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Demographic profile of banana farmers in the municipalities of Allacapan, Lasam, Gattaran and Baggao in the Province of Cagayan, Philippines

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Key words: Socio-demographic profile , Iloco, Geo-referenced, Agro-climatic

Abstract

The study aimed to determine the socio-demographic profile of banana farmers in Allacapan, Lasam, Gattaran and Baggao, Cagayan; (2) identify the banana information strategies, technical assistance and support services offered to the respondents; (3) determine the knowledge and skills; and (4) the extent of improvement of the socio-economic status of the farmers. Banana Farmers in Allacapan, Lasam, Gattaran and Baggao, Cagayan Socio-Demographic Profile of the Respondents. The NAMRIA form was used to gather data to the banana farmers thru an individual interview from October to December 2020. The gathered data from the respondents were analyzed using the frequency counts, weighted means, and percentages. The geo-referenced locations of the banana farms were analyzed using the QGIS software. Results revealed that for the yield, majority of the banana growers in Allacapan had a yearly harvest ranging from 1000-5000 kilograms which means that low yield was obtained by the farmers. The GPS recordings of the banana farms were collected from March to May 2021. Based on the results of the study, the actual field visits and tracking of the banana samples using the geo-tracker application was a reliable technique. Moreover, training on banana production shall be included also to create awareness on the recommended practices for banana production.

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Introduction

Banana is one of the most important fruit crops of the Philippines (Damasco, *et. al.*, 2019). In Cagayan Valley, banana is the prime commodity under fruit crops. During the first quarter of 2019, the production was pulled down by 45.48% or shortage of 15,680 metric tons from its 2018 of 34,481 metric tons. This is due to the occurrence super typhoons Ompong and Rosita in 2nd semester of 2018 (PSA, 2019).

The Philippine production of banana since 2010 peaked in 2012 with more than 9.2 million metric tons followed by a sharp decline in 2013 as a direct result of the damage wrought by typhoon Pablo. In terms of area are planted, from a high of about 454,000 hectares hectares in 2012, this declined to about 446,000 hectares in 2013 and further down to 443,000 hectares in 2014 and 2015 (PSA, 2014-2017). The biggest commercial production are located in Davao Region in Mindanao and Cagayan Valley in Luzon. One of the problems that this study would like to address is the significant relationship between the socio-demographic profile of banana farmers to the cultivation practices at Cagayan; and relationship to agro-climatic conditions.

Generally, determine the socio-demographic profile of banana farmers in Allacapan, Lasam, Gattaran and Baggao, Cagayan; (2) identify the banana information strategies, technical assistance and support services offered to the respondents; (3) determine the knowledge and skills; (4) the extent of improvement of the socio-economic status of the farmers, and the relationships of the socio-economic, demographic characteristics of farmers with their knowledge and skills , and the extent of improvement of the socio-economic lives of the respondents; and (5) Provide up-to-date and reliable information for use by researchers and policy makers.

Materials and methods

This study was conducted to evaluate the demographic profile of banana farmers in the municipalities of Allacapan, Lasam, Gattaran and Baggao, in the province of Cagayan. The profiles covered the following: age, education, and banana farming experience. The banana production cultural management practices of the growers were also gathered.

Banana Farmers in Allacapan, Lasam, Gattaran and Baggao, Cagayan Socio-Demographic Profile of the Respondents. Many agricultural studies have observed a relationship between farmer demographic characteristics and environmental behaviors. These relationships are frequently employed in the construction of models, the identification of farmer types, or as part of more descriptive analyses aimed at understanding farmers' environmental behavior. However, they have also often been found to be inconsistent or contradictory. Although a considerable body of literature has built up around the subject area, research has a tendency to focus on factors such as the direction, strength and consistency of the relationship – leaving the issue of causality largely to speculation.

