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Establishing baseline agriculture performance and rural development indicators in Cagayan Province

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Abstract

Agriculture is the principal source of income in many developing countries, and raising productivity in this sector has the potential to raise farm revenue and alleviate rural poverty. This study sought to establish a baseline of information about agriculture performance and rural development indicators in the province of Cagayan. This inquiry is being carried out using a survey technique in order to obtain information from the participants. The information for the study was gathered through the use of questionnaires. Participants in the research were four hundred (400) farmers from the province of Cagayan. In order to analyze, the data was put into SPSS, which included the usage of percentages, means, and standard deviation. Results reveal that people in their mid-adult years made up the majority of those who answered the survey questions. Despite the fact that both sexes are involved in agriculture in the area, males account for a greater proportion of it. A significant proportion of respondents cite government officials and staff as their primary sources of information. While new technologies are still minor information sources, the development of ICTs to facilitate information conveyance is promoted to meet the demands of a quickly changing society.

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Introduction

In many developing nations, agriculture is the primary source of income, and increasing productivity in this sector has the potential to boost farm revenue and relieve rural poverty (Balisacan *et al.*, 2012; Suh, 2015). Millions of Filipino farmers rely on rice as a primary source of income, as it is the country's most important agricultural product (Bordey, 2010; Briones, 2010; Fuwa & Marciano, 2017). Even more remarkable, from 1970 to 2008, the Philippines produced 16.82 million metric tons of rice. Due to natural calamities (such as typhoon2), output decreased (to 15.77mmT) in 2010. As a result, Philippine rice output in 2011 increased to 16.68 million metric tons, a record high. There was a 3.4 percent rise in the total area allotted to rice growing between 2011 and 2012. According to the National Agricultural Statistics Service (NASS), rice yields grew from 3.71 metric tons/hectare in 2011 to 3.84 tons/hectare in 2012. Increased access to irrigation and improved seed-fertilizer technologies are to blame for this rise.

Research (Galero *et al.*, 2014; Timmer, 2012; Villaver *et al.*, 2019) indicates that the Philippines' rice self-sufficiency endeavor was hampered by a number of reasons, including the 2008 food crisis, high agricultural input costs, restrictions on land ownership, and a growing population. Food security in the Philippines may be in jeopardy as a result of the country's significant dependency on rice imports (Brooks *et al.*, 2013; Timmer, 2012).

The Philippines' agricultural strategy aims to achieve self-sufficiency in rice, which has a direct impact on the country's efforts to eliminate extreme hunger and poverty (Trethewie, 2012). Access to farmland by rural poor people is critical to food security and economic growth in the Philippines. It was finally enacted in 2010 by the Philippine government, which ordered a 70% drop in imports from 2.3 million tons to 707 thousand tons.

In the Philippines, there is a wide variety of agricultural farms. Traditional agricultural practices are still widely used by a huge majority of small-scale farmers on both sides of the spectrum. Land scarcity is a significant reason for the country's increasing reliance on rice imports. Only 4.69 million hectares of rice were harvested in 2012, compared to major rice-producing Asian countries. There were 44, 29, 12, and 10 million hectares of rice grown in India, China, Indonesia, and Thailand over the same era. The Philippines, according to the International Rice Research Institute (Irri, 2014), is a rice-importing country because of its small landmass, growing population, diet, climate, aging infrastructure, and a lack of land ownership, among other things.

According to economic theory, farmers' access to land and financial resources, both of which are essential for better land management, will be restricted if they do not own their property. Land is a critical component of agricultural growth in developing nations, which has drawn the attention of both experts and politicians (Akinyemi & Mushunje, 2019; Ballesteros and Bresciani, 2008; Koirala *et al.*, 2016).

Farm revenue is largely derived from the sale of farmland. Filipino agriculture relies heavily on the land leasing sector. Many land reform programs have been enacted by the Philippine government in an effort to make land more accessible. Land reform in the Philippines only applies to tenant areas that cultivate rice and corn. One of the most recent policies to redistribute farmland to landless farmers and renters was the Comprehensive Agrarian Reform Program (CARP), which was initiated in 1988 but is still not fully implemented. A maximum of 7 hectares of farmland can be possessed by one person under these land reforms (Vargas, 2003).

