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# ON UNDERSTANDING THE PREDICTORS OF CORN PRODUCTION USING REGRESSION MODEL: THE CASE OF SIQUIJOR, PHILIPPINES

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***Abstract***

*The research paper aims to determine the influence of farmers' socio-demographic and economic characteristics on their corn production in Lazi, Siquijor, Philippines using regression analysis. Indeed, 17 selected barangays in Lazi, Siquijor were included in the study, and data were obtained from 313 corn farmers out of 1443 corn farmers in Lazi. In determining the required number of respondents, Slovin's formula and proportionate sampling were utilized to find the number of respondents in each barangay. Both secondary and primary data were utilized. Regression analysis was used to analyze the variables influencing corn production in the target area. Robust regression was used as the statistical model to analyze the data and test assumptions. The software used was R Studio, jamovi, and Microsoft Excel. Results showed that in terms of the socio-demographics of the farmers, only sex was found to be significant. In contrast, age, civil status, educational attainment, and household size were found to be insignificant. However, socioeconomic, household income, major occupation, land tenure, and farm size were found to have a significant relationship with corn production. Participation in association, attendance at training, access to financial assistance, and extension services were found to have no significant influence. Based on the result, more interventions must be given to farmers, and farmers must also be active and be registered to the registry system of the Department of Agriculture so that the interventions can reach them. Moreover, governments must share some piece of the public lands in Lazi for the farmers who only own little land to till.*

***Key words*****:** *corn farmers, corn production, production level, determinants, regression approach*

## INTRODUCTION

In [12], it is mentioned that corn (*Zea mays* L.) is an important crop from the grass family Graminae (Poaceae) that spring up in the United States of America. Corn is considered globally as one of the most consequential grain crops, placed third behind wheat and rice. Yet in the country the Philippines, it succeeded in the use of agricultural assets, after rice which impacted its economy. In fact, it is one of the major staple grains in the country. Approximately, for about 1.8 million Filipino farmers recognized corn as the primary source of their income, especially in remote areas [13]. In addition, in [20] and [22], it is portrayed that maize's importance is also recognized in the development of the manufacturing and livestock industries as it is not only used for humans as a food source but also for industrial applications and for animal foods. Yellow corn in the Philippines' animal industry serves as the primary source of feed [4]. Apparently, corn as food for humans and animals is being progressively utilized by the production sector as an economic resource [22]. On the other hand, during the rice shortage, white corn was the most important replacement staple, especially for people in the countryside [13], [25].

In the place of Siquijor, Philippines, corn or maize is grown in all municipalities [11]. According to the data from the Office of the Provincial Agriculturist (OPA) in Siquijor, the average yield (mt per ha) of corn on the island for the year 2020 was about 2.1 mt/ha. However, in the year 2021, the average yield of corn declined by about 5.6% having a total of 2.19 mt/ha of yield. Moreover, in the year 2022, the average yield of corn on the island comprised a total of 1.40 mt/ha, implying a great decline in the average yield of 36.07%

compared to the year 2021. The said decline could be attributed to the decrease in the area harvested per year. The data from OPA in Siquijor indicates that in the year 2020 the total area harvested on the island was 3,304.00 ha, while in 2021, the area harvested decreased by about 21.39% having a total of 2,597.21 ha. However, in the year 2022, a continuous decrease in the area harvested was experienced having 1,920.78 ha, implying a 26.04% decline from the year 2021. This decline could be due to some characteristics of the corn growers on the island of Siquijor considering that these features impose pressure on an individual's attitude and behavior [2]. Previous studies in the country of the Philippines about corn production concentrated only on technical efficiency, enhancement of crop aspects, production systems, and constraints [16], [17], [24], but no mention of farmers' socio-demographic characteristics influencing corn production. In that case, finding out the predictors that will have a bearing on farmers' corn production will provide information to the Municipal Agricultural Office and other leading agencies of the government, to plan out interventions to facilitate the increase of corn production. Moreover, the issues and constraints faced by the farmers regarding pest problems, price, and cost will also be determined to provide solutions and recommendations to increase corn production. Thus, this study is realized.

