households was also done. An economic model for willingness to pay for insurance premium amount was created on characteristics of farmers with and without agricultural insurance including farm size and households.

3. Results and Discussion

3.1. Central Visayas

The randomly drawn treatment samples and the matched control samples were located in the three provinces of Central Visayas namely: Cebu, Bohol and Siquijor. It is located in the Visayas group of islands with latitude of 10 degrees north and longitude of 123.5 degrees east. Among the three provinces, Siquijor is the smallest with 33,749 hectares. With respect to population, Central Visayas has a total population of 6,800,180 that is around 7 percent of the total population in the Philippines based on the 2010 Census of Population. Cebu province gets the largest share in terms of population with 2,619,362 people where 59 percent of the population resides in the three highly-urbanized cities of Cebu namely; Cebu, Mandaue, and Lapu-lapu. On the other hand, Siquijor has the least population with 91,066 people. Household population in the region is estimated at 5.2 million with Cebu province's share of close to 50 percent. With respect to the number of households, Cebu has the most number of households at 565,583 while Siquijor has the least number of 21,211 households.

In terms of the number of political units, Cebu province has the most number of cities with 6 component cities and 3 highly urbanized cities, 44 municipalities, and 1,066 barangays. Similarly, Bohol has 1 component city, 47 municipalities, and has the most number of barangays with 1,109 barangays spread throughout the island. Siquijor is the only one that has no city and only has 6 municipalities with 134 barangays. Cebu and Bohol are considered as 1st class province in terms of income while Siquijor is classified as a 5th class province. In terms of provincial incomes from both internal and external sources for the fiscal year of 2014, Cebu has the highest income, which is estimated at 2.5 billion pesos. Bohol has a local income for the same fiscal year at 1.4 billion pesos while Siquijor has the lowest income at 354 million pesos. Overall, Central Visayas has an aggregate income of around 5.9 billion pesos that is 5.9 percent of the total income sources of the Philippines

All these provinces produce agricultural commodities including corn. Corn production in Central Visayas is mostly for domestic consumption (white corn type). The major effects of crop loss due to calamities would directly affect the lives of the households. There were 5 municipalities covered in Bohol, 2 in Siquijor and 17 municipalities in Cebu. Table 2 presents the distribution of respondents by province and municipality.

Table 2. Distribution of Respondents by Province and Municipalities, Region VII - Central Visayas

Province / Municipality	Respondents
Bohol (3 %)	
Pilar	4
Alicia	2
Catigbian	2
Dauis	2
Trinidad	2
Sub-total	12

Cebu (96 %)	
Bantayan	164
Asturias	70
Tudela	32
Barili	28
Dalaguete	28
Alegria	24
Ginatilan	24
Badian	22
Poros	20
San Remigio	20
Dumanjug	12
San Francisco	10
Alcoy	8
Carmen	8
Daanbantayan	8
Sogod	8
Argao	2
Boljoon	2
Sub-total	490
Siquijor (1 %)	
Enrique Villanueva	4
Siquijor	4
Sub-total	8
Total	510

3.2 Profile of Farmer by Treatment Group, Central Visayas

A brief profile of the farmer respondents is presented in Table 3. The average age of farmer is 56 years old with an average of 25 years of farming experience. The average family size for the year 2014 and 2015 is consistent at 4.7 members. The dependency ratio for 2014 is 24 years old and 25 years old for 2015.

The farmers were male dominated (83 percent) and 72.83 percent have completed primary education. Three out of four farmers were married. All of the respondents declared farming as their primary occupation which includes fishing and livestock raising and that they are employers in own family related farm/business.

The membership of farmers to farmer associations or cooperatives showed mixed results. For farmers with claims, 67 percent were members of a farmer association or cooperative. On the other hand, 85 percent of farmers without claims were not members of any farmers' association. This indicates that those with claims have sought organizations as support mechanism to improve technical knowledge and mitigate risks. Those without claims do not value membership in farmers' association since they do not find a need to collaborate. To reiterate, organizational membership is a critical factor in determining insurance availment and highly encouraged. Active participation in farmers' organization can be a gauge of commitment and perseverance to participate on community based activities. It is also an avenue to be updated and learn new things, particularly on farming technology. Important to note is that during meeting, it is generally the wives that attend.

Table 3. Profile of Farmer Respondent by Treatment Group, Region VII - Central Visayas

Profile	With Insurance			Without Insurance	Total / Pooled
	With Claims	No Claims	Total		
Average Age of Farmers	56	56	56	57	56
Arverage age of Household	56	56	56	57	56
Years of Farming Experience	27	26	27	24	25
Average Family Size (2014)	4.7	4.8	4.7	4.7	4.7
Aerage Family Size (2015)	4.9	4.7	4.8	4.6	4.7
Dependency Ratio (2014)	25	24	25	23	24
Dependency Ratio (2015)	26	24	25	25	25
Percent Distribution, Gender of Farmers					
Male	83.08	81.60	82.35	84.31	83.33
Female	16.92	18.40	17.65	15.69	16.67
Percent Distribution, Civil Status of Farmer					
Single	3.08	4.69	2.75	1.96	2.35
Married	73.85	69.53	72.55	70.20	71.37
Widowed	20.00	22.66	21.57	25.88	23.73
Divorced/Separated	-	0.78	0.39	0.39	0.39
Common Law / Live-in	3.08	2.34	2.75	1.57	2.16
Percent Distribution, Highest Educational Attainment (Lumped Category) of Farmers					
No grade completed	0.00	0.00	73.73	0.39	0.20
Primary	79.23	68.00	7.45	72.16	72.94
Secondary	5.38	9.60	18.82	9.80	8.63
Post Secondary/Tertiary	15.38	22.40	100.00	17.65	18.24
Percent Distribution of Membership of Farmer in Farmer's Associations/Cooperatives 2014 and 2015					
Yes	70.77	63.2	67.06	14.90	40.98
No	29.23	36.8	32.94	85.10	59.02

3.3Housing, Household and Productive Assets

Data on the housing conditions of farmers can be used as proxy variables to measure the economic conditions of household. Findings showed that 97percent of the farmers live in single detached houses and 92.75 percent owned the house they lived in or had an ownership like possession of the facility.

Their houses have access to electricity (94.71 percent). Water supply is accessible to all and 57.65 percent have water piped into or near their dwelling places. The households have access to flush toilet facilities within or near their dwelling places (52.75 percent have own flush toilets and 23.33

percent shares the use of flush toilets with other households). However, 2.16 percent do not have any toilet facility that, although a small percentage, is an indication of poor living condition.

The predominant material used for the outer walls of their houses and roofs were permanent materials (walls was 48.63 percent with galvanized iron/aluminum, tile, concrete, brick, stone, wood or asbestos as materials and roof was 54.70 percent with galvanized iron, aluminum, tile, concrete, brick or stone as materials,). Their houses were structurally acceptable and can withstand adverse climatic conditions.

Hence, the farmers have access to basic utilities such as housing, water and electricity and live in structurally safe housing units. They may not live comfortably, but they have equipped themselves with the necessities of life.

Table 4. Housing and Household Assets, By Treatment Group, Region VII - Central Visayas

Household & Productive Assets	With Insurance			Without Insurance	Total / Pooled
	With Claims	No Claims	Total		
Percentage Distribution ofType of Building of Houses of Farmers					
Single House	95.38	98.40	96.86	96.47	96.67
Duplex	4.62	1.60	3.14	3.53	3.33
Total	100.00	100.00	100.00	100.00	100.00
Percentage Distribution of Construction Material of Outer Wall (House) of Farmers					
Light materials (bamboo, sawali, cogon, nipa anahaw)	35.38	38.40	32.94	40.39	38.63
Mixed but predominantly permanent materials	30.00	26.40	28.24	29.80	29.02
Permanent materials (galvanized iron/aluminum, tile, concrete, brick, stone, wood and asbestos)	18.46	24.80	21.57	17.65	19.61
Mixed but predominantly light materials	16.15	10.40	13.33	12.16	12.75
Total	100.00	100.00	100.00	100.00	100.00
Percent Distribution of Construction Material of Roof (House) of Farmers					
Mixed but predominantly permanent materials	34.62	36.80	35.69	36.08	35.88
Light materials (cogon/nipa and anahaw)	34.62	31.20	32.94	38.43	35.69
Permanent materials (galvanized iron, aluminum, tile, concrete, brick, stone, etc)	16.92	22.40	19.61	18.04	18.82
Mixed but predominantly light materials	13.85	9.60	11.76	7.45	9.61
Total	100.00	100.00	100.00	100.00	100.00
Percent Distribution of Tenurial Status of House and Lot of Farmers					
Owner, owner like possession of house and	33.08	39.20	36.08	36.08	36.08
Rent house including lot	0.77	0.80	0.78	0.39	0.59
Own house, rent lot	2.31	3.20	2.75	3.14	2.94
Own house, rent free lot with consent of owner	61.54	51.20	56.47	56.86	56.67
Own house, rent free lot w/out consent of owner	-	1.60	0.78	0.39	0.59
Rent free house and lot with consent of owner	2.31	4.00	3.14	3.14	3.14
Total	100.00	100.00	100.00	100.00	100.00

Table 5. Housing and Access to Basic Utilities, By Treatment Group, Region VII - Central Visayas