The CARP might have a negative impact on the rental market's efficiency. CARP-awarded land might lead to conflicts over land leases and/or property rights being canceled, which could lead to increased land rental rates as a result of this.

In general, the purpose of this study was to establish a baseline of information about agriculture performance and rural development indicators in the province of Cagayan.

Its specific objectives were as follows: 1) Establish baseline information about farmers; 2) Establish baseline information about the performance of agricultural production 3) Establish a baseline of information on rural development indicators in the province of Cagayan.

Materials and methods

Research Design

This inquiry is being carried out using a survey technique in order to obtain information from the participants. The survey method is a methodology for acquiring data that involves asking questions to persons who are believed to have the information that is being sought.

Participants

Participants in the research were four hundred (400) farmers from the province of Cagayan who were asked to participate. The following factors were used to guide the selection of respondents for a purposeful sampling approach utilizing the site selection technique: 1) The respondents must be at least 18 years old; 2) the respondents must have been a resident of the province for more than five years; and 3) the respondents must have been actively involved in farming for at least three years before participating in the survey.

The informants gave their consent before taking part in the study.

They answered in accordance with the nature of their experiences and their desire to take part in the study. Furthermore, as part of the study's ethical concerns, the participants were informed that the interviews they were conducting were being videotaped. The principles of autonomy, secrecy, anonymity, and reciprocity were upheld in this situation.

Instruments and Procedures

The instrument included items that elicited information about the respondents' personal traits. The questions were drafted in English by the researchers and then translated into Ilokano during the actual interview.

Group discussion questions for the grand tour were based on the Structured Interview Guide, which was distributed prior to the meeting. All of the interviews were meticulously recorded with the use of a tape recorder and a digital camera. A validation of the instrument was also carried out in order to uncover any defects in the questions and make any required adjustments before the device was put into use in the field for the first time. Respondents in the research were not among those who participated in the pre-testing activity.

Data Analysis

The information gathered from the survey was analyzed in order to uncover and grasp the respondents' personal experiences and viewpoints on a variety of themes, among other things.

In order to do additional analysis, the data was put into SPSS, which included the usage of percentages, means, and standard deviation.

Results

Respondents' Profile

Table 1 shows the age and sex of the respondents. A total of 121 or 30.3% of respondents were aged between 41-50, followed by a total of 114 or 28.5% of respondents aged 51-60, followed by 85 or 21.3% of respondents belonging to age group 61-70, followed by 57 or 14.2% of respondents in age group 31-40, followed by 14 or 3.5% of respondents in age group 71-80, followed by 8 or 2% of respondents respondents belong to the age group 21-30, and finally, the smallest number, 1 or 0.3% of respondents is 20 years old and below.

It is reasonable to presume that the bulk of survey respondents were in their middle adult years. This demonstrates that individuals with farming skill and enthusiasm are required for this age group.

This illustrates that agricultural employees are frequently older and age at a faster pace than other workers in the Philippines. Additionally, farmer aging is a problem in growing markets, as younger workers prefer nonfarm occupations.

Table 1. Age and sex of the respondents.

Variable	Frequency (n=400)	Percent
Age		
41-50	121	30.3
51-60	114	28.5
61-70	85	21.3
31-40	57	14.2
71-80	14	3.5
21-30	8	2
20 and below	1	0.3
Total	400	100
Mean	56	
SD	9.99	
Sex		
Male	280	70
Female	120	30
Total	400	100

For the sex of the participants, the were more males (70%) compared to females (30%). Rice growing continues to be viewed as a male-dominated activity. This explains why males are frequently portrayed as farmers, while females are portrayed as their assistants in charge of child care and household duties. It occurs in industries where male and female workers are equally compensated or where female workers are marginally compensated.

Table 2. Civil status and educational attainment of the respondents.

Variable	Frequency (n=400)	Percent
Civil Status		
Married	306	76.5
Refused to answer	51	12.8
Widowed	22	5.5
Single	18	4.5
Separate	3	0.8
Total	400	100
Educational Attainment		
High School Graduate	118	29.5
Elementary Graduate	61	15.3
College Graduate	56	14
Some High School	52	13
Some College	49	12.3
Some Elementary	34	8.6
Vocational	25	6.3
Post Graduate	4	1
None	1	0.3
Total	400	100

It can be seen from the Table 2 that most of the respondents are married (76.5%), followed by respondents who refused to answer (12.8%), widow/widowers (5.5%), single (4.5%), and separated (0.8%). This illustrates that married respondents are more likely than single respondents to engage in farming, as having a family necessitates them to have a source of money to support family members.