This review addresses this gap by reviewing literature on four (4) key demographic variables: age, experience, education, and gender for hypothesized causal links. Overall the review indicates that the issue of causality is a complex one. Inconsistent relationships can be attributed to the presence of multiple causal pathways, the role of scheme factors in determining which pathway is important, inadequately specified measurements of demographic characteristics, and the treatment of non-linear causalities as linear. In addition, all demographic characteristics were perceived to be influenced (to varying extents) by cultural-historical patterns leading to cohort effects or socialized differences in the relationship with environmental behaviour. The paper concludes that more work is required on the issue of causality.

Data gathering instrument

To gather the needed data, a survey questionnaire was used. This was supplemented by unstructured interview and informal observation in the selected banana growers in Allacapan, Lasam, Gattaran, and Baggao, Cagayan.

Data collection

The researcher conducted in-depth interviews with the banana grower/farmer respondents. In such interviews, an appropriate technique that may serve appealing to the respondents was applied in order to elicit correct information, and create conducive atmosphere for free flow of answers to questions asked. For more precise gathering of data, interview schedule was translated by the researchers in the vernacular (*Iloco*) as it is the common dialect used in the area to allow the farmers to understand better the questionnaire and enhance a speedy gathering of information.

Data analysis

The data was gathered, tallied, tabulated to determine the profile of the respondents, and the technology transfer strategies adopted in the promotion and dissemination of banana, the frequency counts, percentage and ranking was used in treating the data descriptively. These were statistically treated using descriptive analysis. The average weighted mean was used to treat the data on the knowledge gained and skills acquired from banana and the extent of improvement of the banana farmers along social, economic aspects.

Correlation analysis was used in finding the relationships between the personal characteristics of the respondents and their knowledge gained in banana, and the social and economic impact. Regression analysis was utilized in determining the indicators of success of the banana farmers.

Baseline data gathering for banana plantation

The data was collected based on records of all reported banana growers and farmers in the province. The banana plantations were then validated by reconnaissance survey with the aid of Global Positioning System (GPS) and a survey form developed by National Mapping and Resource Information Authority (NAMRIA). Land use (banana) systems data to be gathered were: capital intensity, market orientation, labor intensity, mechanization and power usage in relation to mechanization, farm size, infrastructure requirements, cropping characteristics and cultural management practices including nutrient and pest managements, harvest and post-harvest operations, land preparation and water management. The survey was dependent on the top banana growers and top banana plantations determined in baseline data gathering. The number of respondents was pre-determined based on the initial data generated.

Interview with farmers/baseline data gathering for banana plantation

Information on the disease previously observed and production/cultivation techniques such as : planting materials sources, fertilization cultivation, pest management and other practices was gathered through interview with the farmers in the municipalities.

Reconnaissance survey

The banana plantations were then validated by reconnaissance survey with the aid of Global Positioning System (GPS) and a survey form developed by National Mapping and Resource Information Authority (NAMRIA). The surveys determine geographic locations (using GPS) and the agricultural land use systems of banana farmers and growers (using NAMRIA survey form). Land use (banana) systems data gathered were capital intensity, market orientation, labor intensity, mechanization and power usage in relation to mechanization, farm size, infrastructure requirements, cropping characteristics and cultural management practices including nutrient and pest managements, harvest and post-harvest operations, land preparation and water management.

Spatial analysis

All data to be gathered including the geo-referenced banana locations and the qualitative data was spatially analyzed using Quantum Geographic Information System 2.18.4 (QGIS 2.18.4) software. The software was also used to generate the banana map of Cagayan province.

Results and discussion

Site selection

The site selection was based from the results of the gathered secondary data at the Office of the Provincial

Agriculturists (OPA) at Cagayan. The banana areas with historical BBTD infection in the major banana growing areas were considered in the survey.

The list of banana growers were gathered and verified through actual visits to the different municipalities of Cagayan. Four municipalities were selected in Cagayan province namely. Allacapan, Lasam, Gattaran and Baggao. After gathering all the list of potential growers courtesy calls and orientation was conducted at the Office of the Municipal Agriculturist (OMA).

