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Evaluation of the Impact of the Agricultural Insurance Program of PCIC on Agricultural Producers in Region IV-A

Felino P. Lansigan et al.

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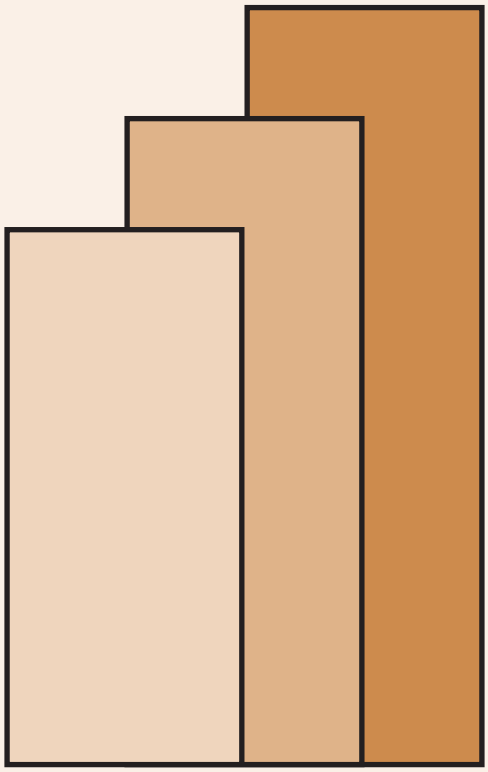

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For comments, suggestions or further inquiries please contact:
The Research Information Staff, Philippine Institute for Development Studies
18th Floor, Three Cyberpod Centris – North Tower, EDSA corner Quezon Avenue, 1100 Quezon City, Philippines
Tel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

Evaluation of the Impact of Agricultural Insurance Program of the Philippine Crop Insurance Corporation on Agricultural Producers Region IVA CALABARZON

UNIVERSITY OF THE PHILIPPINES LOS BANOS PROJECT TEAM
Institute of Statistics (INSTAT)

FELINO P. LANSIGAN, PhD (Project Leader)
CONSORCIA E. REANO, PhD
LIZA N. COMIA, PhD
NANCY A. TANDANG, PhD
ROSELLE V. COLLADO
JAMES ROLDAN S. REYES
RACHELYN S. ARANA
RONALD R. ROLDAN, JR.
ROCKY T. MARCELINO
JARED JORIM O. MENDOZA
MARA SHERLIN DP TALENTO
EDRUN R. GAYOSA
LEONARD ALAN F. ALMERO

TABLE OF CONTENTS

Evaluation of the Impact of Agricultural Insurance Program of the Philippine Crop Insurance Corporation on Agricultural Producers Region IVA (CALABARZON)

ABSTRACT

The evaluation of the impact of agricultural insurance program of the Philippine Crop Insurance Corporation on coconut farmers in Region IVA CALABARZON was conducted from October 2015 to July 2016. The main instrument for conducting impact evaluation was the Coconut Farmers Survey which covered the provinces of Batangas, Cavite, Laguna and Quezon in the CALABARZON with a random sample of 500 coconut farmers. The 500 samples comprised the random sample of 250 matched pairs of coconut farmers. Each pair was composed of a farmer with insurance and a farmer without insurance. Farmers with insurance were classified further into two groups, namely: those with claims, and those without claims. A proportional allocation scheme with groups and farm size as stratification variables was used. For each of the two insurance groups, three strata were formed defined according to farm size: Stratum 1 - 0.5 ha & below; Stratum 2 – greater than 0.5 to 1 ha; and Stratum 3- greater than 1 ha. The sample sizes from each group are given in Table 1.

Farmer, farm and household characteristics were obtained by interviewing the farmers using a structured survey questionnaire.

The farmers cited the following: 1) adverse weather conditions; 2) low farm gate prices; and 3) pests and diseases as the three most important problems. Although the study was conducted to assess the impact of agricultural insurance, it was worth noting that a significant proportion of coconut farmers were not aware of the existence of programs as crop insurance.

The study revealed that lack of awareness among coconut farmers on the availability of insurance products was a big problem. Some of the farmers who have been granted free insurance were not aware that they were insured. Among the most common and important reasons for non-availment of crop insurance were the lack of awareness on the availability of crop insurance products, lack of information on how to process insurance documents and the belief that there was no need for insurance.

No significant differences in mean income from coconut production were observed between the two groups with insurance, with claims and without claims, across farm sizes 0.5 ha and below and greater than 0.5 to 1 ha. Significant differences were detected only for farmers with farm sizes greater than 1 ha. The

results were consistent across 2014 and 2015. When pooled, no differences were obtained between the group with insurance and the group without insurance. Results showed that the only characteristic associated with whether or not the farmer is insured is if the farmer is keen on joining farmers' organizations.

Although the farmers think that having insurance is advantageous, most farmers were not willing to pay any premium.

BACKGROUND AND RATIONALE

In recent years, the occurrence of extreme climate events has become more felt especially by the agricultural sector. The intensity and frequency of more intense typhoons have resulted in damages ranging from moderate to total crop loss. Undeniably, farmers, most especially the small ones, are at the losing end. Increased efforts by the government and the private sector is needed to help boost the agricultural sector.

The small-scale farmers are most vulnerable to destruction caused by strong typhoons on their crops that they depend on for the payment of past debts incurred to finance farming activities. However, these arrears remain unpaid due to previous devastations, digging the farmers deeper into the debt hole.

The plight of farmers has been difficult enough even without natural disasters battering them every year, as middlemen exploit to the fullest their need for capital to fund their planting activities, intended initially as their source of income and livelihood. Much later, they end up doing mere subsistence farming.

Coconut, which was considered before as a very hardy, typhoon-tolerant crop has also succumbed to typhoons which have become more destructive in recent years. Further, biotic stresses in the form of pests and diseases have also contributed their significant role in pushing the coconut farmers to the limit.

The Philippines ranked second top coconut producer in the world behind Indonesia in 2014 with an estimated total production of 14.7 million MT, accounting for 30% of world's total coconut production. For the last ten years, the average country production is placed at 15.2 million MT. In the same period, the Philippines registered its highest production in 2012 with 15.8 million MT. In 2014, coconut oil contributed 450.56 million or 6.7 % share of exports.

CALABARZON ranked fifth among the regions in terms of production at 1,379,297.8 million MT in 2015 behind Davao, Northern Mindanao, Zamboanga, and ARMM.

In 2013, the Philippine Crop Insurance Corporation (PCIC) and the Philippine Coconut Authority (PCA) signed a memorandum of understanding for the insurance coverage of coconut farmers in the country. This was to provide a venue through which the coconut farmers can avail of loans. Aside from managing the agricultural production and agri-enterprise credit and microfinance for Small Coconut Farmers Organizations (SCFO's), PCA also suggested to provide insurance to 500,000 farmers from the various organizations for the year 2014. PCA provided the budget for the cost of premium particularly for Term Insurance Package- Accident and Dismemberment Security Scheme (ADSS). On the part of the PCA, it will obtain insurance for their properties and assets and projects, including PCA buildings,

research centers, training centers, seedling nurseries and plantations of SCFOs and its members.

For its part, PCIC shall support PCA's projects like the rehabilitation through fertilization, the National Coconut Planting/Replanting, maintenance of seed gardens and seed farms, different forms of intercropping and the *Kasaganahan sa Niyugan ay Kaunlaran ng Bayan* (KAANIB). In addition, PCIC shall support research and development of regulatory services following the Coconut Industry Roadmap.

PCA Administrator Euclides G. Forbes stated that the program is designed to help the SCFOs cope with hazards brought about by extreme weather events. He also added that insurance will protect farmers against losses brought about pests and diseases, natural calamities and adverse weather conditions. He also reiterated that this is part of PCA's promise to improve and maintain global competitiveness of the coconut industry.

In the Philippines, the task of giving farmers coverage against crop losses is borne mainly by the government through the PCIC. The efforts of the private sector to protect the farmers against crop losses is totally missed. Private insurance companies have long recognized that the Philippines is hit by several big typhoons each year and to offer insurance is a great risk. Private insurance companies do not have insurance products to cover crop losses.

Some of the insurance companies and financial institutions like United Coconut Planters Bank (UCPB) do not even have a product to cover crop losses specifically, nor is the insurer considering to get into the business soon because of the risks involved, even as UCPB was originally positioned to help coconut farmers who are also vulnerable to losing their trees and produce to frequent typhoon visitations.

This study is conducted to evaluate the impact of the Philippine crop insurance program implemented by the PCIC on coconut production systems. This study specifically focused on coconut farmers in the CALABARZON area. The results of the evaluation shall provide the needed justification and inputs towards the improvement of the program's implementation procedures and possible increase in funding for insurance coverage.

The PCIC Charter (RA 8175) specifies the provision of government funds for the farmers to better manage and face risks inherent in agriculture. As such it is only proper that there be proof provided to support that such a program elicits the envisioned benefits to its target beneficiaries. In addition, the review of the program components may result in improvements that can be made in the program implementation.

OBJECTIVES OF THE STUDY

The main objective of the study is to evaluate the impacts of Philippine crop insurance program implemented by the PCIC on coconut farmers. Specifically, it aims to:

1. Provide assessment of the impact of the program on coconut farmers' welfare;
2. Provide an assessment of the implementation procedure of the crop insurance program implemented by the PCIC;
3. Gather perceptions and feedback of farmer cooperative leaders and farmers on the crop insurance program; and
4. Measure the farmers' willingness to pay for crop insurance.

METHODOLOGY

A survey research design was implemented with coconut farmers as respondents using a stratified random sampling design.

Domain of the Study

The domain of the study included the four coconut producing provinces in CALABARZON, namely: Batangas, Cavite, Laguna and Quezon. CALABARZON accounts for 9.39% of the country's total coconut production of 4.05 million metric tons. Coconut production for the four provinces in 2013 were at 66, 36, 64 and 1,1210 thousand metric tons for Batangas, Cavite, Laguna and Quezon, respectively.

Figure 1. Domain of the study

Sampling Methodology

The Coconut Farmers Survey was conducted during the period October 2015 to July 2016 covering four provinces in the CALABARZON. The survey covered 500 coconut farm households generated using a stratified random sampling. The 500 samples were matched to form 250 pairs of coconut farmers. Each pair was composed of a farmer with insurance and a farmer without insurance. The members of each pair were matched according to farm and farmer characteristics such as farm size, number of parcels, area of coconut farms, location of farms and Agrarian Reform Beneficiary status (ARB or non-ARB) among others. Farmers with insurance were classified further into two groups: those with claims and those without claims. A proportional allocation scheme with groups and farm size as stratification variables was used. For each of the two insurance groups, three strata were formed defined according to farm size: 1 -0.5 ha. & below; 2 – greater than 0.5 to 1 ha; and 3- greater than 1 ha.