Household & Productive Assets	With Insurance			Without Insurance	Total / Pooled
	With Claims	No Claims	Total		
Availability of Electricity in Houses of Farmers					
Yes	95.38	90.40	92.94	96.47	94.71
No	4.62	9.60	7.06	3.53	5.29
Total	100.00	100.00	100.00	100.00	100.00
Main Source of Water Supply For Drinking of Farmers (in Percent)					
Community water system piped into dwelling	26.92	37.60	32.16	36.08	34.12
Community water system piped into yard/ plot	25.38	22.40	23.92	23.14	23.53
Public tap/ standpipe	10.00	13.60	11.76	9.41	10.59
Protected Well	8.46	8.00	8.24	9.02	8.63
Unprotected Well	5.38	6.40	5.88	5.88	5.88
Developed spring	7.69	4.80	6.27	5.49	5.88
Undeveloped spring	3.08	0.80	1.96	0.39	0.98
River/stream/pong/lake/dam	-	-	-	0.78	0.20
Tanker truck/peddler/neighbor	-	0.80	0.39	9.02	0.59
Purified water refilling station/bottled	12.31	5.60	9.02	0.39	9.02
Surface Water	-	-	-	0.39	0.20
Others	0.77	-	0.39	-	0.39
Total	100.00	100.00	100.00	100.00	100.00
Type of Toilet Facility in Household of Farmers					
Flush toilet, own toilet	47.69	57.60	52.55	52.94	52.75
Flush toilet, shared with other household	21.54	20.80	21.18	25.49	23.33
pit toilet/latrine, closed pit	15.38	8.80	12.16	12.94	12.55
pit toilet/latrine,open pit	0.77	1.60	1.18	1.18	1.18
pail system	12.31	6.40	9.41	6.67	8.04
None	2.31	4.80	3.53	0.78	2.16
Total	100.00	100.00	100.00	100.00	100.00

3.4 Access to Physical Infrastructure, Economic Support and Agricultural Services

The Department of Agriculture and private entities have made available physical infrastructure, economic support and agricultural services on a barangay level to assist farmers particularly in pre-planting, planting, harvest and post harvest periods. Agricultural facilities are economic supports and may refer to any of the following: traditional sun drying pavement; mechanical dryer; thresher; harvester-thresher; corn shellers; in-house storage; communal warehouse; government

warehouse; private commercial warehouses; agricultural produce market or what we commonly know as bagsakan. They are located in the corn cluster areas of the province and under the care of the LGU or designated farmer associations. Since farmlands in Central Visayas are located in the uplands, usage of these facilities is not possible on a regular basis. For Cebu, these facilities are located only in the following municipalities and city: San Remegio, Bantayan, Daanbantayan, Bogo, Asturias and Toledo City.

Agricultural extension services are usually provided by private entities such as availability of fertilizer, pesticides, seeds and feeds dealers. Extension services include financial institutions (formal or informal) that provide ready access to farmers to credit, whenever needed.

The presence of these support-services and facilities can affect the agricultural household's ability to recover from shocks. However, data on Table 6 show that the level of awareness of these facilities is poor and at times negative. The farmers were not aware that these facilities were available near their farmlands.

Table 6 Awareness of Facilities in the Barangay, By Treatment Group, Region VII – Central Visayas

level of Awareness	With Insurance			Without Insurance
	With Claims	No Claims	Total	
2014	0.2248	-0.4678	-0.1147	0.1147
2015	0.2529	-0.4479	-0.0906	0.0906

3.5 Farm Characteristics of Corn Farmers

Table 7 presents the farm characteristics of corn farmlands in Central Visayas that can influence their farm productivity. The average number of parcels cultivated from the year 2014 to 2015 is 1.2 parcels with an average physical area of 0.81 hectares. Majority of their farmlands are within the same barangay of their home address (98.71 percent). Typical of the corn farmlands in Central Visayas, the topography are broad plain (62.87 percent) and hilly/rolled (25.74 percent).

Farmers are mono cropping (96.51percent)that implies that they usually grow a single crop in a field and grow the same crop every year. The farms solely rely on rain as their water source and do not have any irrigation system to possibly increase agricultural productivity. This dependence on rain explains their vulnerability to climate changes and consequently lower production.

On ownership of land they cultivate, 86.82percent of the farmers are tenants and only 10.65percent own the land they cultivated. Given that the farmers are tenants cultivating only 1 parcel each with an average of .81 hectare and all areas in farmland are devoted to corn, it can be expected that volume of corn production is minimal and may not be enough for commercialization.

Table 7. Farm Characteristics of Corn Farmers by Treatment Group, Region VII - Central Visayas

Farm Characteristics	With Insurance			Without Insurance	Total / Pooled
	With Claims	Without Claims	Total		
Parcels of Land Cultivated by Farmers 2014 and 2015					
Average Number of Parcels Cultivated	1.10	1.30	1.20	1.10	1.20
Average Physical Area Planted to Main Crop	0.99	0.64	0.82	0.80	0.81
Parcel Location of Farmers With Respect to Home Address (Percent)					
Within the same barangay	100.00	99.30	99.64	97.75	98.71
Different barangay, same municipality	-	0.70	0.36	1.87	1.10
Different municipality, same province	-	-	-	0.37	0.18
Cropping System Used By Parcel (Percent)					
Monocropping	98.51	97.90	98.19	94.76	96.51
intercropping	1.49	2.10	1.81	3.75	2.76
both mono & intercropping	-	-	-	1.50	0.74
Topography By Farmer (Percent)					
Broad plain	55.97	65.73	61.01	64.79	62.87
Hilly/rolling	31.34	21.68	26.35	25.09	25.74
River/flood plain	11.19	9.09	10.11	9.36	9.74
Both plain & hilly	1.49	3.50	2.53	0.75	1.65
Tenurial Status (Percent)					
Tenanted	89.55	88.11	88.81	88.01	88.42
Fully owned	9.70	11.19	10.47	11.24	10.85
Held Under Certificate of Land Transfer (CLT) or Certificate of Land Ownership (CLOA)	0.75	0.70	0.72	0.37	0.55
Others	-	-	-	0.37	0.18

3.6 Characterization of Corn Parcel

Corn farmers in the region adhere to two cropping seasons with a four-month duration per season: wet and dry seasons.

The wet season is usually from May to August which has defined and predictable rainfall patterns. Planting, though, may shift from May to June or April depending on rainfall patterns. Corn production is generally high during wet season and produces bumper stocks for farmers.

The second cropping season is the dry season from September to December. Rainfall pattern is undefined. If rain comes, it is usually accompanied by strong winds to the detriment of corn crops.

Generally, farmers plant on 60 to 70 percent of their farmlands due to the unpredictable weather as farm income is lower.

The third cropping season is from January to April and corn produce is generally for seed germination. Farmers prefer fresh seeds for the next cropping season. The potential of corn seeds to germinate is only four months. Thus, the produce of December (second cropping season) is not anymore viable for the June of next year's planting season.

A hectare of farmland usually needs 15 kilos of corn seeds for traditional variety, 17 to 18 kilos for Hybrid and 18 to 20 kilos for OPV.

The variety of corn planted is a major contributor to farm productivity. The type of variety used is a primary indicator of farm income as well as soil type, water source and corn environment.

In an interview with Mrs Marya Villaganas, Provincial Coordinator for Corn for Cebu, assuming that farmers employ the standard farm technology, a hybrid corn variety can produce a net yield a maximum of P 3,000 kilos per hectare while the traditional variety (tinigib) can yield a maximum of 650 kilos per hectare.

Municipal Agriculture Officer (MAO) in the areas covered by the study claimed to have aggressively advocated for the use of hybrid corn variety and open pollinated corn variety among farmers in 2014 and 2015.

Although the hybrid corn variety and OPV can yield higher corn produce, farmers have not responded to the enticement due to high production cost. To maximize yield of OPV and hybrid varieties, more bags of fertilizers are required as well as detailed planting process, harvesting techniques and post harvest care are necessary. Unlike traditional variety, plant care is not a necessity. The corn granules of traditional variety are relatively hard and not susceptible to weevil when crops were stored unlike OPV and hybrid.

As shown in Table 8, open pollinated variety was the most common variety planted by farmers in 2014. As part of the Region's post Yolanda rehabilitation effort, the DA pushed for enhanced corn production in 2014. Corn technology packages were made available to farmers in the form of farm assistance from seeds, fertilizers and training in farm technology management.

In 2015, there was a slight shift back to the traditional variety. This preference to the traditional variety by farmers can be lodged on two issues – production cost, as discussed, and the seemingly risk averse nature of corn farmers. The second cropping season is more susceptible to climate change. Farmers may not want to incur more production cost knowing the unpredictable nature of weather to which their crop produce is vulnerable.

Table 8. Percentage Distribution of Corn Variety Planted by Period, Region VII - Central Visayas

Variety Planted	2014	2015
Open Pollinated Variety	50.90	42.09
Traditional Variety	39.82	49.80
Hybrid Corn Variety	9.28	8.10

3.7 Availment of Agricultural Insurance for the Parcel

The study had 255 pairs of farmer respondents with and without agricultural insurance and matched according to five of the following criteria: crop of interest, agrarian reform beneficiary (ARB) status, farm location (to ensure that they experience the same shock), farm size, tenurial farm status, access to irrigation, age and education level.

Of the 255, there were 130 corn farmers who received claims and 125 who did not for the reference period (October 2013 to September 2015).

Farmer with agricultural insurance is expected to file indemnity claims when they experience adverse natural calamities or pest infestations that affect their farmlands. Indemnity is the actual amount paid to the farmer based on the claims documents he submitted and the claim adjuster's validation. Indemnity claims are not additions to income but are reimbursements for production costs incurred in a damage farmland for a cropping season. It is, instead, part of production inputs that may be used for the next cropping season. The claims do not necessarily cover all the production cost.

Those who received indemnity claims identified the LGU as the lone sponsor of agriculture insurance. However, this is contrary to PCIC's data on number of claim payments made from 2014 and 2015 (Table 9). In 2014 and 2015, PCIC released claims for programs under RSBSA, DAR, Yolanda and regular (which refers to LGU sponsored programs) fund sources. This disparity shows that farmers were not aware of the other government-sponsored programs that provide free insurance such as the Agrarian Reform Beneficiaries Agricultural Insurance Program (DAR ARB AIP) of the Department of Agrarian Reform and the automatic eligibility of farmers listed in the RSBSA. They may have benefited from them but did not recognize them as the fund source.