Educational attainment is also presented in table 2. It can be perceived that 29.5% of the respondents are high school graduates, over those who are elementary graduates (15.3%), college graduates (14%), have reached some high school (13%), some college (12.3%), some elementary (8.6%), vocational (6.3%), and the last, post graduates (1%).

This indicates that the majority of respondents employed in agriculture were literate and had earned a high school diploma.

Table 3. Respondents' response as to whether they own the land where their house is erected and as to whether they received money from relatives within and outside the country.

Variable	Frequency (n=400)	Percent
Residential Home Land Ownership		
Yes	278	69.5
No	122	30.5
Total	400	100
Respondents whether they receive remittances from relatives living in the Philippines		
No	328	82
Yes	72	18
Total	400	100
Respondents whether they receive remittances from relatives living in another country		
No	328	82
Yes	72	18
Total	400	100

Table 3 presents the respondents' response as to whether they own the land where their house is erected and as to whether they received money from relatives within and outside the country.

There are more participants who owns the land where they live (69.5%) than those who do not (30.5%). More respondents reported that they do not receive remittances from relatives living in the Philippines (82%) than those who do (18%). Similarly, more respondents do not receive remittance from relatives living abroad (82%) than those who receive (18%).

Table 4. Number of children of the respondents below 21 years old and number of children attending school.

Variable	Frequency (n=400)	Percent
Respondents with children below 21 years old		
0	176	44
2	83	20.8
1	80	20
3	40	10
4	13	3.3
5	7	1.8
6	1	0.3
Total	400	100
Mean	1.40	
SD	1.29	
Respondents with children below 20 years old attending school		
0	183	45.8
1	84	21
2	83	20.8
3	34	8.5
4	9	2.3
5	7	1.8
Total	400	100
Mean	1.21	
SD	1.18	

The number of children of the respondents below 21 years old and number of children attending school is presented in table 4. Forty-four percent of the respondents do not have children below 21 years old, over those who have two (20.8%), one child (20%), three children (10%), four children (3.3%), five children (1.8%), and the least, six (0.3%).

The 45.8% of the respondents do not have children below 20 years old attending school, compared to those who have one (21%), two (20.8%), three (8.5%), four (2.3%), and last, five (1.8%).

Table 5. Group identity of the respondents.

Group Identity of the Respondents	Frequency	Percent
Not applicable	229	56.5
Senior citizens	97	24
Indigenous people (IP)	77	19
Person with disability	2	0.5

With regard to the group identity of the respondents, as indicated in table 5, the majority do not have applicable group identity (56.5%), followed by senior citizens (24%), indigenous people (IP) (19%), and persons with disabilities (0.5%).

Multiple Response

Table 6. Data of the respondents as to whether they are a beneficiary of the "Pantawid Pamilyang Pilipino Program" or 4Ps and whether they are the head of their household.

Variable	Frequency (n=400)	Percent
Respondents whether their families are beneficiary of the 4Ps		
No	354	88.5
Yes	45	11.3
Refused to answer	1	0.3
Total	400	100
Whether the respondents are head of the household		
Yes	296	74
No	104	26
Total	400	100

Table 6 reveals the data of the respondents as to whether they are a beneficiary of the "Pantawid Pamilyang Pilipino Program" or 4Ps and whether they are the head of their household. Most participants reported that their families are not beneficiary of the 4Ps (88.5%) over than who said that their families are beneficiary (11.3%), and the ones who refused to answer (0.3%). More participants stated that they are the head of their household (74%) compared to those who are not (26%).

Table 7. Sex aggregation of household members.