In general, the study aimed to determine the influence of farmers' socio-demographic and economic characteristics on their corn production. Specifically, the study determined the socio-demographic and economic characteristics, corn yield for the last three years, and corn production-related problems of the respondents. The study also identified which socio-demographic and economic variables predict the corn production of the respondents and generated a regression model of corn production.

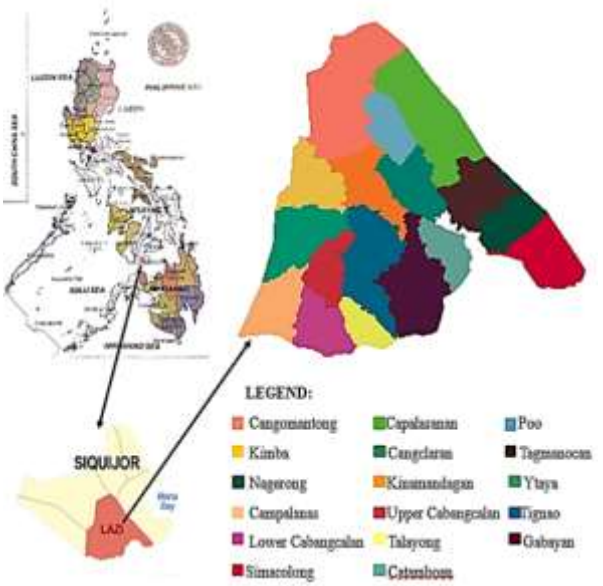
## MATERIALS AND METHODS

### Research Design

Quantitative and qualitative data were gathered through a primary cross-sectional survey and secondary data. To capture the different factors affecting corn production in Lazi, Siquijor, this study engaged a descriptive and complex correlational research design that involves descriptive measures and multiple regression. The purpose of the designs is to give a sound description of the characteristics of the farmers and their corn production in their place. In addition, the study targeted forecasting and logical arguments that explain the influence of independent variables on corn production.

### Locale of the Study

Lazi, Siquijor is the chosen target area for the study. According to the data from the Office of the Provincial Agriculturist (OPA) on the island of Siquijor, the municipality of Lazi had the biggest area harvest with 969.57 ha in terms of corn, followed by San Juan having 147.75 ha. In terms of production, Lazi also had the highest having 1,207 metric tons which was followed by Maria having 925.09 metric tons. Shown in Map 1 is the location of the study.




Map 1. Location of the Study.
Source: [15].

### Sampling Techniques

According to data from the Local Government Unit of Lazi, there were 18 barangays in Lazi's municipality. However, in the study 17 barangays were only included since during the visit, it was observed and as the farmers have stated many of the corn farmers in Tigbawan

were no longer planting corn since the area is mainly populated with market area since it is the center of Lazi where people primarily get their daily work in selling and several businesses, leaving 17 barangays with registered farmers of a total of 1,443. Slovin's formula was used to find the total of respondents in each barangay. In that case, 313 corn farmers out of 1443 corn farmers in Lazi, Siquijor were considered as participants in the study. Proportionate sampling was done as depicted in Table 1 in choosing the respondent

Table 1. Proportionate sampling for the number of farmer-respondents in each barangay.

| BARANGAY | TOTAL NUMBER OF FARMERS | PERCENTAGE (%) | NUMBER OF FARMER RESPONDENTS |
|---|---|---|---|
| Campalanas | 206 | 14.27 | 45 |
| Lower Cabangcalan | 125 | 8.66 | 27 |
| Gabayan | 132 | 9.15 | 29 |
| Kimba | 119 | 8.25 | 26 |
| Cangomantong | 121 | 8.38 | 26 |
| Simacolong | 112 | 7.76 | 24 |
| Talayong | 86 | 5.95 | 19 |
| Tignao | 75 | 5.19 | 16 |
| Capalasanan | 67 | 4.64 | 14 |
| Kinamandagan | 67 | 4.64 | 14 |
| Nagerong | 64 | 4.43 | 14 |
| Tagmanocan | 59 | 4.08 | 13 |
| Cangclaran | 55 | 3.81 | 12 |
| Upper Cabangcalan | 59 | 4.08 | 13 |
| Poo | 46 | 3.18 | 10 |
| Ytaya | 22 | 1.52 | 5 |
| Catambuan | 28 | 1.94 | 6 |
| **TOTAL** | **1443** | **100.00** | **313** |

Source: Author's computations (2024).