Table 9. Average Amount of Indemnity Claim Payments Disbursed by PCIC, by Program, by Period, Region VII – Central Visayas

Program	Number of Farmers	Area	Indemnity Claim Payments	Average Claim Per Hectare
2014				
DAR	126	83.06	559,373.60	4,439.47
Regular	890	694.55	3,497,718.49	3,930.02
RSBSA	363	206.25	2,027,156.00	5,584.45
Yolanda	227	170.15	1,309,267.00	5,767.70
Overall	1606	1,154.01	7,393,515.09	4,603.68
2015				
Regular	126	83.06	559,373.60	4,439.47
RSBSA	1088	708.63	6,115,545.00	5,620.91
Yolanda	1400	1,002.06	11,625,018.00	8,303.58
	4220	2,947.76	25,693,451.69	7,000.74

The average amount of coverage per farmer and indemnity claim received per farmer are shown in Table 10. The increase in average amount of coverage is proportional to farm size. Indemnity claims received are relatively lower than the amount of coverage. This is because indemnity claims are reimbursements for production costs incurred in a damage farmland for a cropping season. The claims do not necessary cover all the production cost nor the average amount of coverage.

The indemnity claims had mixed results. The farmlands of 0.5 to 1 hectares in size received higher claims than those of farmlands of more than one hectare in size. This shows that indemnity claims received is not based on farm size but on the reported damage by farmers and verified by PCIC personnel in a cropping season. The indemnity claimed is not directly proportional to the size of the farm size.

The average indemnity claims of farmers were P 3,588.00 in 2014 and P 4,301.00 in 2015. On the other hand, PCIC data showed high amount of average indemnity claims paid to farmers. In 2014, it was an average amount of P 4,603.68 in 2014 and P 7,000.74 in 2015. The increase in 2015 was due to the special funds allocated for farm productions to assist farmers. The farmer respondents came from various places in Cebu, Bohol and Siquijor which may not be from the Yolanda devastated areas and thus were not eligible of this special funds.

Table 10. Average Amounts of Coverage and Indemnity Claims Received Per Farmer, by Farm Size, by Period, Region VII - Central Visayas

Amount	Farm Size
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	< .5 ha	>.5 ha to 1 ha <	> 1 ha	Total
Average Amount of Coverage, 2014				
With Claims	8,837.00	9,944.00	17,794.00	12,796.00
Without Claims	10,398.00	16,007.00	32,750.00	13,232.00
Average Amount of Claim Received Per Farmer				
2014	2,830.00	4,931.00	3,093.00	3,588.00
2015	3,185.00	4,941.00	4,932.00	4,301.00

Typhoons were the most common cause of loss connected to indemnity claims for reference period (September 2013 – October 2015). Central Visayas was visited by strong and destructive typhoons. In 2013 was Yolanda and 2014 was Senyang, Ruby and Queenie.

Drought was the second most common cause of loss connected to indemnity claims due to the unfavorable impact of the El Niño in the region. The prolonged dry spell caused by El Niño decreased soil moisture during the vegetative and reproductive stages of corn and resulted to decrease in corn production.

The average amount of indemnity claims received by cause of loss validated the above findings. Claims due to typhoon and floods were the highest at P 4,355.00, followed by drought at P 4,156.00 and pest infiltration and disease at P 3,977.00.

Table 11. Percent Distribution of Cause of Loss Connected to Indemnity Claims by Farm Size, by Period, Region VII - Central Visayas

Cause of Loss	Farm Size			Total
	< .5 ha	>.5 ha to 1 ha <	> 1 ha	
2014				
Typhoon, Flood	76.00	70.37	68.57	71.26
Drought, not enough water	20.00	18.52	20.00	19.54
Pest and Diseases	4.00	11.11	11.43	9.20
Total	100.00	100.00	100.00	100.00
2015				
Typhoon, Flood	81.82	58.82	71.43	70.59
Drought, not enough water	15.15	32.35	17.14	21.57
Pest and Diseases	3.03	8.82	11.43	7.84
Total	100.00	100.00	100.00	100.00

The average amount of indemnity claims received by cause of loss validated the above findings. Claims due to typhoon and floods were the highest at P 4,355.00, followed by drought at P 4,156.00 and pest infiltration and disease at P 3,977.00.

Table 12. Average Amount of Indemnity Claim Received By Cause of Loss, Type of Crop, Farm Size, Treatment Group, Region VII Central Visayas

Cause of Damage	0.5 ha. & below	>0.5 to 1 ha	>1.0 ha.	Total
Typhoon, Flood	2,852.00	4,654.00	6,051.00	4,355.00
Drought not enough water	2,791.00	4,149.00	6,683.00	4,156.00
Pest and disease	3,627.00	4,250.00	4,071.00	3,977.00
Strong wind not related to typhoon	3,000.00	-	-	3,000.00

The study had 125 assured farmers who were not able to receive indemnity claims for 2014 and 2015. These farmers were aware that their farmlands were insured and were eligible to indemnity claims. Table 13 presents their perceived reasons for not receiving claim.

Assured farmers were unable to receive claims for two main reasons: the inefficiency stemmed from PCIC or from the farmers themselves. Some farmers felt that PCIC was demised in performing their tasks because the adjuster did not visit their farms (36.23 percent). Others admitted oversight and inefficiency on their part. They did not exert any effort to apply for indemnity claims because they were disappointed of their neighbors' experiences who filed claims but did not receive any (46.38 percent). Others exerted effort, but not enough to comply with PCIC requirements. The assessed damage was below 10 percent and is not eligible for indemnity. They did not reach the cut off date for document submission and the documents submitted were incomplete thus returned.

Table 13 Percent Distribution, Reason for Not Receiving Any Claim Despite Crop Damage, by Treatment Group, Region VII - Central Visayas

Reason for Not Receiving Claim from Agricultural Insurance	Farm Size			Total
	< .5 ha	>.5 ha to 1 ha <	> 1 ha	
PCIC related				
Adjuster did not visit the farm	26.19	52.00	50.00	36.23
Farmer related				
Assessed damage was below ten percent	14.29	-	-	8.70
Did not reach the cut off date for filing of documents	4.76	8.00	-	5.80
Claim was disapproved due to lack of documents	2.38	4.00	-	2.90
Did not claim	52.38	36.00	50.00	46.38
Total	100.00	100.00	100.00	100.00

3.8 Utilization of Indemnity Claim Payment

There were 130 farmer respondents who availed themselves of agriculture insurance and received indemnity. Majority (82.31 percent) have received indemnity claims in 2014 and 57.69 percent received it in time for the next planting season. Only 13.85 percent replied that the amount was sufficient to cover the expenses for the next planting season. The majority found it insufficient or just did not respond positively (86.15 percent). This claim of insufficiency is understandable because the indemnity claim is only a reimbursement of a portion of their production cost of the previous cropping season. It should not be considered as additional income.

The utilization of the indemnity claim was varied. Majority of the farmers have used the indemnity claims for agricultural purposes such as to pay for farm inputs (43.89 percent) and used to pay for clearing debris after the typhoon /floor /devastation (11.83 percent). However, there were some who admitted having spent it for other purposes namely used to buy food for my family (20.61 percent); personal expenses (12.98 percent); used to pay for my existing loans (4.96 percent); to pay for children's education (4.58 percent) and pay for family's medical bill (1.15 percent).

The findings showed that indemnity claims were used in mitigating risks brought about by shocks experienced by farmers. The amount received was used for inputs for the next cropping season and to smoothen up consumption needs of the farmers when faced with shocks.

Table 14. Utilization of Indemnity Claim Payment By Farm Size, Treatment Group, Region VII - Central Visayas

On Indemnity Claims	With Insurance, With Claim				
	0.5 ha. & below	>0.5 to 1 ha	>1.0 ha.	Total	Percent
Received Indemnity In 2014					
Yes	35	34	38	107	82.31
No	8	5	10	23	17.69
Received In Time For The Next Season's Plant					
Yes	27	27	21	75	57.69
No	8	7	17	32	24.62
Amount Received Sufficient To Plant Again					
Yes	8	5	5	18	13.85
No	0	1	1	2	1.54
No response	19	21	15	55	73.33
Total	27	27	21	75	100.00
Utilization of Indemnity Claim Payment					
Used to pay for farm production inputs	39	37	39	115	43.89
Used to buy food for my family	20	14	20	54	20.61
Used for personal expenses	7	13	14	34	12.98

On Indemnity Claims	With Insurance, With Claim				
	0.5 ha. & below	>0.5 to 1 ha	>1.0 ha.	Total	Percent
Used to pay for clearing debris after the typhoon / floor / devastation	11	15	5	31	11.83
Used to pay my existing loan sp that I can renew my loan	4	5	4	13	4.96
used to pay for my children's education	4	4	4	12	4.58
Used to pay for my family's medical bill	1	1	1	3	1.15

3.9 Farm Income

In general, assured corn farmers have greater net income per hectare. This is more evident among those farmers who received indemnity claims for both years. Their net income per hectare increased with the size of landholding, which means that bigger farmlands have greater returns due to economies of scale. Bigger farmlands give farmers the advantage of maximizing production inputs and lowering cost. This pattern is relatively more pronounced in 2014 than in 2015.

Net income was relatively higher in 2014 compared to 2015. This reflects the post Yolanda rehabilitation effort in Region VII spearheaded by the Department of Agriculture (DA) to help farmers in Yolanda stricken areas recover. The DA pushed for enhanced corn production in 2014. Corn technology packages were available to farmers that included seeds, fertilizers and farm technology management trainings. Tractors from Mindanao were sent to Cebu with fuel subsidy from DA. These interventions from the national government generated positive effects on net income of farmers. The program's priority was on small farmlands from 0.25 hectare to 1 hectare. 0.5 ha and less.

This focused on small farmlands as beneficiaries of the post Yolanda recovery project was reflected in the increase in average net income of farmers with claims from 2014 to 2015. Contrary to the 2015 trend, it was only them who experienced an increase in income.

In 2015, majority of the farmers experienced a decline in income relative to 2014. The long spell drought brought about by El Nino affected corn produce along with pest infestations. In most farmlands, the positive interventions in 2014 were offset by the adverse effect of natural calamities in 2015.