Variable	Frequency (n=400)	Percent
Number of Male Household Member		
2	135	33.8
1	105	26.3
3	91	22.8
4	32	8
5	24	6
6	8	2
0	3	0.8
7	2	0.5
Total	400	100
Mean	2.4	
SD	1.28	
Number of Female Household Member		
2	134	33.5
1	105	26.3
3	92	23
4	37	9.3
5	17	4.3
0	7	1.8
7	6	1.5
6	1	0.3
8	1	0.3
Total	400	100
Mean	2.35	
SD	1.31	

It can be seen from table 7 that some respondents have two male household members (33.8%) followed by those who have one male member (26.3%), three members (22.8%), four members (8%), five members (6%), no male member (0.8%), and seven members (0.5%). Similarly, the majority of respondents (33.5%) have two female household members, followed by those with one female household member (26.3%), three female household members (23%), four female household members (9.3%), five female household members (4.3%), no female household member (1.8%), and seven female household members (1.5%), six female household members (0.3%), and eight female household members (0.3%).

Respondents' response as to whether they own any government or non-government Identification cards (IDs) and types of ID they possess is revealed in Table 9. Respondents who possess a government ID (92.3%) have a greater number than who do not (7.8%). For the type of ID, most respondents possess other types of IDs (52.5%), over those who possess driver's license (17.4%), PhilHealth (12.6%), no ID (7.9%), SSS (4.8%), UMID (2.5%), PRC License (1.4%), and the last, GSIS (1%).

Table 8. Engagement of respondents in the different sectors of agriculture.

Engagement of respondents in the different sectors of agriculture	Frequency (n=400)	Percent
1	246	61.5
2	120	30
3	16	4
4	10	2.5
5	3	0.8
6	3	0.8
7	2	0.5
Total	400	100
Mean	1.55	
SD	0.93	

Table 8 presents the engagement of respondents in the different sectors of agriculture. The majority of the respondents are engaged to one sector of agriculture (61.5%), compared to those who are engaged to two (30%), three (4%), four (2.5%), five (0.8), six (0.8%), and seven sectors of agriculture (0.5%).

Table 9. Respondents' response as to whether they own any government or non-government Identification cards (IDs) and types of ID they possess.

Variable	Frequency (n=400)	Percent
Respondents' whether they possess a government ID		
Yes	369	92.3
No	31	7.8
Total	400	100
Type of ID		
Others	254	52.5
Driver's License	84	17.4
PhilHealth	61	12.6
No ID	38	7.9
SSS	23	4.8
UMID	12	2.5
PRC License	7	1.4
GSIS	5	1

Others: Postal ID, Voter's ID, Senior Citizen ID, Barangay ID, Passport, Government employee ID, 4P's ID, National ID, TIN ID

Table 10. Respondents' response as to whether they are member of the Social Security System (SSS).

SSS Membership	Frequency (n=400)	Percent
No	323	80.75
Yes	77	19.25
Total	400	100

From Table 10, it can be discerned that more respondents (80.75%) are members of the Social Security System (SSS) than those who are not members of the said system (19.25%)

Table 11. Respondents' response as to whether they are members of any Farmers, Livestock Raisers, or Fishers Association/Cooperative and reasons why they are non-member of any.

Variable	Frequency (n=400)	Percent
Respondents' response as to whether they have joined a cooperative/association		
No	204	50.5
Yes	196	48.5
Total	400	100
Respondents' response as to why they are not member of any cooperative or association		
Not applicable	201	50.25
No Cooperative/Association in the area	119	29.75
Not interested	64	16
Stopped membership	5	1.25
Others	11	2.75
Total	400	100

Others: Avoid issues, cooperative not active

The respondents' response as to whether they are members of any Farmers, Livestock Raisers, or Fishers Association/Cooperative and reasons why they are non-member of any is presented in Table 11. More participants responded that they did not join a cooperative/association (50.5%) than those who joined (48.5%). Most response as to why they are not member is that there is no cooperative/association in the area (29.75%), not interested (16%), others (2.75%), and stopped membership (1.25%).

Table 12. Respondents' response as to whether they are registered in the RSBSA, year of their registration and reason of non-registration.