## Data Collection

Both primary data and secondary data were utilized in this survey study. Primary data or the data on corn farmers' characteristics (that is Sex, Civil Status, Highest Educational Attainment, Household Size, Farming Years, Household Income, Major Occupation, Land Tenure, Farm Size, Training Acquired, Association Membership, Financial Assistance, and Extension Services), corn production (yield), issues, farming practices, and constraints faced by them using an organized and developed questionnaire. In a year, there are two seasons for corn production, the wet and dry season. Corn yield is calculated as sacks per average farm size (ha) where 1 sack is equal to 50 kilograms and converted into kilograms per hectare per year (kg/ha/year). Data gathering was obtained through face-to-face interviews. Secondary data was collected from annual reports, documents, and baseline data from the Office of the Provincial Agriculture in Siquijor and from the Local Government Unit of Lazi, Siquijor, and from other relevant literature. Table 2 presents the different acronyms used in this study.

Table 2. Acronyms were involved in the study

| Abbreviation | Meaning |
|---|---|
| OPV | Open-Pollinated Varieties |
| OPA | Office of the Provincial Agriculturist |
| MAO | Municipal Agricultural Office |
| LGU | Local Government Unit |
| 4Ps | Pantawid Pamilyang Pilipino Program |
| PCIC | Philippine Crop Insurance Corporation |
| DSWD | Department of Social Welfare and Development |
| AICS | Assistance to Individuals in Crisis Situations |
| ASA | Association for Social Advancement, a non-profit, non-stock corporation specializing in microfinance |
| GSIS | Government Service Insurance System |
| CARD | Center for Agriculture and Rural Development, a microfinance institution |
| DA | Department of Agriculture |
| SAAD | Special Area for Agricultural Development |
| DAR | Department of Agrarian Reform |
| PCA | Philippine Coconut Authority |

Source: Author's guide (2024).

## Data Analysis

After all the needed data had been gathered, it was encoded in Microsoft Excel, and the necessary coding for statistical analysis was applied. The data was analyzed with descriptive measures and multiple regression models using various software such as R Studio, jamovi, and Microsoft Excel analysis. For descriptive analysis, Microsoft Excel was utilized which yielded the mean, median, standard deviation, and range. Multiple linear regression analysis was used to identify the variables that influence the corn yield in the study area. Robust regression was utilized as the statistical model in analyzing the data so with the testing of assumptions [7]. The formula of a linear regression model (1) is given below:

$$Y_i=b_0+b_1X_1+b_2X_2+\ldots+b_{14}X_{14}+e_i \quad \ldots\ldots\ldots(1)$$

where $Y_i$= Yield of corn (sacks (50 kg) per average farm size (in hectare)), $X_2$=Sex, $X_3$=Civil status, $X_4$=Highest Educational Attainment, $X_5$= Household size, $X_6$=Farming years, $X_7$= Household income, $X_8$=Major Occupation, $X_9$=Land tenure, $X_{10}$=Farm size, $X_{11}$= Training acquired, $X_{12}$=Association membership, $X_{13}$= Financial assistance, $X_{14}$= Extension Services, $b_0$= Intercept Y, $b_i$= Coefficient of Variable $X_i$ and $e_i$=error term.