The increase in net income of assured farmers with claims is a motivation for farmers with no claims to serious efforts to enjoy the same benefits. It is important to PCIC or the person in-charge (underwriter or solicitors) to explain the reasons for non-receipt of indemnities so that they will be addressed and enable farmers to claim the benefits they are entitled to.

On closer look at Table 15, income of assured farmers without claims and with farm size of 0.5 hectare to 1 hectare have relatively higher net income. This seeming inconsistency is difficult to explain and we need to go back to source data for possible outliers.

Table 15. Average Net Income Derived From Producing Corn, By Treatment Group, By Farm Size, By Period, Region VII - Central Visayas

Farm Size	With Insurance		Without Insurance	Total / Pooled
	With Claims	No Claims		
2014				
< 0.5 ha.	7,455.59	4,020.25	2,169.04	3,127.87
0.5 ha. to 1 ha.	7,803.62	6,422.00	1,973.34	3,763.19
>1 ha.	10,089.02	4,354.78	4,666.36	6,462.69
All farm sizes	8,650.37	4,951.13	2,623.50	4,070.44
2015				
< 0.5 ha.	10,814.26	2,607.13	1,131.72	2,995.68
0.5 ha. to 1 ha.	7,191.56	4,590.29	2,534.18	3,831.06
>1 ha.	9,556.01	15,585.82	4,097.59	6,745.05
All farm sizes	9,247.24	4,510.86	2,232.07	4,096.73

The increase in net income of farmers can be attributed to the agricultural insurance that they enjoyed through indemnity claims.

On the assumption that the only difference among farmer respondents was the indemnity claims received, agricultural insurance capacitated farmers to overcome shocks through indemnity claims and the motivation to move ahead with insured farmlands. They were able to bounce back after a shock as confirmed in receipts of higher net income. This is an indication that assured farmlands had greater capacity to increase yield compared to the un-assured corn farmers.

We can confidently deduce this since the farmer respondents were matched to ensure that they experience the same shocks and farming experience (production costs) and the variable difference among them is the receipt of indemnity claims.

Manual Propensity Score Matching (PSM) were performed to determine if there are significant differences among net incomes of farmers from different treatment groups and control group including differences in farm sizes as shown in Table 16.

Manual propensity score matching was also used to ensure that farmers across treatment groups were matched based on the following criteria: agrarian reform beneficiary (ARB) status, farm location (to ensure that they experience the same shock), farm size, tenurial farm status, access to irrigation, age and education level. This was done in order to weed out differences among farmers and agricultural insurance remain as the only differentiating variable among them. Any changes can be attributed to the possession of agricultural insurance.

Table 16. Net Income Comparison Using Matched Samples, By Farm Size, By Treatment Group, Region VII – Central Visayas

Farm size	Y _{with insurance} - Y _{without insurance}		Y _{with claims} - Y _{without insurance}	
	2014	2015	2014	2015
0.5 ha. & below	1,245.92	3,286.14	2,857.51	7,469.69
> 0.5 to 1 ha.	1,160.59	1,393.01	2,951.87	3,497.96
> 1 ha.	738.33	2,761.60	878.70	2,803.12
All farm sizes	1,115.13	2,582.39	2,155.90	4,524.58

T-tests revealed statistical significant differences between incomes of those with and without insurance across farm sizes as shown in Table 16. This is particularly evident among farmers with farm sizes ranging from 0.5 to 1 hectare which is significant at the 1 percent level. Average net income difference between matched samples for farmers with insurance and those without insurance is positive across treatment and control groups. The same is true for matched samples among assured farmers with claims and without insurance.

Table 17. Statistical Comparison Of Income And Between Farmers With And Without Indemnity Claims, by Farm Size, Treatment Group, Region VII - Central Visayas

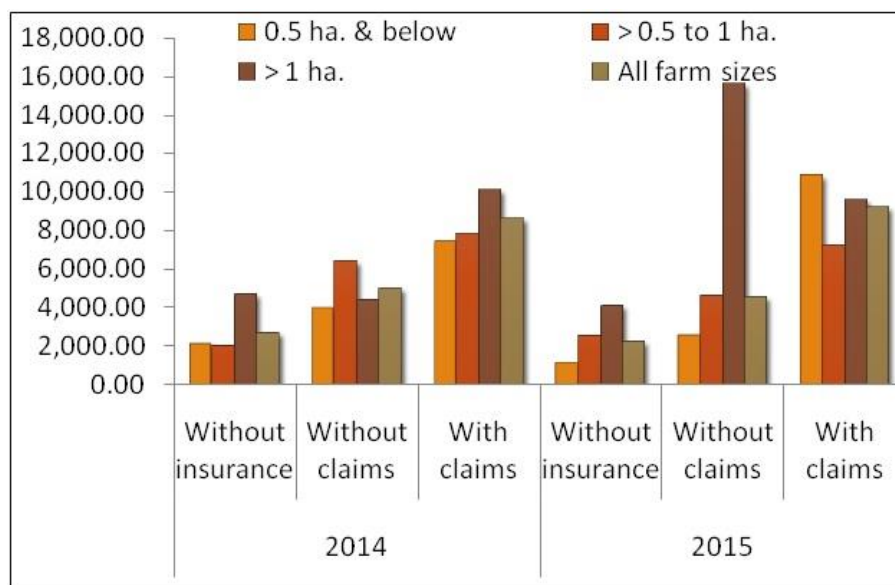
Farm size	Y _{with insurance} - Y _{without insurance}		Y _{with claims} - Y _{without claims}	
	2014	2015	2014	2015
0.5 ha. & below	Php4,266.13 ***	Php5,420.78 ***	Php1,502.24 n.s.	Php5,633.50 **
> 0.5 to 1 ha.	Php3,698.44 ***	Php3,203.51 ***	Php4,511.07 ***	Php3,981.76 ***
> 1 ha.	Php4,404.49 ***	Php5,894.58 ***	Php7,742.66 *	Php4,143.83 n.s.
All farm sizes	Php4,241.03 ***	Php4,827.30 ***	Php3,699.24 ***	Php4,736.37 ***

Note: Y = net income from corn production (on a per-hectare basis); n.s. not significant; * significant at 10percent; ** significant at 5percent; *** significant at 1percent

There were also other significant factors affecting income. Income increased with farm size due to economies of scale. Adopters of hybrid crop variety have relatively higher income than sample farmers who use traditional variety. Corns planted in hilly/rolling plains tend to be more productive than those planted in broad plains. Farmers with more household assets tend to have higher farm income. More educated farmers have relatively higher income than less educated ones. Farmers with bigger landholdings tend to benefit more from community facilities like credit, post-harvest equipment, among others.

In summary, findings showed that agricultural insurance in Central Visayas 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.

Figure 3. Net Income by Farm Size, by Treatment Group, Region VII - Central Visayas



3.10 Impact Estimation Results

Estimated impact of agricultural insurance on net farm income is shown in Table 18 using econometric model 1 (income). The impact of agricultural insurance on income varies across different sizes of corn farms. Findings showed that agricultural insurance has a positive and significant impact on incomes of corn farmers, particularly those with corn farms greater than 0.5 hectare. For a one-percent increase in the probability of getting insurance, there is a corresponding increase in income from corn production of at least 2.5 percent.

There were also other significant factors affecting income. Income increased with farm size due to economies of scale. Adopters of hybrid crop variety have relatively higher income than sample farmers who use traditional variety. Corns planted in hilly/rolling plains tend to be more productive than those planted in broad plains. Farmers with more household assets tend to have higher farm income. More educated farmers have relatively higher income than less educated ones. Farmers with bigger landholdings tend to benefit more from community facilities like credit, postharvest equipment, among others.

Table 18. Estimated Impact Of Agricultural Insurance On Net Farm Income By Farm Size, By Treatment Group, Region VII – Central Visayas

Farm size	All samples	Matched samples		
	(T1/T2 vs. T3)	(T1/T2 vs. T3)	(T1 vs. T3)	(T2 vs. T3)
All farm sizes (n=506)	2.43***	2.43***	2.35***	2.15***
0.5 ha. & below (n=223)	0.64 ^{n.s.}	0.60 ^{n.s.}	0.22 ^{n.s.}	-0.15 ^{n.s.}
> 0.5 to 1 ha. (n=173)	2.72***	2.71***	2.87***	2.58***
> 1 ha. to 3 has. (n=110)	2.62***	2.62***	2.80***	2.59***

Note: Estimated models have covariates; ^{n.s.}not significant; *significant at 10%; **significant at 5%; ***significant at 1%

In summary, crop insurance improves farmers' welfare, as measured by net farm income. Indemnity payments have been mainly used to pay for farm production inputs although at times is diverted to fund household expenses in order to smoothen household food consumption.

The impact of agricultural insurance on corn farmers was determined on how they have managed risks encountered and how their well being, through income, have improved for the period 2014 to 2015.

3.11 Factors Affecting PCIC Insurance Availment

The study used econometric model 2 on probability of being assured to determine demand for PCIC insurance among corn farmers in Central Visayas. Variables that affected PCIC insurance availment were membership in farmers' organization; size of farmlands; educational attainment of the farmer; location of the farmer's household relative to the PCIC Office; status of land tenure; and accessed to community-level facilities. The distance of the farmer's household relative to PCIC Office was used as an instrumental variable for the availment of PCIC insurance. The variables and their net effect are shown in figure 4. These factors were significant in explaining the variability in the availment of PCIC insurance in least 90percent confidence level.

There were also other significant factors affecting income. Income increases with farm size. Adopters of hybrid crop variety have relatively higher income than sample farmers who use traditional variety. Corns planted in hilly/rolling plains tend to be more productive than those planted in broad plains. Farmers with more household assets tend to have higher farm income. More educated farmers have relatively higher income than less educated ones. Farmers with bigger landholdings tend to benefit more from community facilities like credit, postharvest equipment, among others.

Membership to farm organizations is one of the requirements that must be complied with to avail themselves of agricultural insurance. The organization can be a source of information of new trends on farm technology as well as support and encouragement from fellow farmers on various issues regarding corn farming. The organization can give farmers the opportunity to collaborate and work with the other farmers. It is expected that all assured farmers are members of a farm organization.