The following are the definitions of our eligible population and treatment groups:

Eligible population: Crop farmers included in the Registry System for Basic Sectors in Agriculture (RSBSA) list and were located in areas where there were claims.
Treatment groups:
Treatment Group 1: Crop farmers who had crop insurance and received indemnity claims payment from the PCIC during the reference period (Oct. 2013-Sep. 2015)
Treatment Group 2: Crop farmers who had crop insurance but did not receive indemnity claims payment from the PCIC, and were located in areas where there were claims during the reference period
Comparison Group: Crop farmers who did not avail of crop insurance but with similar characteristics as those of treatment samples

The sample sizes of each group are given in Table 1. A 100% response rate was obtained.

Table 1. Number of pairs obtained for the treatment groups for each farm size.

Farm Size	With Insurance,With Claims	With Insurance,Without Claims	Without Insurance
0.5 ha. & below	8	34	42
Greater than 0.5 to 1 ha	21	29	50
Greater than 1 ha	96	62	158

Assistance from the local government units through the Office of the Municipal Agricultural Officer (MAO) and the Philippine Coconut Authority (Region 4A) Coconut Development Officers (CDO) were sought to facilitate contact with the farmer respondents. Initial coordination activities were done with either the MAO or CDO of the identified municipalities. Visits to the identified sample farmers were done by the University of the Philippines Los Banos project team to validate farm and farmer characteristics with the above officers serving as guides.

Farmer respondents who did not meet the specified farmer characteristics were dropped from the list and replaced. In most cases, replacements were done in pairs using replacement samples provided by Philippine Institute for Development Studies (PIDS). A number of pairs were replaced due to one or more of the following reasons:

1) Farmer did not actually own coconut farms.
2) Farmer were already dead.
3) Farmer have changed address.
4) Farmer refused being interviewed.
5) Inaccessibility of farmer's household location

Access was a major problem especially with farmers who lived in very remote areas. Hence, for cost-effective data collection, areas with relatively high

population of selected farmers were prioritized. This was the main reason for dropping Teresa in Rizal; Sampaloc, Tayabas and Alabat Is. in Quezon; and San Juan and Tingloy in Batangas. Replacement pairs were instead used to meet the sample size required. Table 2 gives the distribution of the samples across the CALABARZON.

Table 2. Distribution of sampled households across the four provinces.

PROVINCE	TREATMENT	FARM SIZE (hectare)		
		≤ 0.5	>0.5 to 1	≥ 1
Batangas	With Insurance,With Claims	1 (0.4)	0	1(0.4)
	With Insurance,Without Claims	17 (6.8)	4 (1.6)	5 (2.0)
Cavite	With Insurance,With Claims	-	-	-
	With Insurance,Without Claims	5 (2.0)	5 (2.0)	-
Laguna	With Insurance,With Claims	-	-	-
	With Insurance,Without Claims	2 (0.8)	2 (0.8)	1 (0.4)
Quezon	With Insurance,With Claims	7(2.8)	22 (8.8)	94 (37.6)
	With Insurance,Without Claims	10 (4.0	17 (6.8)	57 (22.8)

Of the 250 pairs, 207 (82.8%) were from Quezon, 28(11.2%) from Batangas, 10 from Cavite (4%) and 5 (2%) from Laguna.

RESULTS

Profile of Farmers and Household Characteristics

About 55% of the farmers across treatment groups and farm sizes were agrarian reform beneficiaries (ARB). The distribution of farmers according to ARB status is shown in Table 3. There were more farmers with insurance (with claims or without claims) who were ARBs than those without insurance.

Table 3. Frequency (relative frequency) of ARB famers for the three treatment groups and farm sizes.

TREATMENT GROUPS	FARM SIZE (hectare)			TOTAL
	≤ 0.5	> 0.5 to 1	>1	
With Insurance, With Claims	7 (1.4)	17 (3.4)	82 (16.4)	106 (21.2)
With Insurance, Without Claims	10 (2.0)	12 (2.4)	36 (7.2)	58 (11.6)
Without Insurance	14 (2.8)	18 (3.6)	77 (15.4)	109 (21.8)

The mean ages of the coconut farmers for the three treatment groups and farm sizes are given in Table 4. The mean age of the farmer respondents is 51. The youngest farmer was 19 years old while the oldest farmer is 84 years old. Age of farmer did not differ significantly across treatment groups nor were there any differences observed between farmers with insurance and farmers without insurance.

Table 4. Mean age (in years) of farmers for the three treatment groups and farm sizes.

TREATMENT GROUPS	FARM SIZE (hectare)			MEAN
	≤ 0.5	> 0.5 to 1	>1	
With Insurance,With Claims	49	46	49	49
With Insurance,Without Claims	55	51	52	52
Without Insurance	55	45	51	50

Table 5 shows that as expected, majority or about 78% of the coconut farm owners are males. The highest frequency of female farmers was obtained in Cavite and Quezon. Majority of the farmers are also married (78.4%) which is true across treatment groups. The percent distribution of sex and civil status of farmers for treatment groups and farm sizes are given in Tables 6 and 7, respectively.

Table 5. Distribution of gender of farmers across treatment groups and farm sizes.

GENDER	FARM SIZE (hectare)		
	≤ 0.5	> 0.5 to 1	>1
With Insurance, With claims			
Male	5 (1%)	14 (2.8%)	84 (16.8%)
Female	3 (0.6%)	7 (1.4%)	12 (2.4%)
With Insurance, Without claims			
Male	25 (5%)	22 (4.4%)	53 (10.6%)
Female	9 (1.8%)	7 (1.4%)	9 (1.8%)
Without Insurance			
Male	29 (5.8%)	41 (8.2%)	116 (23.2%)
Female	13 (2.6%)	9 (1.8%)	42 (8.4%)

Table 6 presents the frequency distribution of civil status among the farmers. Although association between civil status and treatment group was obtained, its magnitude was too small to be of statistical significance at the 5% level. It was revealed that for farmers with insurance, it is 1.44 times more likely that they are married.

Table 6. Frequency (relative frequency) distribution of farmers according to civil status by treatment group and farm size.

CIVIL STATUS	FARM SIZE (hectare)			TOTAL
	≤ 0.5	>0.5 to 1	> 1	
With Insurance, With claims				
Single	0	0	8 (1.6)	8 (1.6)
Married	7 (1.4)	16 (3.2)	79 (15.8)	102 (20.4)
Widowed	1 (0.2)	3 (0.6)	3 (0.6)	7 (1.4)
Divorced/Separated	0	1 (0.2)	1 (0.2)	2 (0.4)
Common Law/Live-in	0	1 (0.2)	2 (0.4)	3 (0.6)
With Insurance, Without Claims				
Single	1 (0.2)	1 (0.2)	5 91.0)	7 (1.4)
Married	28 (5.6)	25 (5.0)	49 (9.8)	102 (20.4)
Widowed	1 (0.2)	2 (0.4)	3 (0.6)	6 (1.2)
Divorced/Separated	2 (0.4)	0	1 (0.2)	3 (0.6)
Common Law/Live-in	2 (0.4)	1 (0.2)	3 (0.6)	6 (1.2)
Without Insurance				
Single	3 (0.6)	2 (0.4)	12 (2.4)	17 (3.4)
Married	35 (7.0)	40 (8.0	113 (22.6)	188 (37.6)
Widowed	4 (0.8)	3 (0.6)	16 (3.2)	23 (4.6)
Divorced/Separated	0	2 (0.4)	3 (0.6)	5 (1.0)
Common Law/Live-in	0	2 (0.4)	9 (1.8)	11 (2.2)

The education profile is important for devising strategies for dissemination and awareness campaigns by insurance providers. About half of farmers (52%) had primary schooling as the highest grade completed. The distribution of highest grade completed was very much similar across farmers with insurance and those farmers without insurance.

Table 7. Distribution of farmer's highest grade completed by treatment group and farm size.

HIGHEST GRADE COMPLETED	FARM SIZE (hectare)			TOTAL
	≤ 0.5	>0.5 to 1	> 1	
With Insurance, With Claims				
No grade completed	0	2	3	5
Elementary undergraduate	2	4	23	29
Elementary graduate	4	5	21	30
High school undergraduate	0	2	0	2
High school graduate	0	6	30	36
College undergraduate	1	0	4	5
College graduate	1	0	0	1
Postgraduate	0	0	1	1
With Insurance, Without Claims				
No grade completed	2	0	3	5
Elementary undergraduate	9	9	12	30
Elementary graduate	5	9	17	31
High school undergraduate	2	0	2	4
High school graduate	10	0	13	23
College undergraduate	4	0	6	10
College graduate	1	0	1	2
Without Insurance				
No grade completed	1	2	18	21
Elementary undergraduate	16	10	38	64
Elementary graduate	8	18	51	77
High school undergraduate	1	0	0	1
High school graduate	11	9	33	53
College undergraduate	0	3	9	12
College graduate	0	0	2	2
Postgraduate	1	0	0	1

Table 7 and Figure 2 show that majority of the farmers across treatment groups reached up to high school only. It was also observed that there was a higher proportion of farmers who did not attend school among farmers without insurance. No association between highest grade completed and treatment group was obtained *(p =0.06)*.

Information on the farmers' highest grade completed is valuable especially in planning strategies and designing suitable materials for awareness campaigns or effective strategies for increasing coverage of insurance programs.