Respondents' response as to whether they are registered in the RSBSA	Frequency (n=400)	Percent
No	54	13.5
Yes	346	86.5
Total	400	100
Year of Registration in the RSBSA	Frequency (n=400)	Percent
2019	217	54.3
2020	70	17.5
Not Applicable	54	13.5
2018	30	7.5
2021	17	4.3
2017	7	1.8
2016	4	1
2015	1	0.3
Total	400	100
Reason not registered to RSBSA	Frequency	Percent
Not applicable	346	86.5
Not aware of the registration	23	5.75
No response	16	4
Were not able to attend	9	2.25
On process	3	0.75
Not farm owner	1	0.25
on travel that time	1	0.25
Registered but no name in the list	1	0.25
Total	400	100

From the table above, it can be seen that a greater number of respondents are registered in the RSBSA (86.5%) than those who are not registered (13.5%).

The majority of the respondents who claimed to be registered was registered in the year of 2019 (54.3%), followed by those who registered in 2020 (17.5%), 2018 (7.5%), 2021 (4.3%), 2017 (1.8%), 2016 (1%), and the least, 2015 (0.3%). For the respondents who claimed to be not registered, their reason is that they are not aware of the registration (5.75%), followed by no response (4%), were not able to attend (2.25%), on process (0.75%), not farm owner (0.25%), on travel that time (0.25%), and the least, registered but no name in the list (0.25%).

Table 13. Respondents' time to travel to municipal hall (minute).

Time to travel to municipal hall (minute)	Frequency (n=400)	Percent
0-15	181	45.3
16-30	158	39.5
31-45	14	3.5
46-60	31	7.8
More than an hour	16	4
Total	400	100
Mean	23.24	
SD	22.102	

Table 13 show the respondents' time to travel to municipal hall. Some of them claimed that they have to travel to municipal hall by 0-15 minutes (45.3%), over those who claimed that they have to travel for 16-30 minutes (39.5%), 46-60 minutes (7.8%), 31-45 minutes (3.5%), and more than an hour (4%).

Table 14. Respondents' information source on government services, programs and projects.

Information source on government services, programs and projects	Frequency	Percent
Barangay officials and employees	391	31.9
Municipal/City Government Employees	244	20.1
Television(TV)	178	14.6
Radio	149	12.3
Internet, social media (FB, Twitter)	83	6.8
NGO,Association, or cooperative	76	6.3
Someone you know who has used the service	45	3.7
Billboards/Signs	20	1.6
Promo materials/ leaflets	20	1.6
Newspaper/Magazines	4	0.3
Someone you know who has NOT used the service	1	0.1
Others	5	0.4

Multiple Responses

Others: DA officials, SMS/Calls

Table 14 reflects the respondents' information source on government services, programs and projects. The source of information of 31.9% of the respondents are

the barangay officials and employees, followed by municipal/city government employees (20.1%), television (TV) (14.6%), radio (12.3%), internet, social media (FB, twitter) (6.8%), NGO, association, or cooperative (6.3%), someone they know who has used the service (3.7%), billboards/signs (1.6%), promo materials/leaflets (1.6%), others (0.4%), newspaper/magazines (0.3%), and someone they know who has not used the service (0.1%).

Table 15. Respondents' main source of income.

Main source of income	Frequency (n=400)	Percent
Farming	336	84
Fishing	35	8.75
Poultry/Livestock raising	23	5.75
Farm labor	5	1.25
Others	1	0.25
Total	400	100

Others: Sari-sari store,

The main source of income of the respondents is shown in Table 15. The generality of the respondents rely on farming as main source of income (84%), over those who rely on fishing (8.75%), poultry/livestock raising (5.75%), farm labor (1.25%), and others (0.25%).

Table 16. Respondents' information source agricultural services from the government.

Information source on agricultural services from the government	Frequency	Percent
Barangay officials and employees	377	94.25
DA official	270	67.50
Municipal agriculturist	255	63.75
Radio	104	26
NGO, association, or cooperative	69	17.25
Internet, social media (FB, Twitter)	50	12.5
Someone you know who has used the service	37	9.25
Billboards/Signs	20	5
Promo materials/ leaflets	19	4.75
Private enterprise/agent	11	2.75
Others	6	1.5
Newspaper/Magazines	5	1.25
Television	110	27.5

In terms of the respondents' information source on agricultural services from the government, as shown in table 16, most said that they receive information from barangay officials and employees (94.25%), over those who receive information from DA officials (67.50%), municipal agriculturist (63.75%), television (27.5%), radio (26%), NGO, association, or cooperative (17.25%), internet, social media (FB, Twitter) (12.5%), someone they know who has used the service (9.25%), billboards/signs (5%), promo materials/leaflets (4.75%), private enterprise/agent (2.75%), others (1.5%), and newspaper/magazines (1.25%).