Findings show that 67 percent of assured farmers were members of farmer's organization (cooperative, farmers' organization, ARBO). Only 15 percent of the unassured farmers were affiliated with farm organizations. This indicates that these farmers are not convinced of the importance of farm organizations.

The probability of insurance availment increased with landholdings (farm size). Results revealed that farmers with larger farms were more likely to avail insurance. Farmers with large farms have higher incentive of getting an agricultural insurance because they usually face larger production risks.

Results also revealed that farmer's educational attainment positively influenced the probability of insurance availment among corn farmers in Central Visayas. Highly educated farmers appreciated the value of agricultural insurance relative to those who did not have any formal education, especially if its premium was fully subsidized by the local government. However, it is important to note that the agricultural insurance is not biased to educational attainment of the people. PCIC encouraged all farmers to be members regardless of educational attainment. There are adequate number of underwriters and solicitor in the region to assist farmers in applying for indemnity claims.

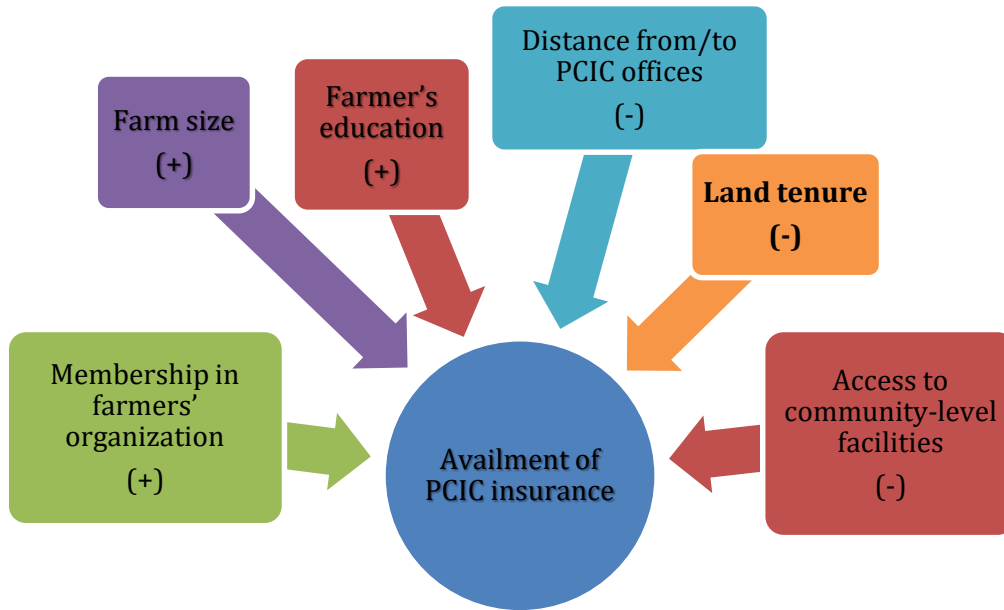
The presence of at least one PCIC office within the region where the farmers were located significantly affected insurance demand. The distance between the PCIC office and the farmer's household need not necessarily be very close. In Cebu for example, PCIC Office is located in the urban center of Cebu City, but agricultural insurance penetration was as far as Bantayan Island in the northern part of the province.

The majority of the sample corn farmers with PCIC insurance do not own their corn farms. They are mostly tenants. Findings show that tenurial status has a negative effect on demand for agricultural insurance. Tenants do not have the same motivation as the landowner to secure corn produce. However, farmers are enrolled in the agricultural insurance program because it is FREE of charge for all farmers in Cebu where 96 percent of the farmer respondents reside.

Access to community-level facilities such as credit institutions, agricultural/post-harvest facilities and input dealers/agricultural extension services does not significantly affect demand for agricultural insurance in the region.

For corn variety, OPV and hybrid corn promises to yield higher net income. The corn variety planted was a requirement for agriculture insurance to push farmers to shift in farming practices for higher yield. Unfortunately, in the implementation stage of the project, this requirement was relaxed in consideration of the relatively high production cost they entail.

Figure 4. Factors Affecting PCIC Availment



In summary, crop insurance improves farmers' welfare as measured by net farm income. Indemnity payments have been used mainly to pay for farm production inputs although at times is diverted to fund household expenses in order to smoothen up household food consumption.

3.11 Credit Availment Practices

Farmers who availed of credit shows willingness to take risks. They are capable to borrow funds, comply with stringent requirements of financial institutions (formal lending) and pay relatively high interest rates (informal lending). Table 19 presents the credit practices of farmers.

Findings showed that only 3.86 percent of farmers availed of agricultural loans from the reference period (October 2013 to September 2015). Majority of the farmers (89.52 percent) are risk averse and did not succumb to borrowing. Common reasons for non-availment of loans were their lack of confidence and lack of capacity to borrow (23.65 percent). A number of them (18.33 percent) do not want to borrow.

For those who availed themselves of loan, cooperatives were the most common source of agricultural loans. The loans generally require co-borrowers or guarantors (9 percent) and/or agricultural insurance (2 percent) as collateral. The farmers, generally, are not bankable for lack of collateral.

Table 19. Credit Availment Practices of Corn Farmers by Treatment Group, Region VII Central Visayas

Credit Availment Practices	With Insurance			Without Insurance	Total / Pooled
	With Claims	Without Claims	Total		
Percent Distribution of Corn that Availled of Agricultural Loans					
Did not avail of Loan	94.62	94.35	86.64	97.24	89.52
Availled of Loan	5.38	5.65	5.05	2.76	3.86
Percent Distribution of Loans By Type of Creditor (Formal/ Informal)					
Cooperative	4	2	6	3	9
Private moneylenders (institutions)	2	4	6	1	7
Private moneylenders (persons)	1	1	2	2	4
Relatives / friends	-	-	-	1	1
Percent Distribution of Loans Requiring Co-Borrowers and Agricultural Insurance					
Co-borrower/ Guarantor required	3	4	7	2	9
Agricultural Insurance required	1	1	2	0	2

The use of borrowed money was varied. In 2014, majority of the farmers (57.14 percent) used the loan for farming operations such as purchase farm inputs or farm improvements. On the other hand, 39.28 percent borrowed to satisfy personal needs – as addition to household consumption, finance education and house construction or repairs. The same pattern is seen in 2015. Important to note is that some farmers (3.57 percent) used loans to fund entrepreneurial activities as a possible source of additional income.

The findings indicate that farmers use credit as a risk-mitigating tool to cushion the impact of shocks in their household and farming activities.

Table 20. Distribution of Loans Aailed By Utilization, by Treatment Group, Region VII – Central Visayas

Utilization of Loans	With Insurance		Total	Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims				
2014						
Farm Production (Inputs)	3	6	9	4	13	46.43
Household Consumption	3	4	7	0	7	25.00
Farm Improvements	0	3	3	0	3	10.71
Education	0	2	2	0	2	7.14
House Construction / Repair	2	0	2	0	2	7.14
Business Investments	1	0	1	0	1	3.57
Total	9	15	24	4	28	100.00
2015						
Farm Production (Inputs)	9	10	19	11	30	40.00
Household Consumption	7	9	16	5	21	28.00
Education	3	5	8	5	13	17.33
Farm Improvements	3	2	5	1	6	8.00
Business Investments	2	1	3	0	3	4.00
House Construction / Repair	0	1	1	0	1	1.33
Purchase Of Vehicle	0	1	1	0	1	1.33
Total	24	29	53	22	75	100.00

Evident in Table 21 is that farmers have not availed themselves of agricultural loans for the past 2 years. It is not obvious because they do not need additional funds to finance their agricultural activities. Capital injection can improve farm yield and its financial performance. The lack of the confidence in their capacity to pay the loan superseded the desire to improve agricultural activities and consequently improve corn produce.

A number of respondents (18.33 percent) claimed they did not want to borrow. Findings show that even those with agricultural insurance and received indemnity claims did not borrow money even if they can use this as collaterals to lending institutions.

If agricultural insurance is seen as a tool to manage risks then they can use the insurance as collateral to have funds in the farming activities.

Table 21. Percent Distribution of Reasons for Non-availment of Loans During the Past Two Years, by Treatment Group, Region VII - Central Visayas

Reasons for Non-availment of Loans	With Insurance			Without Insurance	Total / Pooled
	With Claims	Without Claims	Total		
Cannot Afford To Borrow	25.95	30.98	28.28	20.49	23.65
Do Not Want To Borrow	22.45	23.57	22.97	15.15	18.33
Limited Sources Of Credit	8.75	9.43	9.06	6.94	7.80
No Access To Credit	9.62	8.42	9.06	6.51	7.55
No Collateral To Offer	7.00	8.75	7.81	5.98	6.72
High Interest Rate	7.58	5.39	6.56	5.55	5.96
No Need, Has Enough Capital	7.00	3.37	5.31	2.56	3.68
Already Has Existing Unpaid Loan Balance	0.29	-	0.16	0.32	0.25

The availability of financial institution and the farmers' intention to save are indications that farmers are forward looking and save for the future. Banks (45.85 percent) are predominantly the depository of farmers' saving followed by informal lenders (31.30 percent) as shown in table 22.

Table 22. Percent Distribution of Farmers As to Where They Save by Treatment Group, Region VII - Central Visayas

Financial Institutions / Lenders	With Insurance			Without Insurance	Total / Pooled
	With Claims	Without Claims	Total		
Banks	58.33	51.20	54.86	39.79	45.85
Informal lenders	38.64	42.40	40.47	25.13	31.30
Cooperatives	2.27	2.40	2.33	0.52	1.25
Microfinance Institutions / NGOs	0.76	4.00	2.33	0.26	1.10

3.12. Shocks and Coping

3.12.1 Shocks

Unexpected shocks, whether natural or manmade, affect income. The immediate consequence of a shock is loss of income or increase in household expenses.