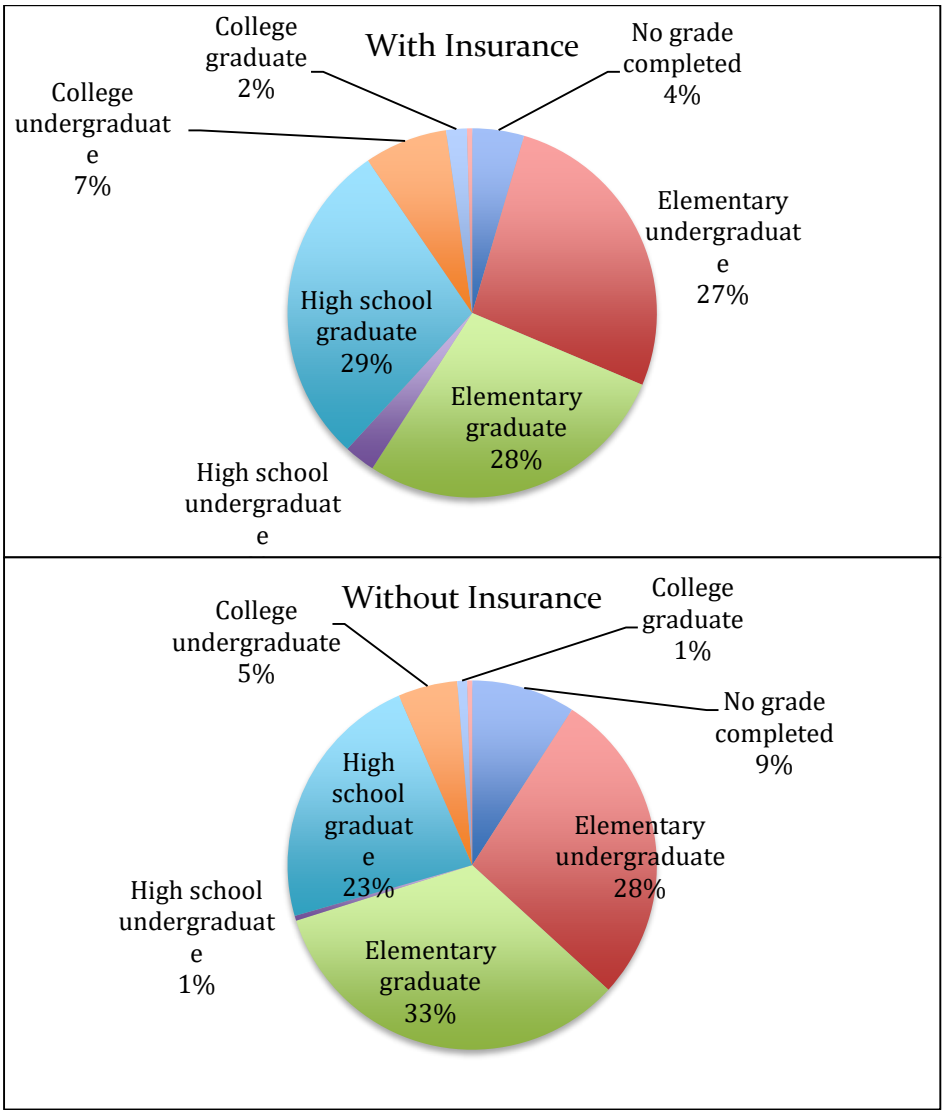

Fig. 2. Proportion of farmers by highest grade completed.

In all of the treatment groups, farmers with primary schooling as highest grade completed accounted for the highest proportion across treatment groups. Noteworthy is the relatively higher proportion of farmers with secondary schooling as highest grade completed for those with insurance compared to those without insurance.

Table 8. Average household size for the treatment groups and farm sizes.

TREATMENT GROUP	FARM SIZE (hectare)		
	≤ 0.5	>0.5 to 1	> 1
2014			
With Insurance, With Claims	3.75	4.83	3.96
With Insurance, Without Claims	4.91	4.13	4.33
Without Insurance	4.54	4.48	4.30
2015			
With Insurance, With Claims	3.75	4.83	3.88
With Insurance, Without Claims	4.91	4.33	4.04
Without Insurance	4.50	4.61	4.18

Household size across treatment groups, farm sizes and years ranged from 1 to 13. The average household sizes of the three treatment groups did not differ from each other with an overall average of 4.30 and 4.29 in 2014 and 2015, respectively, comparable to the normal size of a Filipino household.

Primary Occupation of Coconut Farmers

The following figure shows the distribution of primary occupation of farmers within treatment groups and farm sizes. Across groups and sizes, farming was the most common primary occupation. The six primary occupations that were most popular among the farmers are: 1) farming; 2) hired farm worker; 3) unskilled labor; 4) skilled labor; 5) professional employment; and 6) business operator.

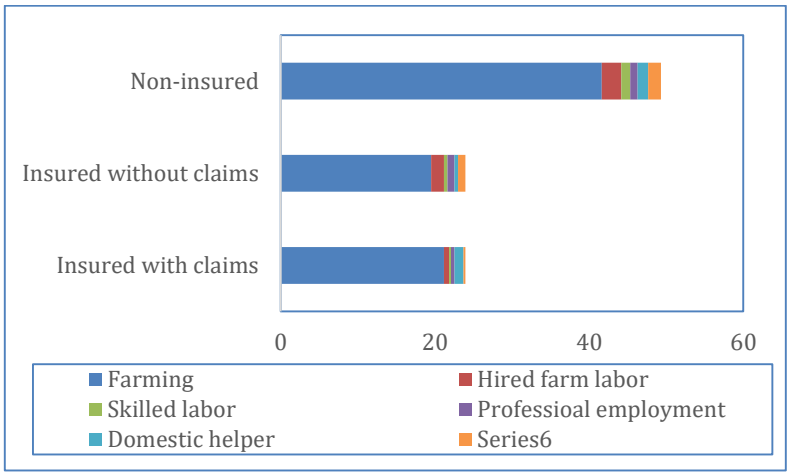

Fig. 3. Distribution of the six most common primary occupation among farmers.

Around 82% of farmers reported farming as their primary occupation across treatment groups and farm sizes. Across treatment groups, about 63% with farming as primary occupation have farms that are at least one hectare.

This may be so since income from smaller farms may not be sufficient to meet the households' financial needs and hence the need for other sources of income. Under normal conditions and with the current national average of 43 nuts/tree/year, a one-hectare farm with 100 full-bearing trees is expected to have a gross income of more than PhP 344,000/year at the price of PhP 8/nut. There are about eight harvests per year for matured nuts and at most 12 for young coconuts. Previous rates show that labor, mostly during harvest would take not less than 30% of the price on a per nut basis. In addition, prices of coconut products generally exhibit large fluctuations across locations and across times of the year.

The proportion of coconut farmers with farming as primary occupation are the same for farmers with insurance and farmers without insurance at about 40% each. A small percentage (5%) of the farmers work as hired workers in other farms, doing activities like harvesting and hauling. As a common practice in coconut growing areas, there are identified harvesters more popularly known as "*magkakawit*" who take charge of the harvesting chores for a number of farms in the locality. For those with large farm sizes, more than half (53%) stated that farming is their primary occupation. This is expected since most of these farms are operating on a commercial scale and are in contact with direct buyers.

Among the top six most frequent primary occupations of coconut farmers are: 1- Farmer (includes fishing and livestock); 2 - Hired Farm worker; 3 - Skilled labor; 4- Unskilled labor; 5 - Professional employment; 6 - Professional practice; and 7 - Business operator. The distribution of all primary occupations of the coconut farmers are given in Table 9.

Table 9. Frequency distribution of farmers' according to primary occupation by treatment group and farm size.

PRIMARY OCCUPATION	FARM SIZE (hectare)			TOTAL
	≤ 0.5	>0.5 to 1	> 1	
With Insurance, With Claims				
Farmer (includes fishing and livestock)	6	15	70	91
Hired Farm worker	1	0	2	3
Skilled labor	0	0	1	1
Unskilled labor	0	0	1	1
Professional employment	0	1	1	2
Professional practice	1	0	0	1
Business operator	0	1	4	5
Others	0	0	1	1
None	0	0	2	2
Not applicable	0	0	1	1
With Insurance, Without Claims				
Farmer (includes fishing and livestock)	23	12	49	84
Hired Farm worker	2	4	1	7
Skilled labor	1	0	1	2
Unskilled labor	0	1	1	2
Professional employment	0	2	2	4
Business operator	1	1	0	2
Domestic helper	1	0	00	1
Others	2	1	1	4
Without Insurance				
Farmer (includes fishing and livestock)	29	39	111	179
Hired Farm worker	1	2	8	11
Skilled labor	2	1	2	5
Unskilled labor	0	0	2	2
Professional employment	1	1	2	4
Professional practice	1	0	0	1
Business operator	1	1	4	6
Domestic helper	0	0	1	1
Others	2	1	4	7

The distribution of class of worker was also obtained and is given in Figure 4. The classes of workers include: 1 – working for private household; 2- working for private business establishment/firm; 3 – working for government/government corporation; 4 – self-employed with no paid employees; 5 – employer in own family related farm or business; 6 – working with pay on own family operated farm or business; and 7 – working without pay on own family operated business.

The three modal classes of workers across treatment groups and farm sizes are: 1) working without pay on their own family operated farm; 2) self-employed with no paid employee; and 3) working for private households in order of decreasing frequency. Across treatment groups, the frequency of those working without pay decreased from 48% to 36% while working for private households increased from 24% to 34% for the two years. The frequency of farmers working in private households increased from 14.3% to 18.1% with increasing farm size.

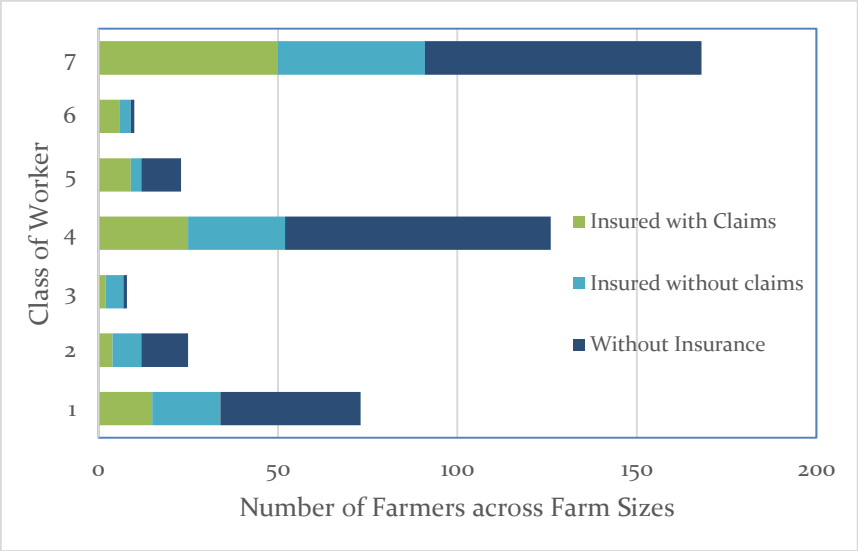

Fig. 4. Distribution of class of worker for farmer's primary occupation.