Table 17. Goods and services received by respondents in the last 12 months.

Received goods and services of respondents in the last 12 months	Frequency	Percent
Fertilizers	340	85
Seeds	336	84
Trainings	46	11.5
Technology Demonstration	45	11.25
Information, education, and communication	28	7
Others	26	6.5
Botanical pesticides	23	5.75
Advice from or consultation with LGU ext	21	5.25
Establishment of small-scale irrigation	17	4.25
Biological control agents	13	3.25
Construction of farm production facilities	7	1.75
Maintenance of farm production facilities	7	1.75
Farm production-related machinery and eq	6	1.5
Post harvest equipment and machinery	6	1.5
Upgrading of farm production facilities	4	1
Rehabilitation of farm production facilities	3	0.75

In terms of the goods and services received by respondents in the last 12 months, most received goods or services were fertilizers (85%), followed by seeds (84%), trainings (11.5%), technology demonstration (11.25%), information, education, and communication (7%), others (6.5%), botanical pesticides (5.75%), advice from or consultation with LGU ext (5.25%), establishment of small-scale irrigation (4.25%), biological control agents (3.25%), construction of farm production facilities (1.75%), maintenance of farm production facilities (1.75%), farm production-related machinery and eq (1.5%), post-harvest equipment and machinery

(1.5%), upgrading of farm production facilities (1%), and the least, rehabilitation of farm production facilities (0.75%).

Table 18. Respondents' response as to whether they received goods or services from NGOs and goods or services received.

Variables	Frequency	Percent
Respondents' response whether they received goods or services from NGOs		
No	379	94.75
Yes	21	5.25
Total	400	100
NGO Goods or services received		
Not applicable	379	89.1
Seeds	18	0.2
Fertilizers	11	0.2
Others	4	1
Trainings	3	0.7
Botanical pesticides	2	0.2
Farm production-related machinery and eq	2	0.5
Technology Demonstrations	2	0.5
Biological Control Agents	1	0.2
Information, Education, and Communication (IEC) materials	1	0.2

Multiple responses

It can be seen in Table 18 that more respondents did not receive goods or services from NGOs (94.75%) than those who received (5.25%). In terms of the NGO Goods or services received, other types of goods/services are the most common (1%), followed by trainings (0.7%), farm production-related machinery and eq (0.5%), technology demonstrations (0.5%), seeds (0.2%), fertilizers (0.2%), botanical pesticides (0.2%), biological control agents (0.2%), and Information, Education, and Communication (IEC) materials (0.2%).

And lastly, Table 19 presents the respondents' response as to whether they received goods and services from Development Partner organizations and goods and services received. Almost all of the respondents reported that they did not receive goods or services from Development Partner organizations (98.25%) compared to those who had received (1.75%). Most respondents who received DPO goods or services had claimed other types of goods/services (1.5%), over those who received seeds (0.75%), fertilizers (0.5%), technology demonstrations (0.25%), and Information, Education, and Communication (IEC) materials (0.25%).

Table 19. Respondents' response as to whether they received goods and services from Development Partner organizations and goods and services received.

Variable	Frequency	Percent
Respondents' response whether they received goods or services from Development Partner organizations		
No	393	98.25
Yes	7	1.75
Total	400	100
DPO Goods or services received		
Technology Demonstrations	1	0.25
Information, Education, and Communication (IEC) materials	1	0.25
Others	6	1.5
Seeds	3	0.75
Fertilizers	2	0.5
Not applicable	387	96.75