Central Visayas had its own share of natural disasters for the reference period October 2013 to September 2015. There was super typhoon Yolanda that struck Eastern Visayas and Northern Cebu in the latter part of 2013 and the unfavorable impact of the El Niño on agriculture in 2015.

Table 23 presents a list of significant shocks from natural disasters experienced by farmers classified according to severity for the period. Consistent with weather data, the farmers experienced typhoon, drought, flood, earthquake, pest infestation and epidemic disease outbreak and perceived them as significant. Typhoon was identified as most severe, followed by El Niño, the drought. The farmlands in various areas in Central Visayas suffered pest infestation in the same period as confirmed by Ms Marya Villaganas, Corn Coordinator for Cebu province.

Table 23. Distribution of Significant Shocks (Natural Disasters) Experienced During the Past Two Years in by Treatment Group, Region VII - Central Visayas

Type of Shocks (Natural Disasters)	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims	Total			
Typhoon						
Most Severe	105	97	202	196	398	38.91
Second Most Severe	41	32	73	63	136	13.29
Flood						
Most Severe	1	1	2	3	5	0.49
Second Most Severe	2	0	2	2	4	0.39
Drought						
Most Severe	28	33	61	57	118	11.53
Second Most Severe	56	42	98	102	200	19.55
Earthquake						
Most Severe	4	3	7	3	10	0.98
Second Most Severe	1	3	4	12	16	1.56
Epidemic /Disease Outbreak						
Most Severe	0	1	1	0	1	0.10
Second Most Severe	0	0	0	0	0	-
Pest Infestation						
Most Severe	17	10	27	31	58	5.67
Second Most Severe	17	19	36	41	77	7.53

Manmade shocks come in the any of the following forms, increase in food and fuel prices, financial crisis, and serious accident of family member and death of family member(s). It disrupts the financial situation and lifestyle of the household.

Table 24 presents the list of significant manmade shocks experienced by farmers classified according to severity during the period. Findings showed that increase in food prices tops the list. However, most manmade shocks were not considered significant. This may be because reactions to the severity of their effect are relative to personal experiences of farmers.

Table 24. Distribution of Significant Shocks (Man made Disasters) Experienced During the Past Two Years in by Treatment Group, Region VII - Central Visayas

Type of Shocks (Manmade Disasters)	With Insurance		total	Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims				
Increase In Food Prices						
Most Severe	43	36	79	90	169	68.42
Second Most Severe	3	0	3	5	8	3.24
Increase In Fuel Prices						
Most Severe	1	1	2	1	3	1.21
Second Most Severe	2	7	9	18	27	10.93
Serious Accident In The Family						
Most Severe	0	1	1	0	1	0.40
Second Most Severe	0	0	0	0	0	-
Death In The Family						
Most Severe	1	1	2	0	2	0.81
Second Most Severe	0	0	0	0	0	-
Financial Crisis						
Most Severe	3	2	5	9	14	5.67
Second Most Severe	7	5	12	11	23	9.31

3.12.2 Coping

Risk management is a skill that farmers need to learn considering agriculture is susceptible to natural calamities, a phenomenon they have to live with. The study determined the coping strategies practiced by farmers from shocks for the past two years. After a shock, what do they do, where to they go and to whom to they ask help.

Food is a basic necessity. They do not abstain from eating but find ways to lessen food consumption or revert to cheaper alternatives. Findings showed that when shocks from natural disasters were encountered, the three most common coping strategies of farmers for food related activities were to skip meals (15.35 percent); shift to cheaper food items (14.71 percent) and reliance on own produce (13.73 percent). For manmade disasters, skipping meals also topped the list (11.68 percent) followed by reliance on own produce shift to cheaper items (11.58 percent) and eating less of preferred food (11.47 percent).

Table 25. Coping Strategy (Food Related) For Most Severe Shocks Experienced, By Treatment Group, Region VII - Central Visayas

Coping Strategy	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims	Total			
Natural Disasters						
Skipped Meals	98	104	202	205	407	15.35
Shifted To Cheaper Food Items	96	99	195	195	390	14.71
Relied More On Own Produce	87	96	183	181	364	13.73
Consumed Staple Food Only	84	95	179	176	355	13.39
Ate Less Preferred Food	81	89	170	178	348	13.13
Lessened The Frequency Of Dining Out	48	54	102	104	206	7.77
Ate More Ready To Cook Food	45	42	87	88	175	6.60
Bought Cooked Food	36	41	77	87	164	6.19
Reduced Portions	48	3	51	88	139	5.24
Relied On School Feeding	8	22	30	34	64	2.41
Bought Food On Credit	16	32	0	39	39	1.47
Manmade Disasters						
Skipped Meals	50	37	87	24	111	11.68
Ate Less Preferred Food	49	36	85	25	110	11.58
Relied More On Own Produce	50	36	86	24	110	11.58
Shifted To Cheaper Food Items	48	36	84	25	109	11.47
Consumed Staple Food Only	50	34	84	22	106	11.16
Reduced Portions	41	25	66	21	87	9.16
Ate More Ready To Cook Food	35	25	60	25	85	8.95
Bought Cooked Food	35	23	58	24	82	8.63
Lessened The Frequency Of Dining Out	36	23	59	21	80	8.42
Bought Food On Credit	9	8	17	20	37	3.89
Relied On School Feeding	9	6	15	18	33	3.47

Farmers also adopted coping strategies that are non-food related. After a severe shock experience on natural disaster, the most immediate reaction was obviously to limit the use of necessities such as water (14.73 percent) and electricity (14.64 percent). The flexibility and resourcefulness of farmers is reflected when they opted to find alternative sources of fuel (13.55 percent) and cheaper means of transportation (14.69 percent).

Buying second hand items is a reaction to increased food prices. This indicates that food consumption, as a necessity, may not have been reduced. It was consumption of non-food items that were altered to cheaper alternatives.

Table 26. Coping Strategy (Non-Food Related) For Most Severe Shocks Experienced, By Treatment Group, Region VII - Central Visayas

Coping Strategy	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims	Total			
Natural Disasters						
Limited Use Of Water	84	78	162	162	324	14.73
Shifted To Cheaper Means Of Transportation	79	82	161	162	323	14.69
Limited Use Of Electricity	85	73	158	164	322	14.64
Shifted To Cheaper Fuel Sources	78	70	148	150	298	13.55
Limited Use Of Cooking Fuel	75	66	141	151	292	13.28
Bought Second Hand Items	70	67	137	140	277	12.60
Stopped/Postponed Consuming Products/Services	60	43	103	105	208	9.46
Shifted To Residential Unit With Cheaper Rent	39	32	71	84	155	7.05
Manmade Disasters						
Shifted To Cheaper Fuel Sources	49	333	382	93	475	28.51
Bought Second Hand Items	51	36	87	93	180	10.80
Shifted To Cheaper Means Of Transportation	50	35	85	94	179	10.74
Limited Use Of Electricity	50	36	86	93	179	10.74
Limited Use Of Water	50	36	86	93	179	10.74
Limited Use Of Cooking Fuel	50	33	83	93	176	10.56
Stopped/Postponed Consuming Products/Services	47	32	79	89	168	10.08
Shifted To Residential Unit With Cheaper Rent	36	25	61	69	130	7.80

School children of corn farmers are also affected by shocks. As coping strategies, some farmers allow their children to continue schooling but with cheaper school supplies (39.23 percent); reduced allowance (33.15 percent) and a transfer from a private to public school (11.05 percent) as a result of lower net income attributed to natural disaster.

However, there were farmers who opted otherwise upon encounter with manmade disasters such as increase in food or fuel prices. Some farmers (30.50 percent) stopped sending their children to school to the detriment of the children. Findings showed that 15.25 percent for withdrew children from school and 15.25 percent for postponed enrollment of children to school.

Table 27. Coping Strategy (Education) For Most Severe Shocks Experienced, By Treatment Group, Region VII Central Visayas

Coping Strategy	With Insurance		total	Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims				
Natural Disasters						
Shifted To Cheaper School Supplies	2	27	29	42	71	39.23
Reduced Allowance For Children In School	3	23	26	34	60	33.15
Transferred Children From Private To Public School	1	6	7	13	20	11.05
Withdrew Children From School	1	4	5	6	11	6.08
Children In School Skipped Classes	2	5	7	3	10	5.52
Postponed Enrollment Of Children to School	1	4	5	2	7	3.87
Transferrec Childern To Another Private School With Cheaper Tuition	0	1	1	1	2	1.10
Manmade Disasters						
Reduced Allowance For Children In School	3	4	7	7	14	23.73
Shifter To Cheaper School Supplies	3	2	5	6	11	18.64
Withdrew Children From School	2	2	4	5	9	15.25
Postponed Enrollment Of Children to School	2	3	5	4	9	15.25
Children In School Skipped Classes	2	3	5	3	8	13.56
Transferred Children From Private To Public School	2	1	3	3	6	10.17
Transferrec Childern To Another Private School With Cheaper Tuition	1	0	1	1	2	3.39

Health care is often sacrificed when shocks are encountered. Food, which is a necessity, has a bigger share in the income of farmers and other expenses, such as health care, may not be a priority. Findings showed that as coping mechanism, farmers shifted to general and cheaper drugs (19.94 percent) or cheaper alternatives (18.44 percent). Others opted for self-medication (19.49 percent) most probably due to the unavailability of health services immediately after disasters.