Results showed that 30% of farmers work without pay on their own family-operated farms, 12% from farmers with insurance and 18% from those without insurance. The second most popular class of workers, which accounted for 17%, include those working for private household. The two other common classes of workers are those working for private business and those working with pay on their own family-operated farm or business. The proportions of these classes of workers for farmers with insurance and farmers without insurance were almost equal. This agrees with the earlier result that cites farming as the most popular primary occupation. This accounts for the high percentage of self-employed workers without pay on family operated business (69%). Only about 2% are employed in government or private businesses. This is expected with most of the farmers reaching only up to primary grade level.

As to the nature of employment, consequently, most of the farmers have permanent nature of employment at 87%, either with permanent business or unpaid family work. About 3% have short-term seasonal or casual employment. This includes farm workers who work for other farmers during harvest and related operations.

Farming still remains the top occupation of choice for those with secondary occupation. The distributional pattern for secondary occupation follows that of the primary education.

Household Characteristics

The proportion of household members who are at least high school graduate ranged from 0 to 100 with a mean of 25% in both years. The yearly distributions were both positively skewed. Signed rank test revealed that the proportions of members that are at least high school graduate differed significantly between farmers with insurance and farmers without insurance in 2014 (p=0.0498) and 2015 (*p=0.041*). Table 10 shows that the proportion of household members who are at least high school graduates did not differ across farmers with insurance and farmers without insurance across farm sizes for 2014 and 2015. The difference between the two years did not differ significantly from zero.

Table 10. Proportion of households with at least high school graduates across treatment groups and farm sizes.

TREATMENT GROUPS	Farm Size (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
With Insurance, With Claims	21.66	15.99	29.84	26.90
With Insurance, Without Claims	33.94	22.84	28.87	28.85
Without Insurance	25.32	17.47	25.13	23.28
2015				
With Insurance, With Claims	21.66	15.99	29.49	26.65
With Insurance, Without Claims	33.10	24.39	27.54	28.32
Without Insurance	24.62	17.63	23.84	22.72

The proportion of salaried members was positively skewed and ranged from 0 to 100 with a mean of about 12% for both years. The proportion of salaried members did not differ across treatment groups and farm sizes. The highest proportion of salaried workers was obtained for the group with insurance without claims in both years at 19.85 and 22.79 in 2014 and 2015, respectively. Similarly, upon pooling the groups with insurance, comparison of the proportion of salaried members for households did not show significant differences across farm sizes and years.

Table 11. Proportion of salaried members across treatment groups and farm sizes.

Treatment Groups	Farm Size (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
Insured with Claims	16.04	8.23	8.72	9.12
Insured without Claims	19.48	19.85	15.94	17.82
Not Insured	12.41	9.59	12.06	11.59
2015				
Insured with Claims	12.91	8.23	8.79	8.96
Insured without Claims	18.80	22.79	15.72	18.20
Not Insured	10.69	9.45	11.47	10.94

Table 12 . Proportion of farmers who had a job for the past 2 years.

TREATMENT GROUPS	Farm Size (in ha)			
	≤ 0.5	>0.5 to 1	> 1	Overall
With Insurance	38	38	138	214
Without Insurance	37	45	134	216

No association was detected between treatment groups and whether the farmer had a job during the past two years *(p=0.789)*. Almost equal proportions of insured and non-insured farmers across farm sizes have had jobs for the last two years (Table 12).

Table 13. Distribution of dependency ratio across treatment groups and farm sizes.

TREATMENT GROUPS	FARM SIZE (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
With Insurance, With Claims	23.65	32.56	23.27	24.91
With Insurance, Without Claims	10.02	25.07	22.40	19.63
Without Insurance	15.32	29.35	27.06	25.58
2015				
With Insurance, With Claims	25.21	33.09	25.39	26.71
With Insurance, Without Claims	10.02	32.50	23.76	22.05
Without Insurance	18.09	29.90	27.18	26.23

Comparison of dependency ratios between farmers with insurance and farmers without insurance showed significant difference with a *p-value* of 0.0610 for 2014. Dependency ratio refers to the number of dependents over the total number of members in the households. The difference in dependency ratios for the two years were not significantly different.

No significant association between PhilHealth membership and crop insurance was obtained with odds ratio of 0.906 and 0.925 with Wald's confidence limits (0.631 - 1.902) and (0.645 -1.327), respectively.

Tables 14 to 20 show the relative proportions of farmers who have availed of various programs including those of government such as Philhealth, SSS/GSIS, Pantawid, private insurance, mutual aid, feeding programs between the insured and non-insured farmers. None of the involvements in these programs seem to be associated with whether the farmer being insured or not.

Among these government programs, it is only the Philhealth insurance and the Pantawid program which proved helpful according to the farmers.

Table 14. Proportion of farmers that are PhilHealth members in 2014 and 2015.

Treatment Groups	Farm Size (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
With Insurance, With Claims	62.5	76.19	65.22	66.94
With Insurance, Without Claims	52.94	58.62	49.18	52.42
Without Insurance	57.14	54.00	65.38	61.69
2015				
With Insurance, With Claims	62.5	76.19	66.67	68
With Insurance, Without Claims	52.94	58.62	50.00	52.8
Without Insurance	57.14	54.00	65.82	62

A large proportion of the farmers have farming as the primary occupation and chose to work on their farm with no pay. Hence very few of them have SSS or GSIS insurance. The only way that most of the farmers can be insured is if they get like SSS as self-employed members.

Table 15. Proportion of farmers that are SSS/GSIS members in 2014 and 2015.

TREATMENT GROUPS	Farm Size (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
With Insurance, With Claims	12.5	9.52	16.67	15.2
With Insurance, Without Claims	26.47	20.69	8.06	16
Without Insurance	21.95	0.00	13.92	12.4
2015				
With Insurance, With Claims	12.5	9.52	15.62	14.4
With Insurance, Without Claims	26.47	20.69	8.06	16
Without Insurance	19.51	0.00	13.29	11.6

Table 16. Proportion of farmers that are Pantawid members in 2014 and 2015.

TREATMENT GROUPS	Farm Size (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
With Insurance, With Claims	12.5	19.05	28.12	25.6
With Insurance, Without Claims	20.59	20.69	22.58	21.6
Without Insurance	19.05	32.00	25.32	25.6
2015				
With Insurance, With Claims	12.5	19.05	28.12	25.6
With Insurance, Without Claims	20.59	20.69	20.97	20.8
Without Insurance	19.51	32.00	24.68	25.2

Table 17. Proportion of farmers with private insurance in 2014 and 2015.

Treatment Groups	Farm Size (in ha)			
	≤ 0.5	>0.5 to 1	> 1	Overall
2014				
With Insurance, With Claims	0.00	4.76	7.29	6.4
With Insurance, Without Claims	0.00	6.90	4.84	4
Without Insurance	2.44	0.00	4.43	3.2
2015				
With Insurance, With Claims	0.00	4.76	6.25	5.6
With Insurance, Without Claims	0.00	6.90	3.22	3.2
Without Insurance	2.44	0.00	3.80	2.8

Table 18. Proportion of farmers with mutual aid in 2014 and 2015.

Treatment Groups	Farm Size (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
With Insurance, With Claims	0.00	0.00	7.29	5.6
With Insurance, Without Claims	5.88	3.45	4.84	4.8
Without Insurance	2.44	0.00	6.33	4.4
2015				
With Insurance, With Claims	0.00	0.00	6.25	4.8
With Insurance, Without Claims	5.88	3.45	3.22	4
Without Insurance	2.44	0.00	5.70	4

Table 19. Proportion of farmers who are in a feeding program in 2014 and 2015.

TREATMENT GROUPS	Farm Size (in ha)			
	≤ 0.5	>0.5 to 1	> 1	Overall
2014				
With Insurance, With Claims	0.00	0.00	4.17	3.2
With Insurance, Without Claims	0.00	0.00	1.61	0.8
Without Insurance	0.00	0.00	1.90	1.2
2015				
With Insurance, With Claims	0.00	0.00	3.12	2.4
With Insurance, Without Claims	0.00	0.00	0.00	0
Without Insurance	0.00	0.00	1.27	0.8

Table 20. Proportion of farmers who are in a cash for work program in 2014 and 2015.

TREATMENT GROUPS	Farm Size (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
With Insurance, With Claims	0.00	4.76	4.17	4.8
With Insurance, Without Claims	0.00	0.00	1.61	0.8
Without Insurance	2.44	0.00	1.90	1.6
2015				
With Insurance, With Claims	0.00	4.76	4.17	4
With Insurance, Without Claims	0.00	0.00	0.00	0
Without Insurance	2.44	0.00	1.27	1.2

There are only very few farmers who are engaged in cash for work program. Most of the farmers chose to work on their respective farms even without pay or work as hired farm workers in other farmers' fields.

Table 21. Proportion of farmers who have health assistance in 2014 and 2015.

Treatment Groups	Farm Size (in ha)			Overall
	≤ 0.5	>0.5 to 1	> 1	
2014				
With Insurance, With Claims	0.00	0.00	7.29	5.6
With Insurance, Without Claims	8.82	10.34	4.84	7.2
Without Insurance	4.76	6.00	3.80	4.4
2015				
With Insurance, With Claims	0.00	0.00	6.25	4.8
With Insurance, Without Claims	8.82	10.34	4.84	7.2
Without Insurance	4.76	6.00	3.16	4

There are no significant differences between insured and non-insured farmers for 2014 (p=0.4479) and for 2015 (p=0.5246) for health assistance. The highest proportion of farmers who received health assistance was obtained for insured without claims with farm size 0.5 to 1 ha.

Participation in Farmers' Organization

Only about 15% of the farmers joined farmer organizations. This is so even with the implementation of the KAANIB Project of the Philippine Coconut Authority with about 18 farmer organizations in CALABARZON alone. As of 2012, membership to various coconut farmers' organizations reached more than 2,600 only (Philippine Coconut Authority). The need to educate farmers to enlighten them on the objectives of these organizations and the benefits they can get from them are obvious. It is believed that increased efforts of the local municipal agriculture office and PCA will increase participation rate of coconut farmers. Unlike in other crops, like rice, farmers find it advantageous to be members of farmers organization to easily avail of agricultural services like irrigation, harvesting, access to farm machinery especially during planting and harvesting and credit and access to free farm input like fertilizer and pesticides. Since coconut is not an input-intensive crop, most farmers forego joining farmers' organizations.

Farmers who are insured are 2.47 times more likely to be members of farmer organization than those who are not insured. Between farmers with claims and those without, those with claims are 1.2 times more likely to be members of farmer organizations.