Socio-demographic profile of the banana growers in Cagayan

As to the socio-demographic profile of banana growers in selected municipalities at Cagayan province, the findings revealed that the average age of farmers were 37, 44, 47 and 49 of which farmers from Allacapan (49 years old) were the oldest followed by Gattaran (47 y/o), and the youngest were farmers from Lasam (37 years old). The farmers from Allacapan were into farming for 22 years, 20 years, 16 years and 13 years for Lasam, Gattaran and Baggao, respectively.

Table 1. Socio- demographic profile of banana growers in selected municipalities at Cagayan Province.

Municipality	Ave. Age	Ave. Years In Banana Farming	Educational Attainment (%)					
			Elementary Level	Elem. Graduate	High School Level	High School Graduate	College Level	College Graduate
Allacapan	49	22	32	9	18	19	12	10
Lasam	37	20	36	14	23	12	10	5
Gattaran	47	16	39	14	11	22	6	6
Baggao	44	13	12	30	24	24	3	6

Likewise, majority of these farmers were elementary level 32%, 36% and 39% in Allacapan, Lasam and Gattaran while in Baggao farmers were elementary graduates (30%).

Farm size (%) of Banana Growers in Selected Municipalities at Cagayan Province

The farm size (%) of banana growers was shown in Fig. 1. The findings showed that majority of the banana farmers in the selected four municipalities have a farm size of one hectare below. In Lasam, Cagayan, the farm size of banana growers were 80%, followed by Baggao, Cagayan with 74 and 59.3 for Gattaran. Majority of farmers from Allacapan, Cagayan have a wider farm size (74%) ranging from 2-5 hectares. Only few farmers 8.10%, 4% and 3.70% have 5-10 has from Allacapan, Lasam and Gattaran, respectively while 2.70% and 2% for more than 10 has at Allacapan and Baggao.

Market orientation, Capital and Labor Intensity, and Power Usage of Banana Growers.

Market Orientation (%) of Banana Growers in Selected Municipalities at Cagayan province

The market orientation of banana growers is commercial with subsistence (Fig. 2) wherein in Baggao obtained the highest percentage with 98% followed by Lasam with 96, Allacapan with 95 and the least is from Gattaran with 80%. This means that the banana growers sell all their harvest for income and the fruits considered reject by the traders was left and served as their subsistence and food for animals. For their subsistence, some of them processed it into vinegar, banana que, and used for animal food.

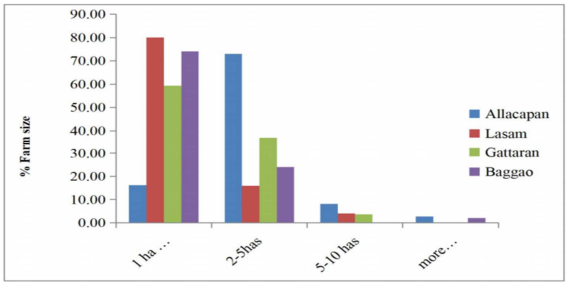

Fig. 1. Farm size (%) of Banana Growers in Selected Municipalities at Cagayan Province.

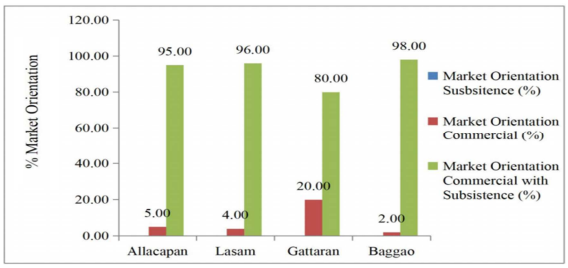

Fig. 2. Market Orientation (%) of Banana Growers in Selected Municipalities at Cagayan province.

Table 2. Capital, Labor Intensity and Power Usage of Banana Growers in Selected Municipalities at Cagayan province.