Table 28. Coping Strategy (Health) For Most Severe Shocks Experienced, By Treatment Group, Region VII Central Visayas

Coping Strategy	With Insurance		total	Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims				
Natural Disasters						
Shifted To Generic And Cheaper Drugs	70	61	131	135	266	19.94
Shifted To Self Medication	69	60	129	131	260	19.49
Shifted To Cheaper Alternative Medicine	64	58	122	124	246	18.44
Reduced Use Of Health Product / Services	56	46	102	111	213	15.97
Shifted To Government Health Centers And Hospitals	54	45	99	102	201	15.07
Stopped Or Postponed Seeking Treatment Or Medication	41	29	70	78	148	11.09
Manmade Disasters						
Shifted To Self Medication	44	26	70	79	149	17.07
Shifted To Generic And Cheaper Drugs	43	28	71	77	148	16.95
Shifted To Government Health Centers And Hospitals	42	27	69	76	145	16.61
Shifted To Cheaper Alternative Medicine	43	26	69	76	145	16.61
Reduced Use Of Health Product / Services	41	25	66	78	144	16.49
Stopped Or Postponed Seeking Treatment Or Medication	41	24	65	77	142	16.27

The study determined the coping strategies adopted by farmers from shocks for the past two years. After a shock, what do they do, where to they go and to whom to they ask help. Findings show that the immediate coping mechanism is financial in nature.

During natural disaster, using the savings was the most common recovery strategy of farmers (76.79 percent). Farmers must have used their savings to buy goods and services to compensate for decrease or loss in income and/or assets. Borrowing money (22.96 percent) was the next most common strategy and friends (44.09 percent) and relatives (27.96 percent) were the most common source. This is understandable as friends and relatives offer ease of borrowing – no formal documentation or collaterals are needed.

Table 29. Coping Strategy (Savings, Assets and Credit) For Most Severe Shocks Experienced, By Farmsize, Central Visayas

Coping Strategy	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims	total			
Natural Disasters						
Spent Savings	84	79	163	148	311	76.79
Borrowed Money	22	24	46	47	93	22.96
Pawned Assets	0	1	1	0	1	0.25
Manmade Disasters						
Spent Savings	50	34	84	93	177	91.24
Borrowed Money	2	5	7	10	17	8.76
Source of Borrowed Money						
Natural Disaster						
Friend	9	11	20	21	41	44.09
Relative	8	3	11	15	26	27.96
Neighbor	3	7	10	7	17	18.28
Cooperative	2	1	3	3	6	6.45
Private Bank	0	1	1	0	1	1.08
Government Bank	0	0	0	1	1	1.08
NGO	0	1	1	0	1	1.08
Manmade Disaster						
Friend	1	3	4	9	13	76.47
Relative	1	2	3		3	17.65
Private Bank	0	0	0	1	1	5.88

Close family ties, a Filipino trait, are manifested when family members and relatives are in a crisis. The most common source of assistance come from relatives either in financial form or otherwise. The same coping strategies are used during manmade disasters.

Table 30. Coping Strategies (Receipt of Assistance) For Most Severe Shocks Experienced, By Farm Size, Region VII - Central Visayas

Coping Strategy	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims	Total			
Natural Disasters						
Received Financial Support Fom Relative	72	59	131	132	263	25.86
Received Other Material Support Fom Relatives	66	49	115	118	233	22.91
Receieved Assistance From The Government	42	28	70	73	143	14.06
Received Assistance From The Private Sector	37	26	63	69	132	12.98
Received Other Material Support From Friends	37	33	70	58	128	12.59
Received Financial Support From Friends	31	29	60	58	118	11.60
Man-Made Disasters						
Received Financial Support Fom Relative	49	33	82	95	177	29.70
Received Other Material Support Fom Relatives	48	32	80	91	171	28.69
Receieved Assistance From The Government	29	20	49	58	107	17.95
Received Assistance From The Private Sector	26	17	43	56	99	16.61
Received Financial Support From Friends	8	3	11	11	22	3.69
Received Other Material Support From Friends	6	4	10	10	20	3.36

Another coping mechanism of farmers was to look for other sources of income aside from farming to offset the loss of income due to shock or the additional expense incurred through shock. Findings show that the most common coping strategy was for farmers to engage in entrepreneurial activities using their agricultural sources as products or through selling basic necessities – rice, shampoo, cooking needs and the like. They allocate a small portion of their house or land to display and store their goods.

A number of households sought other means for additional income such as taking on a part time or full time basis in addition to farming; a member found employment abroad and took on a lower skilled job. Some engaged in hazardous jobs which in normal circumstances they do not get involved with. Such jobs usually compensates better due to risk involved. An example of this was stone breaking in Bantayan Island.

Table 31. Coping Strategy (Additional Sources of Income) For Most Severe Shocks Experienced, by Farm Size, Region VII - Central Visayas

Coping Strategy	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims	total			
Natural Disasters						
Household Member Engaged In Entrepreneurial Activities	36	3	39	48	87	58.78
Household Member Not Previously Not Working Went To Work	0	23	23	4	27	18.24
Household Member Sought Additional Job	1	6	7	6	13	8.78
Household Member Took On Lower Skilled Job	0	0	0	6	6	4.05
Household Member Worked More Than One Paying Job	1	1	2	3	5	3.38
Household Member Sought Employment Overseas	0	2	2	3	5	3.38
Household Member Engaged In Hazardous Job	0	2	2	3	5	3.38
Man-Made Disasters						
Household Member Engaged In Entrepreneurial Activities	42	25	67	61	128	79.50
Household Member Sought Additional Job	2	2	4	5	9	5.59
Household Member Not Previously Not Working Went To Work	2	3	5	4	9	5.59
Household Member Took On Lower Skilled Job	2	2	4	2	6	3.73
Household Member Worked More Than One Paying Job	1	0	1	3	4	2.48
Household Member Engaged In Hazardous Job	1	0	1	2	3	1.86
Household Member Sought Employment Overseas	1	0	1	1	2	1.24

Another coping strategy household took was to spend less time for recreation as shown in Table 32. This was done to cut down on expenses usually used in recreational activities or devote more time to work as a source of income. Based on interview with farmers in Northern Cebu, recreation meant a drinking spree with fellow farmers or going down to the city with the family. Due to a recent shock they encountered, the opted not to engage in recreational activities and replace them with listening to the radio or doing simple repairs in their houses or farmlands.

Other coping strategies they engaged in was to work overtime for additional compensation, members for other households to move in to lessen expenses, members also moved away for the same reason and postponed child bearing plans. A number of farmers mentioned being transferred to temporary housing or evacuation centers. This experience was in relation to the disastrous

encounter with super Typhoon Yolanda in Northern Cebu where they had to move to evacuation centers for safety.

Table 32. Coping Strategy ((Demographic and Other Coping Strategies) For Most Severe Shocks Experienced, By Farm Size, Region VII - Central Visayas

Coping Strategy	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims	total			
Natural Disasters						
Spent Less Time For Recreation	62	62	124	114	238	89.14
Worked Overtime	4	4	8	6	14	5.24
Transferred To Temporary Housing/Evacuation Center	3	2	5	2	7	2.62
Members From Other Households Moved In (To Cut Expenses)	2	1	3	2	5	1.87
Members Moved Away	1	1	2		2	0.75
Postponed Childbearing	1	0	1		1	0.37
Man-Made Disasters						
Spent Less Time For Recreation	37	26	63	58	121	93.80
Worked Overtime	1	1	2	2	4	3.10
Members From Other Households Moved In (To Cut Expenses)	1	0	1	0	1	0.78
Members Moved Away	1	0	1	0	1	0.78
Postponed Childbearing	1	0	1	0	1	0.78
Transferred To Temporary Housing/Evacuation Center	1	0	1	0	1	0.78

Given the shocks experienced and the coping strategies they adopted, the farmers were asked to compare the quality of life these days compared to how it was two years ago. This was to assess if their coping strategies were sufficient to overcome the shocks encountered or their effort enough to improve their living conditions.

Findings showed that the farmers felt it was the same as before. There were no remarkable improvements in their lives or dramatic loss that affected them due to shocks. This is an indication that the farmers have the ability to cope with shocks. They may not have improved their living condition but at least they cushioned the fall very well by the coping strategies they have adopted.

Table 33. Current Condition Compared to Two Years Ago, by Farm Size, Region VII - Central Visayas

Coping Strategy	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	Without Claims	total			
Same as Before	368	352	720	764	1484	72.89
Better Now	140	120	260	188	448	22.00
Worse Now	12	28	40	64	104	5.11
Total	520	500	1020	1016	2036	100.00

3.13 Risk Mitigating Strategies in Crop Production

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.

To maximize corn produce, farmers adopt risk-mitigating strategies to lessen or limit the adverse impact of disasters on crop production in both wet and dry seasons of cropping. Findings showed that the integrated pest management (32.32 percent for wet season and 32.63 percent for dry) was the most common strategy used by farmers in order to counter the infestation of pests. In 2015, armyworms and locusts invaded many of the corn farmlands in Central Visayas.

The second most common risk-mitigating strategy was the adoption of earlier or later planting date depending on weather conditions (31.15 for wet season and 30.75 for dry). Corn farmers adhere to two have two cropping seasons that they adhere to. The wet season which is usually from May to August and dry season from September to December. Planting always shifts a month earlier or later depending on rainfall patterns. This shows the flexible nature of farmers and their sensitivity to weather changes.

Crop rotation is the third strategy adopted to improve soil fertility and product diversification to improve income yield of farmlands (16.63 percent for wet season and 16.90 percent for dry).

Table 34. Distribution of Risk Mitigation Strategies in Crop Production, By Type of Season and Treatment Group, Region VII - Central Visayas

Mitigating Risk Strategies	With Insurance			Without Insurance	Total / Pooled	Percent
	With Claims	No Claims	Total			
Dry Season						
Integrated pest management	82	62	144	132	276	32.32
Adopting earlier or later planting date	82	58	140	126	266	31.15
Crop rotation	44	30	74	68	142	16.63
Product diversification	42	32	74	60	134	15.69
Crop diversification	2	2	6	18	22	2.58
Alteration of farm management practices	0	12	2	6	8	0.94
Use of varieties with high resilience, high temperature tolerance, resistance to salinity, drought and floods	0	2	2	4	6	0.70
Wet Season						
Integrated pest management	4	62	144	134	278	32.63
Adopting earlier or later planting date	82	58	110	130	262	30.75
Crop rotation	52	30	74	70	144	16.90
Product diversification	40	8	72	64	136	15.96
Crop diversification	72	2	4	18	22	2.58
Alteration of farm management practices	0	2	4	4	8	0.94
Use of varieties with high resilience, high temperature tolerance, resistance to salinity, drought and floods	0	0	0	2	2	0.23

3.14 Awareness on Agricultural Insurance

The study had 255 farmer respondents who availed themselves of agricultural crop insurance – 130 of which received indemnity claims and 125 none. Majority of them (85.49 percent) were aware of agricultural insurance have regularly availed of its benefits since for at least two years (77.65 percent). The presence and assistance of the agricultural technician was a major reason for the regular availment of the benefits of the agricultural insurance (80.39 percent).