Farm Characteristics

No significant differences (p=0.3542) were obtained between farmers with insurance and farmers without insurance with respect to the number of years of farming experience. The mean number of years of farming experience by treatment group and farm size are given in Table 22. Farming experience ranged from 0 to 65 years with an average of 24.64 years. Since most of the coconut farms visited had trees that were more than 25 years old, this means that most of the farms were either from inheritance or were passed on to the current owners already with a standing crop. None of the farmers interviewed were able to exactly state the age of their coconut trees especially the full-bearing ones.

Table 22. Distribution of number of years of farming experience for the three treatment groups and farm sizes.

TREATMENT GROUPS	FARM SIZE (hectare)			MEAN (in years)
	≤ 0.5	> 0.5 to 1	>1	
With Insurance,With Claims	26.62	22.43	27.81	26.79
With Insurance,Without Claims	28.88	24.21	21.21	23.99
Without Insurance	26.74	20.67	24.19	23.92

Most of the farmers or about 96% across treatment groups have only one parcel of land being cultivated. These farmers are almost equally distributed among farmers with insurance and those without insurance. Only 16 farmers had more than one parcel equivalent to 3.2% (Table 23).

Table 23. Frequency(percentage) distribution of farmers according to number of parcels.

TREATMENT GROUPS	FARM SIZE (hectare)			TOTAL
	≤ 0.5	> 0.5 to 1	>1	
Number of Parcels=1				
With Insurance, With Claims	8 (1.6)	20 (4.0)	93 (18.6)	121 (24.2)
With Insurance, Without Claims	29 (5.8)	29 (5.8)	59 (11.8)	117 (23.4)
Without Insurance	42 (8.4)	47 (9.4)	154 (30.8)	243 (48.6)
Number of Parcels >1				
With Insurance, With Claims	0	1 (0.2)	1 (0.2)	2 (0.4)
With Insurance, Without Claims	5 (1.0)	2 (0.4)	3 (0.6)	10 (2.0)
Without Insurance	0	2 (0.4)	2 (0.4)	4 (0.8)

Table 24 shows 92% of these parcels were also located within the same barangay. Thirty parcels, equivalent to 6%, were located in other barangays but within the same municipality.

Table 24. Frequency(percentage) distribution of farmers according to location of parcels.

TREATMENT GROUPS	FARM LOCATION			
	Within the same barangay	Different barangay, Same municipality	Dfferent municipality, Same province	Different Province
With Insurance, With Claims	113 (22.6)	10 (2.0)	0	0
With Insurance, Without Claims	114 (22.8)	10 (2.0)	1 (0.2)	0
Without Insurance	232 (46.4)	10 (2.0)	3 (0.6)	1 (0.2)

Farmers practicing monocropping were slightly more than those practicing intercropping (Table 25). Some intercrops include coffee, fruit crops, banana and others. Farmers with farming as primary occupation are those who practice intercropping understandably.

Table 25. Frequency(percentage) distribution of farmers according to cropping system.

TREATMENT GROUPS	FARM SIZE (hectare)			TOTAL
	≤ 0.5	> 0.5 to 1	>1	
With Insurance,With Claims	5 (1.0)	11 (2.2)	55 (11.0)	71(14.2)
With Insurance, Without Claims	9 (1.8)	14 (2.8)	29 (5.8)	52 (10.4)
Without Insurance	20 (4.0)	27 (5.4)	89 (17.8)	136 (27.2)

As for irrigation, unless at the seedling stage, it is not the usual practice to irrigate coconut farms. None of the sampled farms practice irrigation. Most coconut farms if not all, are rainfed.

Table 26 shows that most of the coconut farms or about 59% are planted on rolling or hilly terrain. In practice, farmers would reserve the broad plains and river flooded plains to cash crops since coconuts can thrive without benefit of irrigation. Broad plains are reserved for cash crops like palay, corn or vegetables which need irrigation. In some cases, coconut trees on broad plains are even felled to give space for cash crops.

Table 26. Frequency(percentage) distribution of farmers according to topography of farms.

TREATMENT GROUPS	FARM SIZE (hectare)			TOTAL
	≤ 0.5	> 0.5 to 1	>1	
Hilly/ Rolling Topography				
With Insurance,With Claims	4 (0.8)	15 (3.0)	59 (11.8)	78 (15.6)
With Insurance,Without Claims	21 (4.2)	17 (3.4)	36 (27.2)	74 (14.8)
Without Insurance	16 (3.2)	27 (35.4)	99 (19.8)	142 (28.4)
Broad Plain				
With Insurance,With Claims	3 (0.6)	5 (1.0)	19 (3.8)	27 (5.4)
With Insurance,Without Claims	12 (2.4)	9 (1.8)	23 (4.6)	44 (8.8)
Without Insurance	21 (4.2)	16 (3.2)	47 (9.4)	84 (16.8)
River/ Flooded Plain				
With Insurance,With Claims	1 (0,2)	1 (0,2)	16 (3.2)	18 (3.6)
With Insurance,Without Claims	1 (0.2)	3 (0.6)	3 (0.6)	7 (1.4)
Without Insurance	4 (0.8)	5 (0.6)	10 (2.0)	19 (3.8)

About 49% or 243 have full ownership of their respective farms while 20% are tenants (Table 27). About 87 farmers hold certificates of land ownership.

Table 27. Frequency(percentage) distribution of farmers according to tenurial status of farm parcels.

TENURIAL STATUS	TREATMENT GROUPS			TOTAL
	With Insurance, With Claims	With Insurance, Without Claims	Without Insurance	
Fully Owned	65 (13.0)	66 (13.2)	112 (22.4)	243 (48.6)
Tenanted	12 (2.4)	30 (6.0)	55 (11.0)	97 (19.4)
Rented or Leased	0	1 (0.2)	4 (0.5)	5 (1.0)
Held under certificate of land ownership	37 (7.4)	12 (2.4)	38 (7.6)	87 (17.4)
Owner like possession on other than CLT	9 (1.8)	14 (2.8)	28 (5.6)	51 (10.2)
Others	0	2 (0.4)	9 (1.8)	11 (2.2)

Being a perennial crop, farm management practices like fertilization and pest control are not as intensively implemented as in the annuals and cash crops like palay, corn and banana. The same is true for other farm operations such as cultivation, weeding, and other farm maintenance practices. While pest infestation had become serious in 2013 to 2015 due *Cocolisap* and *Brontispa* in some locations, very few farmers resorted to chemical pesticide applications due to difficulty in the manner of application.

Shocks and Problems Encountered

Farmer respondents were asked about the three most important problems in relation to their farming activities. Three problems were consistently identified by the farmers across treatment groups and these are: 1) adverse weather conditions; 2) low farm gate prices of agricultural products; and 3) pest and diseases.

Table 28. Frequency(percentage) distribution of farmers according to problems encountered by farmers in their agricultural activities.

IMPORTANT PROBLEM	Farm Size			Overall
	≤ 0.5	>0.5 to 1	> 1	
With Insurance, With Claims				
Adverse weather conditions	6(8.6)	12 (13.6)	58 (21.8)	76 (71.7)
Farmers being heavily indebted to traders/lack of capital	0	0	1(0.4)	1 (0.9)
High cost of labor	0	0	1(0.4)	1(0.9)
Low farm gate price of agricultural products	1(1.4)	3(3.4)	4 (1.5)	8 (7.6)
Pest, weeds, emergence of new pests and diseases	1(1.4)	0	0	1(0.9)
Water shortage	0	0	1	1 (0.9)
Poor soil fertility	0	0	1	1 (0.9)
Others	0	5 (5.7)	12 (4.5)	17 (16.0)
With Insurance, Without Claims				
Adverse weather conditions	18	15(17.0)	42 (15.8)	75 (70.1)
Farmers being heavily indebted to traders/lack of capital	1	0	0	1 (0.9)
High cost of farm inputs	0	3	1 (0.4)	4 (3.7)
High cost of labor	1	0	0	1(0.9)
Lack of new farming technologies	0	0	1 (0.4)	1 (0.9)
Lack of post harvest facilities	2	1	1 (0.4)	4 (3.7)
Low farm gate price of agricultural products	5	0	4 (1.5)	9(8.4)

Pest, weeds, emergence of new pests and diseases	1	2	0	3 (2.0)
Poor soil fertility	0	0	1 (0.4)	1 (0.9)
Others	0	4	4 (1.5)	8 (7.5)
Without Insurance				
Adverse weather conditions	22	24	89 (33.4)	135 (64.0)
Farmers being heavily indebted to traders/lack of capital	2	0	1 (0.4)	3 (1.4)
High cost of farm inputs	4	3	1	8 (3.8)
High cost of labor	0	1	2	3 (1.4)
Lack of new farming technologies	0	0	1	1 (0.5)
Lack of post harvest facilities	0	0	0	0
Low farm gate price of agricultural products	3	5	14	22(10.4)
Pest, weeds, emergence of new pests and diseases	1	0	0	1 (0.5)
Water shortage	0	1	1	2 (1.0)
Poor soil fertility	0	0	0	0
Others	2	9	25	36 (17.1)

More than 70% of insured farmers and about 64% of those without insurance identified adverse weather conditions as the most important problem. Adverse conditions for coconut plantations refer to drought conditions and occurrence of typhoons, most notably typhoon *Glenda* back in July 2014. A number of coconut trees were felled by Typhoon Glenda which devastated CALABARZON in July 2014. Reports showed that coconut suffered P4.61 million or $106,000 in damage equivalent to more than 4,300 hectares of coconuts mostly in Quezon. Experts cited that coconut farmers will suffer from loss of income in 2015 which can even extend to 2016. The effects of typhoons include increased nut fall, destruction of inflorescence and leaves. With spathes damaged, reduced if not total yield loss may be experienced in the following months. Depending on the extent of damage, nut bearing may be delayed for a prolonged period leaving farmers with no harvest for as long as twelve months. The second most important problem is low farmgate prices of agricultural products. The range of prices of coconut products exhibited drastic fluctuations. Products derived from the farms include young nuts, whole mature nuts and copra. Some farmers related that their yield went down to almost zero after typhoon Glenda. The price of a whole nut ranged from as low as PhP6 per piece to as high as PhP 14 depending on the location. Copra, on the other hand, ranged from 20 to 38 pesos per kilo.