Municipality	Capital intensity	Labor intensity	Power usage	Mecha Nization	Materials input
Allacapan	traditional	high	Human labor	Non-mechanized	Low-no purchased
Lasam	traditonal	medium	Human labor	Non-mechanized	Low-no purchased
Gattaran	traditional	high	Human labor	Non-mechanized	Low-no purchased
Baggao	traditional	high	Human labor	Non-mechanized	Low-no purchased

The capital intensity is traditional wherein the farmers do not require high initial investment to establish their farm. The cultivation practices were done manually. Using machines or any equipment is not the practice but rather human labor. Some farmers were still practicing the *"Bayanihan* or *ammuyo* system. The material inputs used in banana farming is low-no purchased since majority of the farmers were not using fertilizers, insecticides, and any other pesticides. This is because farmers were not aware to such input needed in the banana production, only the use of weedicide.

Cultivation practices of Banana growers in selected municipalities at Cagayan Province

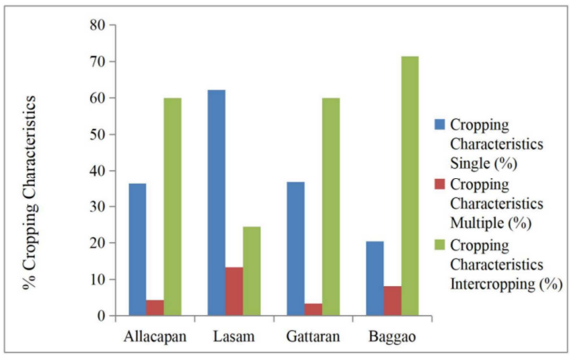

Fig. 3. Cropping characteristics of Banana Growers in Selected Municipalities at Cagayan province.

The cropping system of the farmers is intercropping of which 71.4% practiced in Baggao and 60% in Gattaran and Allacapan. Majority of the farmers intercropped corn, upland rice, fruit trees and vegetables such as eggplant and sitaw. In Lasam, 62.22% practiced single cropping (solely banana).

Land preparation

The area is prepared through the slash and burn practice of the farmers. Some farmers practiced the land clearing manually or with the application of weedicides. The preparation period usually starts from March-June of the year. Digging of holes is the common practiced of the farmers wherein its depth ranges from 1-2 feet.

Planting practices

Majorities which are 95-100% farmers got their planting materials from their own field. Within the locality, only few bought or exchanged suckers from the co-farmers. For the variety planted, the mixed planting of the two varieties namely: saba or commonly known as *dippig* or *tagalog*, latundan or locally known as *murusa* or *manila* obtained the highest percentage of 72%, and 56.60% at Lasam, and Allacapan, Cagayan. It was followed by the mixed planting of saba, lakatan and latundan which obtained 43% at Baggao, Cagayan. According to the farmers, this practiced gave them the highest income compare to planting of one variety alone. Other varieties planted were *bungulan* and *bullilising*.

Table 3. Planting practices of Banana growers in selected municipalities at Cagayan Province

Municipality	Planting Practices						
	Source of Planting Materials (%)		Variety Planted (%)				
	Own suckers	Bought/exchange from co farmer	Pure (*Saba*)	Pure *lakatan*	Mixed (Saba & Lakatan)	Mixed (*Saba & Latundan)*	Mixed (*Saba, Lakatan & Latund*an)
Allacapan	98	2.0	15.10	3.80	9.43	56.60	15.10
Lasam	99	1.0	24.00	0.00	4.00	72.00	0.00
Gattaran	95	5.0	31.90	2.90	40.60	7.24	17.40
Baggao	100	0.0	30.00	2.27	20.45	6.82	43.00

The 4 x 4 m planting distance of banana growers in Lasam, Cagayan had the highest% of 40 followed by 30% both in 3 x 3 and 2 x 2 m.