For those whose farmlands were insured but did not avail of the insurance on a regular basis (22.35 percent), their reasons for non-availment showed that they lack of awareness of the crop insurance program. They lack knowledge of how to avail of the indemnity claim.

The other reasons were attitude related – they were not able to reach the deadline for applying; they were influenced by their neighbor who claimed they did not receive indemnity claims and they do not have enough money to pay for processing of documents – which refers to their residence certificate and other incidental expenses. PCIC can do an awareness campaign to assist them in order to help them enjoy the benefits of the agricultural insurance that they possessed.

Table 35. Availment of Agricultural Insurance, by Treatment Group, Region VII - Central Visayas

On Agricultural Insurance	With Insurance			Percent
	With Claims	No Claims	Total	
When First Availed Of Agricultural Insurance				
About two years ago	55	74	129	50.59
About three years ago	41	34	75	29.41
About a year ago	23	14	37	14.51
About five years ago	7	1	8	3.14
About four years ago	3	1	4	1.57
More that five years ago	1	1	2	0.78
Total	130	125	255	100.00
Availed of Agricultural Insurance Regularly				
Yes, have availed regularly	120	78	198	77.65
No, have not availed regularly	10	47	57	22.35
Total	130	125	255	100.00
Reason for Regular Availment of Agricultural Insurance				
Agricultural technician in our LGU	100	105	205	80.39
Beneficiary of fire insurance	22	11	33	12.94
Encouraged by my neighbor/friend/ relative	6	1	13	5.10
Heard in the radio	0	1	1	0.39
Self motivated	2	7	3	1.18
Total	130	125	255	100.00
Reason for Nonregular Availment of Agricultural Insurance				
I do not have enough money to pay for it	2	19	21	8.24
Did not apply	6	12	18	7.06
I do not know how to avail of agricultural insurance	2	9	11	4.31
I do not think insurance is helpful to my farming activities	0	5	5	1.96
I did not reach the deadline for applying	0	1	1	0.39
A relative/friendneighbor told me they had difficulty getting indemnity claims	0	1	1	0.39
Availed regularly	120	78	198	77.65
Total	130	125	255	100.00

The study had 255 farmer respondents that did not avail of agricultural insurance. The reasons for non-availment of the agricultural insurance are listed in Table 26. The most common reason is that they do not need insurance; not aware of how to avail of insurance; not aware of crop insurance and the documentary requirements are difficult to comply with. The reasons given indicate that the farmers were not fully aware of the program and its benefits.

The other reasons were attitude related –they heard that claims payment takes too long; not satisfied with the amount of cover with respect to premium price and do not trust the institution offering agricultural insurance.

PCIC can convince them of the viability of the program so they can fully benefit from their privileges as farmers. To reiterate, if there are other government-sponsored programs that give free agricultural crop insurance. There is the Agrarian Reform Beneficiaries Agricultural Insurance Program (DAR ARB AIP) of the Department of Agrarian Reform started in 2013, the farmers listed in the Registry System for Basic Sectors in Agriculture (RSBSA) are eligible for free agricultural insurance in rice, corn, livestock, non crop agricultural assets, fisheries and HVCC, subject to cover limits and local government units, particularly those from Cebu and Bohol have their own free agricultural insurance programs for farmers in their locality. For Central Visayas, the agricultural insurance program had the full support of the Cebu and Bohol Provincial Government. Agriculture insurance premium is 100 percent subsidized by the provincial government through its Local Government Units (LGU).

Table 36. Reasons for Non Availment of Agricultural Insurance of Farmers without Insurance, Region VII - Central Visayas

Reasons for Non-Availment of Agricultural Insurance	Frequency	Percent
No need of insurance	89	27.13
Not aware of ways one can avail of insurance	69	21.04
Not aware of crop insurance	60	18.29
Others	28	8.54
Lack capacity to pay for the premium	27	8.23
The documentary requirements are difficult to comply	25	7.62
Heard that claims payment takes too long	20	6.10
Not satisfied with the amount of cover with respect to premium price	8	2.44
Do not trust the institution offering agricultural insurance	2	0.61

Products and services ratings of PCIC are shown in Table 28. The overall rating of farmers was satisfactory. This is an indication that the farmers are satisfied with the agricultural insurance program implemented in Central Visayas. This rating may have stemmed for the relatively high impact of the program as shown in the section of impact analysis.

Table37. Rating of Product and Service Characteristics of PCIC, By Treatment Group, Region VII - Central Visayas

Characteristics of PCIC	With Insurance			Interpretaton
	w/claim	w/o claim	total	
1. Number of forms to be filled up for enrollment and the ease of accomplishing them	3.2	3.1	3.1	Satisfactory
2. Accessibility of the PCIC office	3.2	3.0	3.1	Satisfactory
3. Affordability of the premium payment	3.3	3.0	3.2	Satisfactory
4. The accessibility of payment channels available for paying the premium	3.2	3.0	3.1	Satisfactory
5. The sufficiency of the risks covered when compared to risks faced by farmers in crop production	3.2	2.9	3.1	Satisfactory
6. The adequacy of the amount of cover to be received when a loss occurs for financing next season's planting	3.1	2.9	3.0	Satisfactory
7. Available feedbacking mechanisms (communication channels) in case of questions in enrollment or claims	3.2	2.9	3.1	Satisfactory
8. The procedure for filing indemnity claims (forms to be filled up, etc.)	3.2	2.8	3.0	Satisfactory
9. The objectivity of assessment in processing the indemnity claims-	3.2	2.8	3.0	Satisfactory
10. The sufficiency of the actual indemnity received to finance next season's planting	3.2	2.7	3.0	Satisfactory
11. Length of time of processing claims from filing to actual receipt of indemnity	3.1	2.7	2.9	Satisfactory
12. Overall satisfaction with PCIC's products and services	3.2	2.8	3.0	Satisfactory

3.15. Willingness To Pay For Agricultural Insurance

The corn farmers were given a scenario of an agricultural insurance package with corn as the crop of interest and their willingness to pay was assessed. The package had the same benefits that PCIC currently provide to insured corn farmlands, however, the insurance coverage is pegged at P 24,000.00 per hectare. For eliciting willingness to pay, two bid amounts were pegged: P 5,083.00 per hectare and P 1,950.40 per hectare. The two amounts of cover used were based on the average amount of cover for corn in 2014.

Currently, an insured farmland enjoys the following benefits for corn farmers. the standing crop is insured against natural calamities, or pests and diseases, or both, for up to P40,000 per hectare for hybrid corn varieties, and up to P28,000 per hectare for open pollinated varieties per cropping period; a built-in P10,000 death benefit for the farmer, as long as s/he has not reached the age of 80 years old; a refund of ten percent of net premiums paid, if the farmer has not filed for any claim for three immediately preceding cropping seasons; the coverage shall be from planting to harvesting, provided that insurance coverage shall commence from the date of issuance of the Certificate of Insurance Cover (CIC). Risks not covered by insurance include fire, theft, robbery,

pillage, war, strong winds and heavy rains not induced by typhoon, and those incurred before the start of insurance coverage or after harvesting.

Data on Table 32 shows that farmers with insured corn farmlands and without claims were generally less willingness to pay for a bid amount for agricultural insurance than those who have received claims.

There were 63.20 percent of farmers without claim not willing to pay any of the bid amount compared to 39.23 percent for those farmers with claim. This unwillingness may have stemmed from their the non-enjoyment of indemnities for the past cropping seasons which they believe they were entitled to.

When asked how much they were willing to pay for the mentioned agricultural insurance package their average quoted bid amount was P 523.00 per hectare for farmers with claim and P 447.00 per hectare for farmers without claim or an average of P 477.00 per hectare.

When the bid amount was pegged at P 5,083.00 per hectare only 24.80 percent of farmers without claims were willing to pay compared to 43.85 percent of farmers with claim.

With a lower bid amount of P 1,950.40 per hectare, approximately 9.60 percent more farmers without claim were willing to pay for agricultural insurance. For farmers with claim, a lower bid amount increased the number of farmers willing to pay by 15.38 farmers. However, there were still more farmers with claim (59.23 percent) who were willing to pay at P 1,950.40 than those farmers without claim (34.40 percent).

Table 38. Percent Distribution of Willingness-To-Pay for Corn Insurance, By Bid Amount and Treatment Group, Region VII – Central Visayas

Willingness to Pay for Corn Insurance	With Insurance		
	W/claim	W/o claim	Total
Willing to Pay P5,083/ hectare per cropping season	43.85	24.80	30.98
Willing to pay P1,950.40/hectare per cropping season but not P5,083	59.23	34.40	49.41
Not willing to pay both bid amounts	39.23	63.20	49.41
Not willing to pay both bid amounts because agricultural insurance is not useful	23.85	38.40	30.98
Average quoted bid amount if not willing to pay both bids	523.00	447.00	477.00

4. Conclusions and Policy Recommendations

This study aimed to evaluate the impact of the agricultural insurance program on agricultural households particularly in managing risks and their well-being.

Results of 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 1hectare farmlands.

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

1. 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.
2. 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.

3. PCIC and LGU should seriously implement the rule on type of corn allowable for agriculture insurance (not traditional corn) in order to help farmers increase yield. Admitted that they have relaxed this rule in consideration of high production cost the variety requires to maximized yield.

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.

Once convinced and motivated, the farmers can find ways to finance the standard package of technology needed. They have credit avilment practices, which is an indication they know where fund sources are.