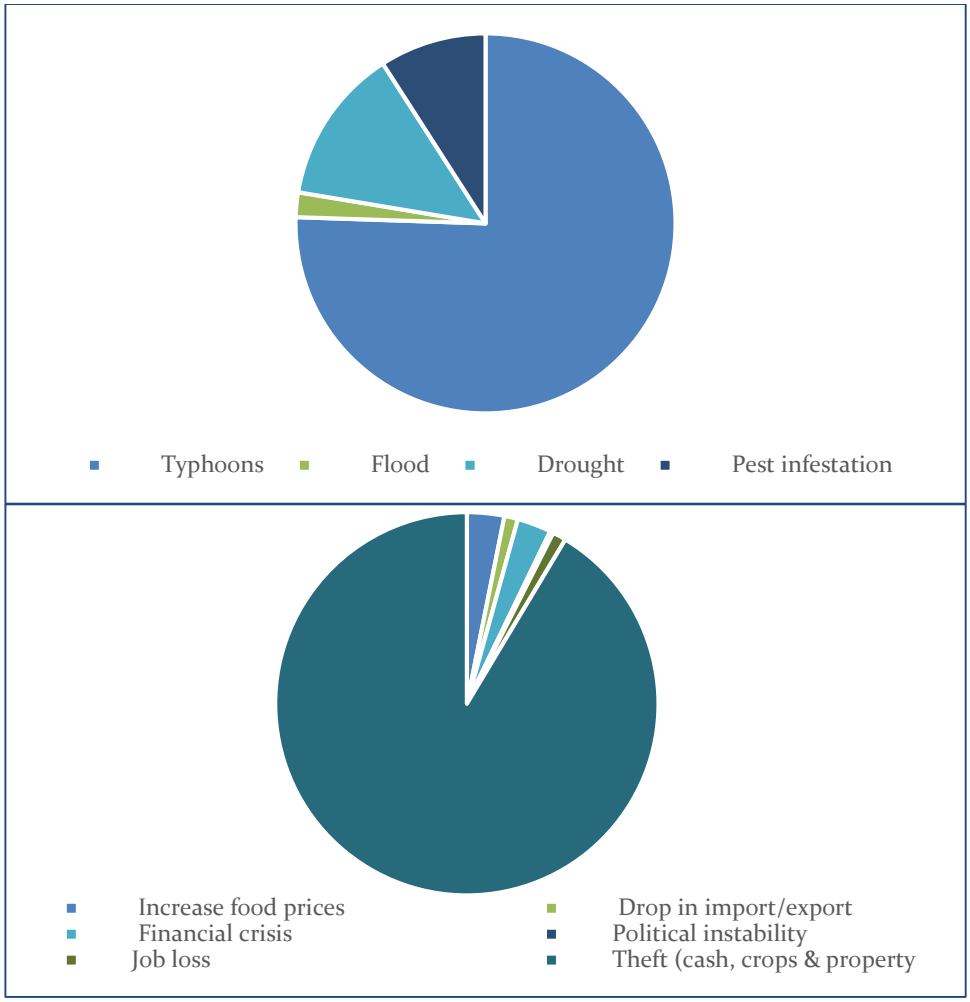

Fig. 5. Natural and man-made disasters experienced by coconut farmers.

About 22% or 108 farmers cited typhoons as the most common natural disaster, followed by drought and pest infestation. Theft was unanimously the most common man-made disaster with 319 farmers or 65% citing it as a problem. Nut pilferage is a common problem among coconut plantation owners. Typhoon *Glenda* was unanimously cited by the farmers as one of the more significant shocks they experienced in 2014. Pest infestation caused by *Cocolisap* during the past five years also took its toll on the coconut farmers resulting to greatly reduced income. Due to *Cocolisap*, a lot of plantation owners had to cut down trees hence greatly affecting the coconut industry. Eighty percent of the farmers agreed that these disasters caused them reduced income. About 30% cited that these natural disasters resulted in loss of their jobs.

Table 29. Ten most popular coping strategies of farmers across treatment groups and farm sizes.

COPING STRATEGY	FREQUENCY
Relied more on own produce	21 (19.8)
Shifted to cheaper items	20 (18.7)
Limited use of electricity	18 (16.5)
Reduced portions	15 (13.4)
Limited use of cooking fuel	13 (11.4)
Limited use of water	13 (11.4)
Spent savings	13 (11.4)
Shifted to cheaper means of transportation	12 (10.4)
Bought food on credit	11(9.5)
Bought second hand items	11 (9.5)

When asked how they cope with challenges brought about by natural and man-made disasters, the farmers cited several coping strategies and the ten most popular are presented in Table 29. Generally, the coping strategies included cutting down expenses on basic necessities like water, electricity, transportation and food. The shift to cheaper items and reliance on their own produce rather than buying were the most popular strategies. Only in cases of strong typhoons, did a few cited that they had to leave their houses for safer shelter. No farmer opted to transfer school children from private to public.

Agricultural Production

Relative distributions of total production for farmers with or without insurance across farm size groups for 2014 and 2015 are presented in the figures below. Data on production contained a lot of missing data as most of the farmers did not actually have a good idea of their farm yield, whether as matured nuts, young nuts or copra.

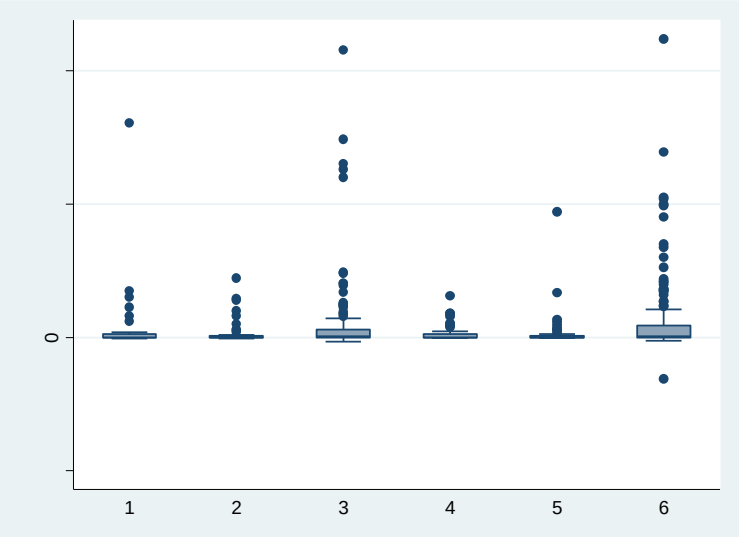

Fig. 6. Distribution of total production (2014) of farmers with insurance (1,2 and 3) and farmers without insurance (4, 5 and 6) across farm size groups.

Highly positively skewed graphs for total production were obtained for the groups. Characteristically, there are a number of outliers detected towards the higher values giving highly positively skewed distributions. Farms with area greater than one hectare obviously turned in extremely high production.

Total production ranged from 0 to over 430,000 kilograms (kg) in 2014 with a mean of 15,744 kg. The observations on total production are not that reliable as most farmers did not have an idea of their production. This is very common among small coconut farmers who sometimes are not even aware of the number of coconut trees in their own farm. Very few farmers are keeping records of the farm activities and expenses associated with them. This is not uncommon with coconut farmers. Farmers recognize that after 45 days or so, a new harvest of matured nuts is forthcoming.

Products from the farm take different forms and dependent on the ongoing practices and availability of traders or market in the locality. The most popular forms are young coconut (*buko*), matured nuts and copra.

Based on interviews with several farmers, production especially after typhoons is greatly reduced. During the course of the study, coconuts were challenged by another biotic stress commonly known as *Cocolisap*. Depending on the location,

the damage resulting from the insect ranged from 0 to 100%. According to the PCA, the most vulnerable plantations were those in Laguna and Batangas. In fact, some farmers had to have trees felled to salvage whatever income they can get from the farm in the form of coco lumber. By survey time, a number have started to recover but are not yet bearing nuts ready for harvest. On the other hand, some plantations hard-hit by typhoons survived with no nut yield for the most part of the year.

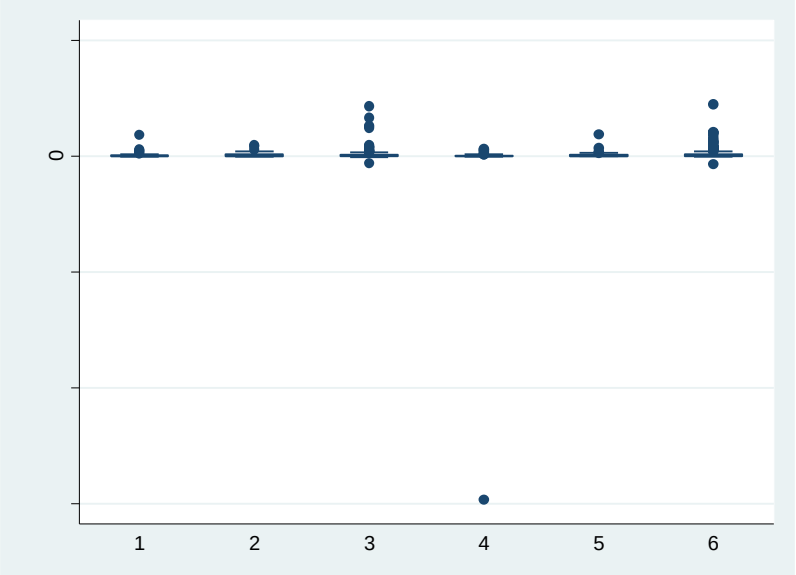

Fig. 7. Distribution of total production (2015) of farmers with insurance (1,2 and 3) and farmers without insurance (4, 5 and 6) across farm size groups.

Similar results were obtained for total production in 2015 but less consistent. The 2015 harvest for some plantations manifested the effects of the typhoon which hit the CALABARZON in July 2014. Nut development takes 12 months from pollination to become fully grown mature nuts. Any stress experienced by the coconut plant will therefore have an adverse effect on yield. This means that for nuts at the sixth month to maturity, nut fall will be a problem while for those at the younger stages, nut weight is greatly affected. Flower initiation, more importantly will also be affected, the effects of which will be realized at most two years later. Areas hard hit by the typhoon experienced reduced yield if not zero production.

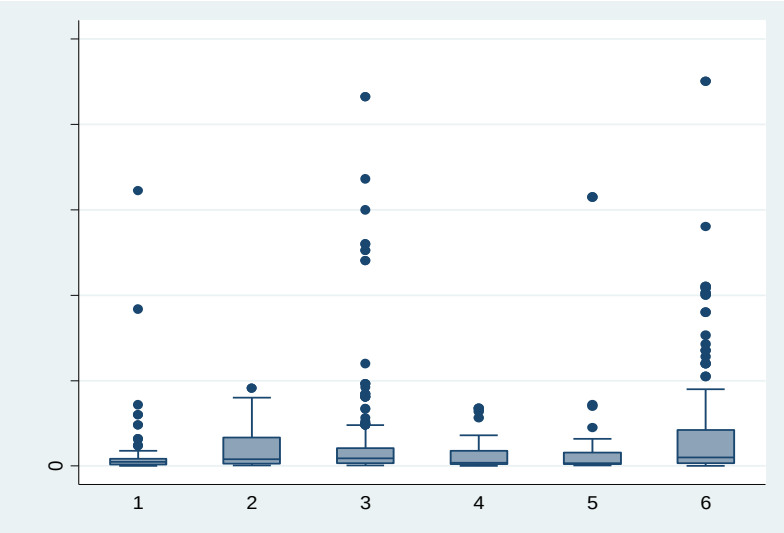

Fig. 8. Distribution of gross income of farmers with insurance (1,2 and 3) and farmers without insurance (4, 5 and 6) across farm size groups.