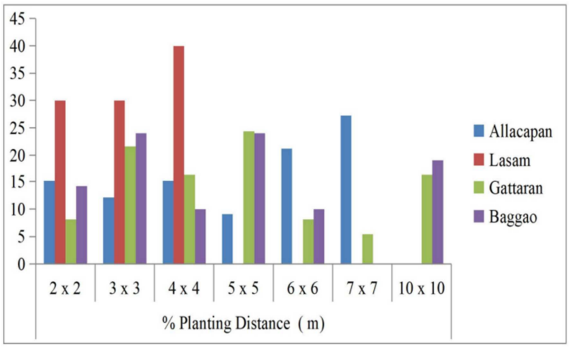

Fig. 4. Planting distance (m) of Banana growers in selected municipalities at Cagayan Province.

In Allacapan, Cagayan, 7 x 7 m obtained the highest percentage of 27.27 followed by 6 x 6 m with 21.21%, and 4 x 4 and 2 x 2 m with 15.15%. This means that the banana growers practiced in planting distance is wider. The 5 x 5 m is the planting distance of banana growers in Gattaran, Cagayan with 24.24% followed by 3 x 3 m with 21. 62% and 10 x 10 m with 16.21%. For Baggao, Cagayan, the planting distance is 3 x 3 m and 5 x 5 m with both 24%. It was followed by 10 x 10 m with 19.04% and the least is the 4 x 4 and 6 x 6 m with both 10%.

Fertilizer application

Farmers were not using fertilizers or no application at all. Only 1-3 farmers were using fertilizers at Gattaran and Baggao. This is done when they applied fertilizers in the intercropped corn.

Pest management

Farmers do not have management for the insect pest. For the BBTD disease or locally called “tungro”, some farmers cut the banana plants and leave it until it will decompose. The most susceptible variety of banana with this disease is the *lakatan*.

Harvesting and hauling

The harvesting is usually done manually by the members of the family or if not hired laborer. The hauling is usually done by using the animal (carabao) to pull the harvested banana bunch.

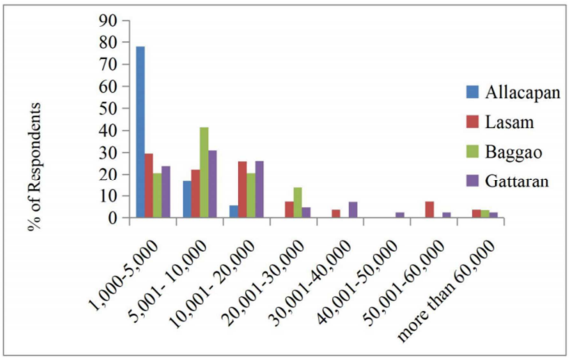

Fig. 5. Yield (kg) per hectare per year of Banana growers in selected municipalities at Cagayan province.

The highest banana yield was 1,000-5,000kg per hectare/year and registered at the municipalities of Allacapan, Cagayan. It was observed that low yield is due to the wider planting distance (7 x 7 m) and intercropping practices by the growers. For the banana growers in Baggao, Cagayan, the highest yield was 5001- 10,000 kilograms per hectare per year. This might be due to the slightly closer plant spacing.

Conclusions and recommendations

In Cagayan province, a study was conducted to determine the socio-demographic profile of banana farmers in Allacapan, Lasam, Gattaran and Baggao, Cagayan; (2) identify the banana information strategies, technical assistance and support services offered to the respondents; (3) determine the knowledge and skills; (4) the extent of improvement of the socio-economic status of the farmers, and the relationships of the socio-economic, demographic characteristics of farmers with their knowledge and skills , and the extent of improvement of the socio-economic lives of the respondents; and (5) Provide up-to-date and reliable information for use by researchers and policy makers.

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Results revealed that for the yield, majority of the banana growers in Allacapan had a yearly harvest ranging from 1000-5000 kilograms which means that low yield was obtained by the farmers. The GPS recordings of the banana farms were collected from March to May 2021. This was used to generate map for Gattaran and Allacapan. Based on the results of the study, the actual field visits and tracking of the banana samples using the geo tracker application was a reliable technique. Moreover, training on banana production shall be included also to create awareness on the recommended practices for banana production.

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