Discussion

According to official national data issued by the National Statistical Coordination Board, the incidence of poverty in the Philippines is increasing. The prevalence of poverty in the general population increased from 24.9 percent in 2003 to 26.4 percent in 2006, and then increased somewhat further to 26.5 percent in 2009. This is the reversal of the decreasing trend and represents a significant detour from the route towards the achievement of the Millennium Development Objectives. There are still significant differences between the areas when it comes to poverty and inequality measurements (Reyes *et al.*, 2012). Rural poverty can be alleviated by boosting agricultural output in many developing countries, where farming is a major source of income (Balisacan *et al.*, 2012; Suh, 2015). A significant source of income for millions of Filipino farmers is the country's most important agricultural crop, rice (Bordey, 2010; Briones, 2010; Fuwa & Marciano, 2017). Even more astounding, the Philippines produced 16.82 million metric tons of rice between 1970 and 2008. Output was reduced in 2010 due to natural disasters, such as Typhoon2 (to 15.77mmT). As a result, rice production in the Philippines reached a record high of 16.68 million metric tons in 2011. Between 2011 and 2012, there was a 3.4 percent

increase in the overall rice-growing area. Rice yields increased from 3.71 metric tons/hectare in 2011 to 3.84 metric tons/hectare in 2012, according to the National Agricultural Statistics Service. For this increase, irrigation and improved seed-fertilizer technology are to be attributed.

As stated by Koirala *et al.* (2016), the Philippine government has also established a number of land reform laws in an effort to transfer agricultural lands to landless farmers and renters. The CARP has the potential to have a negative impact on the efficiency of the land rental market. It may have a chilling effect on rental activity since it is possible that leasing of lands awarded under the CARP could result in rental disputes and/or revocation of given rights to land which might result in higher land rental rates and therefore restrict rental activity.

The purpose of this study was to establish a baseline of information about agriculture performance and rural development indicators in the province of Cagayan. Results reveal that out of 400 respondents, a total of 121 or 30.3% of respondents were aged between 41-50. The bulk of survey respondents were in their middle adult years. A study conducted by Esiobu & I be (2015) found that this age group was comprised of the most inventive, driven, and adaptable people. Since most farmers in the region are at or near the peak of their economic and productive potential, this might be an important factor in encouraging the widespread adoption of entrepreneurial skills in the agricultural sector. Although both genders are active in agriculture, males have a larger share of it in the area. Onubuogu and Esiobu (2014) found that males make up a larger percentage of the workforce in agriculture. When it comes to things like land acquisition and other production aspects, men have traditionally held the upper hand over women in the community. Also, results show that most of the farmers had formal education training, which is likely to have raised their literacy levels. In Chukwu (2013), he said that people with more education are usually faster to adopt new farming technologies. The findings show that the farmers have enough education to be able to adopt new ideas and learn how to be an entrepreneur. It is thought that a farmer's education level will play a big role in how he or she makes decisions about starting a business. Married respondents also make up the majority of those polled. Farming is a more common occupation for married participants as having a family requires them to have an income in order to provide for their family's necessities (Magulod *et al.*, 2019). The study also found out that most farmers own their land. This finding is line with the discovery of Koirala *et al.* (2016) who said that when it comes to producing agriculture, land is a critical aspect, and the land leasing market is an essential institution in the agricultural industry. The ownership of land has a considerable influence on the efficiency of technological systems. However, more than half of the respondents are not members of cooperatives /association which may hinder them from improving their ways in farming. According to Esiobu *et al.* (2014), membership in cooperative societies enables farmers to share information about current agricultural methods and project a collective demand. Membership in a cooperative organization is supposed to increase farmers' entrepreneurial activity in agriculture in the area.

This study also revealed that a large number of the respondents rely on government officials and employees as source of information. While new technologies remain marginal sources of information, as reported by Hernando-Valdez & Cecilia (2021), the development of ICTs to facilitate the distribution of information is promoted in order to meet the demands of changing times. This approach, simpler access and information interchange will enhance the communication network, hence increasing extension service delivery.

Conclusion

People in their mid-adult years made up the majority of those who answered the survey questions. Despite the fact that both sexes are involved in agriculture in the area, males account for a greater proportion of it. In addition, the findings indicate that the majority of the farmers received formal school training, which is likely to have resulted in higher levels of literacy

among the population. The survey also discovered that farming is a more prevalent activity among married participants, owing to the fact that having a family necessitates earning a living in order to cater for the needs of one's household. Over half of those who responded are not members of cooperatives or associations, which may make it difficult for them to improve their agricultural practices. Also of note, a significant proportion of respondents cite government officials and staff as their primary sources of information. In the meanwhile, although new technologies continue to be marginal information sources, the development of information and communication technologies (ICTs) to simplify the transfer of information is encouraged in order to fulfill the demands of a rapidly changing world.

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