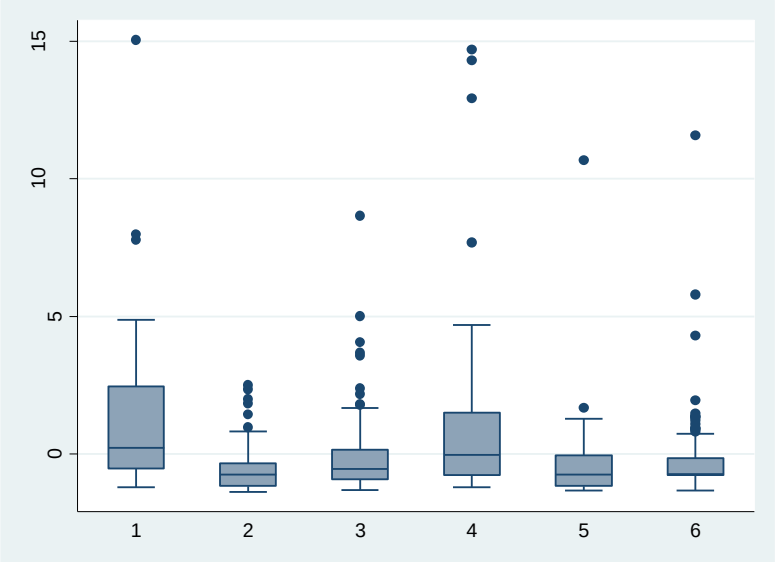

Fig. 9. Index of household assets for 2014.

The boxplots show wider range of middle 50% of the observations for farms at most 0.5 hectare compared to the larger farms.

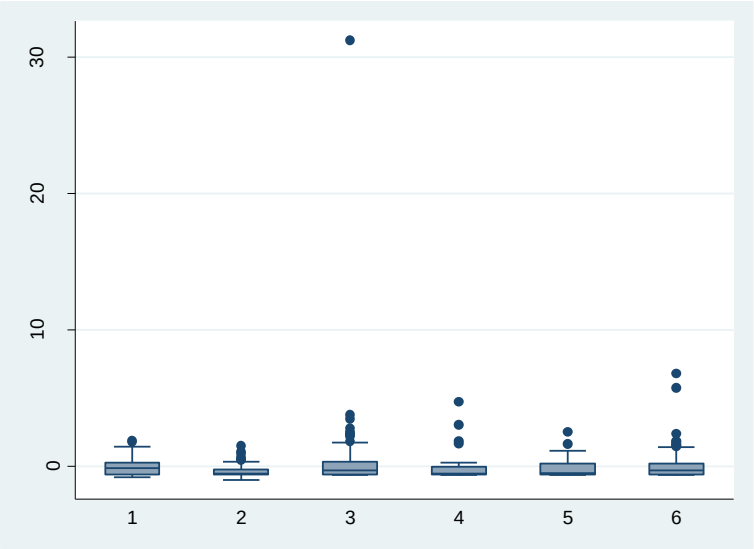

Fig. 10. Index of Household Assets for 2015.

Table 30. Comparison of mean coconut production across treatment groups and farm sizes.

TREATMENT GROUPS	FARM SIZE (hectare)			OVERALL
	≤ 0.5	> 0.5 to 1	>1	
2014				
With Insurance, With Claims vs. With Insurance, Without Claims	-0.3767 (0.7131)	-1.5141 (0.1332)	2.8658 (.0046)	1.6481 (0.1011)
With Insurance (Pooled) vs Without Insurance	0.5423 (0.5896)	-0.7352 (0.4640)	-0.7409 (0.4623)	-0.6478 (0.5198
2015				
With Insurance, With Claims vs. With Insurance, Without Claims	-1.0879 (0.2799)	-0.2429 (0.8086)	3.1116 (0.0021)	0.1844 (0.8537)
With Insurance (Pooled) vs Without Insurance	-1.0294 (0.3070)	0.5621 (0.5772)	-0.9469 (0.3484)	-1.2481 (0.2131)

Farmers' Income

No significant differences in mean income from coconut production were observed between the two groups with insurance, with claims and without claims, across farm sizes 0.5 ha and below and greater than 0.5 to 1 ha. Significant differences were detected only for farmers with farm sizes greater than 1 ha. The results were consistent across 2014 and 2015. When pooled, no differences were obtained between the group with insurance and the group without insurance.

Table 30. Computed t-statistics for comparison of mean income from coconut production across treatment groups and farm sizes.

TREATMENT GROUPS	FARM SIZE (hectare)			OVERALL
	≤ 0.5	> 0.5 to 1	>1	
2014				
With Insurance, With Claims vs. With Insurance, Without Claims	-0.2072 (0.8364)	-1.5141 (0.1332)	2.8658 (.0046)	1.6481 (0.1011)
With Insurance (Pooled) vs Without Insurance	0.5423 (0.5896)	-0.7352 (0.4640)	-0.7409 (0.4623)	-0.6478 (0.5198
2015				
With Insurance, With Claims vs. With Insurance, Without Claims	-1.0879 (0.2799)	-0.2429 (0.8086)	3.1116 (0.0021)	0.1844 (0.8537)
With Insurance (Pooled) vs Without Insurance	-1.0294 (0.3070)	0.5621 (0.5772)	-0.9469 (0.3484)	-1.2481 (0.2131)

Comparison of farm size groups for the treatment groups was also done using t-tests and results are presented in Table 30. No significant differences in income from coconut production were observed between farmers with farm size 0.5 ha and below (farm size 1) and farmers with farm size greater than 0.5 to 1 ha farm size 2). Significant differences were observed only between farmers with farm size 0.5 to 1 ha and farmers with more than 1 ha for those with insurance but without claims and those without insurance. In these cases, farm size 0.5 to 1 ha realized higher income than the larger farms. Likewise, no differences were observed when groups with insurance are pooled. Table 31 shows similar results obtained from income derived from agriculture-related activities. No differences were observed between farm size 1 and farm size 2 in all of the treatment groups.

Table 31. Computed t-statistics for comparison of mean income derived from other agricultural products across treatment groups and farm sizes.

TREATMENT GROUPS	FARM SIZE (hectare)			OVERALL
	≤ 0.5	> 0.5 to 1	>1	
2014				
With Insurance, With Claims vs. With Insurance, Without Claims	0.0855 (0.933)	-0.7645 (0.4464)	1.7028 (.0909)	1.0392 (0.3004)
With Insurance (Pooled) vs Without Insurance	0.8395 (0.4041)	-0.257 (0.7986)	-0.9294 (0.3572)	-0.6909 (0.4913)
2015				
With Insurance, With Claims vs. With Insurance, Without Claims	-0.9283 (0.3561)	0.2227 (0.8243)	2.278 (0.0242)	0.1951 (0.8454)
With Insurance (Pooled) vs Without Insurance	-1.0215 (0.3106)	0.5357 (0.5934)	-1.3406 (0.1864)	-1.4835 (0.1393)

Table 32. Net income of farmers for the three treatment groups and farm sizes.

Treatment Group	Farm Size					
	0.5 ha & below		> 0.5 to 1 ha		greater than 1 ha	
	2014	2015	2014	2015	2014	2015
With Insurance, With Claims	12940.00	12650.00	14597.62	15461.76	2308.38	3561.95
With Insurance, Without Claims	10788.82	14659.41	1214.14	9284.62	-26115.02	-23633.11
Without Insurance	2327.26	4147.71	9284.96	11760.90	-43579.55	-32052.28

Generally, the farmers' net income increased from 2014 to 2015 except for farmers with insurance with claims. Large losses were observed for large farms in 2014, maybe largely due to adverse conditions like drought and typhoons. On the average, farmers with insurance have higher net income compared to farmers without insurance. For farm size 0.5 ha and below, inconsistent results were obtained for farmers with insurance with claims and those without claims. Those with claims experienced an average decline of almost 300 pesos in 2015 while those without claims experienced gain of almost 4000 pesos.

Agricultural Insurance

Only 63 out of 250 coconut farmers with insurance stated that they are currently insured with PCIC. This reveals the large percentage of farmers with insurance who are not aware that their farms are insured. Out of the 63, only three farmers noted that they avail of insurance on a regular basis.

All farmers were asked their reasons for not availing of insurance. Farmers who have been insured before but are not currently insured were asked why they are not availing of the program regularly.

About 95% of insured farmers did not pay any premium. These were farmers who availed of the free insurance provided by the government. Since no premiums were paid, most of the farmers were not aware that they were actually insured. Majority (78%) or 156 farmers availed of the free government insurance provided and implemented by the Department of Agriculture while 18% or 37 farmers believed that it was the local government unit who provided the free insurance. During the interviews, some farmers would only recall that they have signed some document to this effect fully trusting their local agricultural technicians or members of the barangay council. Most of them actually have availed of crop insurance through the initiative of their local agricultural technicians.

The highest premium paid for the two hundred five farmers who responded was PhP 2500.

When asked why they do not avail of crop insurance, a large number of farmers enumerated the three most popular reasons, namely: 1) unaware that crop insurance exists; 2) lack of knowledge on the procedure for availing of insurance; and 3) lack of capacity to pay the premium. More than half (55%) of the coconut farmers cited that they are unaware of such a program. A large proportion (15%) were not aware of the procedures for availing of insurance packages while lack of capacity to pay was cited by 15% of the respondents. About 5% of the farmers felt that they do not see the need for getting insurance and are not satisfied with the amount of insurance coverage. Unlike farmers cultivating annual cash crops such as rice and corn, coconut farmers rarely experience 100% devastation from typhoons or droughts. After a typhoon or drought damage, coconut farmers expect that the coconut trees would recover and go back to its normal productive state after some time. This could be one of the reasons why some farmers felt they do not need insurance.

After a strong typhoon, a coconut tree may be defoliated but for as long as the meristem is not damaged, the tree can recover in about two years. However, during recovery, the farmer will have no yield. In addition, rather than paying for the premium, the farmer may get more selling coconut lumber than what he can claim for felled trees. The farmer may choose to convert his tree as coconut lumber than pay for insurance premium.
However in recent years, with stronger typhoons and extreme droughts and other extreme climatic events coupled with diseases, some farmers realize the advantage of getting insurance. The problem of access to insurance providers like the PCIC also poses a problem. With majority of the coconut plantations of CALABARZON situated in Quezon, very few farmers will be able to find time and exert extra effort to process required documents for insurance. The PCIC needs to address this to promote crop insurance among coconut farmers and widen its coverage to better serve its clients.

During the course of the survey, majority of the insured farmers related that they were not aware that they were themselves insured. This posed a lot of problems most especially in completing the questionnaires during the interviews. Worse, there were respondents included in the frame who according to them did not own coconut farms nor worked before as a coconut farmer.

Among those who are under the with insurance group, only 50% availed of insurance in the last two years while among those who filed for claims, only 44% were able to receive claims.

Moreover, it was raised in the dissemination forum that farmers can only file claims when they experience tree loss which is a very rare occurrence with coconuts unless a really devastating typhoon or severe drought is experienced. In the same forum, it was suggested that yield loss should be the basis of assessment rather than tree loss.

Almost half or 47% of the non-insured farmers cited lack of funds to pay for insurance premium as the prime reason for not regularly applying for insurance. About 25% cited the lack of information on how to avail of insurance benefits as the second most popular reason. About 6% thought that insurance will not be of help to their farming activities in the coconut plantation.

Table 33. Frequency (relative frequency) of reasons for non-availment of insurance.

REASONS FOR NON-AVAILMENT	Farm Size		
	0.5 ha & below	greater than 0.5 to 1 ha	greater than 1 ha
Lack of awareness on agricultural insurance	18 (7.20)	23 (9.20)	56 (22.40)
No need of insurance	1 (0.40)	0	6 (2.40)
Lack capacity to pay the premium	9 (3.60)	4 (1.60)	21 (8.40)
Not aware of the ways one can avail of insurance	6 (2.40)	4 (1.60)	17 (6.80)
Not satisfied with the amount of cover with respect to premium price	1 (0.40)	3 (1.20)	5 (2.00)
Difficulty in complying with documentary requirements	0	2 (0.80)	2 (0.80)
Lack of trust on the institution offering the agricultural insurance	0	0	1 (0.40)
Long time required to process claims payment	0	0	2 (0.80)
Not required by my credit institution	3 (1.20)	0	0
Others	3 (1.20)	6	25 (10.00)

The most popular reasons for non-availment among farmers are lack of awareness on agricultural insurance and lack of capacity to pay the premium. Since majority of the farmers have only high school as the highest grade completed, they do not have the qualifications to land jobs with regular salary. With most farmers having farming as their primary occupation, revenue only comes during harvest time. Matured coconuts are usually harvested every 45 days while young coconuts take about 30 days. Farmers usually have to pay for harvest operations. In the dissemination forum, it was mentioned that for every peso worth of coconut, the farmer gets about 35 centavos.

The lack of PCIC satellite offices in the region and remote location contribute to the very low rate of information dissemination on agricultural insurance among farmers. Most of the farmers get information only through farmers'

organizations, local barangay officials and the municipal agriculturist office. These institutions act as conduits in bringing government services and programs to the farmers and thus play a critical role in elevating the farmers ' status.

Table 34. Usage of indemnity.

USE OF INDEMNITY	Farm Size		
	0.5 ha & below	> 0.5 to 1 ha	greater than 1 ha
Farm Inputs	0	1	9
Loan Payment	0	0	1
Buy Food	1	3	6
Educational	0	1	3
Medical	0	0	1
Clear Debris	0	0	1
Others	0	0	0

Table 35. Summary statistics for use of indemnity claims.

Usage	Mean	Median	Standard Deviation	Minimum	Maximum
Used to pay farm production inputs	1639.286	1000	1286.046	500	4700
Used to pay existing loan so that I could renew my loan	750	750	353.5534	500	1000
Used to buy food for my family	1623.077	1000	1237.709	500	5000
Used to pay for my children's educational expenses	550	500	173.2051	400	850
Used to pay for my family's medical bills	1150	1150	1202.082	300	2000

Only 27 out of 125 respondents received indemnity. The most common usage of indemnity claims are listed in Table 34. Use of indemnity claims for farm input had the highest mean. For coconut farmers, these farm inputs more often will be labor during harvesting for monocropping systems. For intercropping systems, farm inputs will generally include planting materials such as seeds, etc, fertilizers and pesticides not really intended for the coconut. It is not the usual practice of farmers to buy farm inputs such as fertilizer and pesticides and use them for coconut trees in the farm. However, especially for Batangas, Laguna and some plantations in northern part of Quezon, a few farmers invested on pesticides for *Cocolisap* control.

Cropshocks

Table 36. Number of farmers experiencing shocks.

Treatment Groups	Farm Size (in ha)			
	≤ 0.5	>0.5 to 1	> 1	Overall
With Insurance, With Claims	3	13	61	77
With Insurance, Without Claims	13	14	15	42
Without Insurance	0	0	0	0

None of the farmers without insurance related that they experienced crop shock. For farmers with insurance, seventy seven farmers with claims cited that they experienced crop shocks. Overall, only 24% of the farmers related that they experienced crop shocks.

Table 37. Percentage of respondents willing to pay PhP 2,940/ha/year as premium.

Treatment Group	Farm Size			Overall
	0.5 ha & below	> 0.5 to 1 ha	>1 ha	
With Insurance,With Claims	0(0.00)	0 (0.00)	3 (0.70)	3 (0.70)
With Insurance, Without Claims	3(0.70)	3 (0.70)	1 (0.23)	7 (1.64)
Without Insurance	1(0.23)	4(0.94)	3 (0.70)	8 (1.87)

Less than 5% of the farmers are willing to pay the amount of PhP2,940 per hectare per year as premium to get maximum coverage. When asked whether they are willing to pay PhP 840 as cost of premium, only 10% of the farmers were willing to pay. These responses reflect farmers' attitude towards insurance. As earlier noted, the most popular reason why farmers do not avail is the lack awareness on insurance. Farmers perceive insurance as additional expense and therefore a risk rather than one that will curb risks.

Table 38. Frequency (percentage) of farmer respondents willing to pay PhP 840 per hectare per year as premium.

Treatment Group	Farm Size			Overall
	0.5 ha & below	> 0.5 to 1 ha	>1 ha	
With Insurance, With Claims	1 (0.23)	3 (0.70)	17 (3.98)	21 (4.92)
With Insurance, Without Claims	5 (1.17)	7 (1.64)	4 (0.94)	16 (3.75)
Without Insurance	10 (2.34)	11 (2.58)	20(4.68)	41 (9.60)

Table 39. Suggested cost of premium across treatment groups and farm sizes.

Amount of Premium	Number of Farmers	Relative Frequency
0	281	66.12
1 - 100	35	8.24
101-200	20	4.71
201 – 300	31	7.29
301 – 400	6	1.41
401 – 500	50	11.76
501 -600	0	0.00
601 - 700	0	0.00
701 - 800	0	0.00
801 - 900	1	0.24
901 - 1000	0	0.00
> 1000	1	0.24
Total	425	

Table 38 shows the cost of premium farmers are willing to pay. Majority of the farmer respondents, at 66.12%, were not willing to pay the cost of premium for insurance. About 33% were willing to pay one peso to 500 pesos while only two respondents were willing to pay more than 800 pesos.

Construction of predictive models

Logistic regression was employed to identify farm and household characteristics associated with the probability that the farmer will be insured. Only the involvement in farmers' organization gave significant association with the probability that the farmer will be insured. The likelihood ratio chi-square test statistic was significant (p=.001) with odds ratio of 2.46, with 95% confidence interval of [1.447076, 4.170132]. This implies that among those who are insured, farmers involved with farmer organizations are 2.46 times more likely than those who are not members of farmers' organization.

INSIGHTS AND RECOMMENDATIONS

It is a known fact that coverage of farmers by the PCIC is still at a very low rate which is less than 15%. The study exposed several reasons why this is so. One of the main reasons cited is the lack of awareness of farmers on the availability, procedures and benefits of insurance. During the course of the interviews in the survey itself, the farmers were not aware where the PCIC office was located in their municipality if ever it had one. For increased coverage, it would certainly be of advantage if there were more PCIC offices in locations where the farmers are. As it is, the PCIC office in CALABARZON is located in Calamba City in Laguna when about 80% of coconut plantations are situated in Quezon.

Sustained efforts to inform, educate and communicate the farmers on the advantages and benefits of insurance programs should be seriously considered to increase awareness. As was gathered, the farmers are not willing to pay any amount of premium. This poses a challenge for the insurance provider to come up with more attractive packages. Insurance products that incorporate modern technology like weather-based indices can be more attractive especially to avoid the problem of objectivity in crop damage assessment. One of the reasons why farmers do not subscribe to insurance products is the manner of assessment of damage to determine claims. With modern technology, there is a chance for more objective assessment of crop loss and damages. The standards for assessing crop damage for coconut farms needs to be revisited. According to PCIC, coconut farmers are paid only when coconut trees are completely damaged or felled. Typhoons, droughts or floods may render heavy damage to the coconut tree, rendering it unproductive with zero yield for over a year or so, but rarely do they result to felling. This means that while waiting for recovery of the palms which may take about two years, the farmers cannot get anything from PCIC nor from their coconut trees.

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

During the survey, there were some respondents who paid a small amount, like PhP 50 for "insurance premium". Apparently this premium is for a life insurance product which was implemented to increase coverage. If the farmer is not willing to pay, where would the premium come from? Because of the free insurance provided, some farmers believed that they do not need to pay.

As to the conduct of the survey, the team encountered problems that resulted in additional time, cost and effort for the survey team. Inaccuracies in the frame increased implementation cost (travel, enumeration) especially during the validation of the respondents. There were also some problems with the survey instrument and the technology with which it was implemented. The instrument could have been more effective if the questions were limited to obtaining

information relevant to coconut farming or questions designed specifically for coconut farmers. A number of questions were in the survey instrument to which the farmers cannot relate to especially on some cultural management practices like fertilization, pesticide use and seasonal planting to cite a few. Since these were required fields, the enumerator needed to go through all of the questions even if they were not relevant to the coconut farmer making enumeration time-consuming, tedious and less efficient.