## RESULTS AND DISCUSSIONS

### Socio-demographic Characteristics

Table 3 depicts the socio-demographic profile of the corn farmers in Lazi, Siquijor, Philippines. Results showed that the average age of the corn farmers is around 54 (SD=15.41) years old, 31.9% percent of them were between the ages of 51-60, followed by 21.73% with the ages between 41 and 50, 21.41% were between 61 and 70 years old, 10.54% were between 31 and 40 ages. In [10], it is also stated that most of the farmers are relatively old and the average age is higher than 50 years old. Some of the corn farmers (8.31%) have ages between 71 and 80 while 3.83% have ages between 21 and 30, 1.92% have ages 80 and above, and lastly, 0.32% or only one farmer has the age of 20 and below. There are marginally more female farmers (57.5%) than male corn farmers (42.5%). Approximately, about 71.2% of the corn farmers are married, 18.2% are single, 7.7% are widowed and 2.2% are separated as civil status. In addition, the majority of corn farmers attained high school (45.4%) as their highest educational attainment, followed by elementary (40.3%), next is college (9.3%), and lastly vocational (5.10) school. This result is parallel to the findings in [5], that most of the farmers are high school level as their highest educational attainment. Most (48.88%) of corn farmers consist of 4-6 family members followed by 37.38% having 1-3 family members, 12.1% comprising 7-9 members, and lastly, 1.6% consisting of more than 10 members in a household.

### Socio-economic Characteristics

Table 4 also presents the socioeconomic profiles of the corn farmers in Lazi, Siquijor, Philippines. Findings revealed that corn farming is the primary and major occupation of the respondents, bearing 68.4%, followed by other occupations outside farming (18.2%) like office work, government employee, etc., then fisherman/fish vendor (5.4%), vegetable farmer (4.5%), livestock farming (3.2%), lastly 0.3% of the farmers focuses more on rice farming. In fact, corn production in the Philippines plays a major role in improving its gross domestic product (GDP) and national income [13], [17], [18]. In terms of farming experience, 36.42% have experienced between 16-30 years, followed by 25.24% of corn farmers having 31-45 years of farming experience while 18.85% have experienced farming between 6-15 years. Moreover, 13.10% have 46-60 years of experience, 4.79% have been farming for 5 years and below, and lastly only 1.60 of the corn farmers have been tilling their land for more than 60 years. The study also shows that corn farmers have around 29 years of farming experience on average. Additionally, most of the corn farmers (98.4%) have a household income of less than 15,375 while 1.6% of the corn farmers have a household income that ranges between 15,375 and 30,251. On the other hand, nearly half (49.5%) are tenants, while 45% own or inherit their land. A small percentage (5.4%) own some land and also rent additional plots.

The average farmer manages roughly 2 land parcels totaling 0.59 hectares. Most of the corn farmers (88.82%) have a land parcel between 1-2, while 8.95% have 3-4 land parcels. However, only 2.24% have 5-6 parcels of land tilled. In terms of farm size, most of the corn farmers (75.08) have less than 1 hectare of land while 23% have between 1-2 hectares of land. Moreover, only 1.92% of the corn farmers have between 2-3 hectares of land. This implies that corn farmers in Lazi, Siquijor mostly have small pieces of land used for their production. Moreover, there are more farmers engaged in any agricultural association/organization (51.8%), while farmers who don't participate in associations or do not have an association to join hold 48.2%. However, participation in training programs is low, with around 24% of

farmers attending relevant workshops and 75.7% not participating in training.

Table 8. Socio-demographic profiles of the farmers in Lazi, Siquijor (n=313).

| | | | Frequency | Percentage |
|---|---|---|---|---|
| Farming Years | 5 years &below | | 15 | 4.79 |
| | 6-15 years | | 59 | 18.85 |
| | 16-30 years | | 114 | 36.42 |
| | 31-45 years | | 79 | 25.24 |
| | 46-60 years | | 41 | 13.10 |
| | | Mean | 28.85 | |
| | | SD | 15.41 | |
| | | Range | 2-70 | |
| Major Occupation | Corn farmer | | 214 | 68.4 |
| | Vegetable farmer | | 14 | 4.5 |
| | Rice farmer | | 1 | 0.3 |
| | Livestock farmer | | 10 | 3.2 |
| | Fisherman/seller | | 17 | 5.4 |
| | others | | 57 | 18.2 |
| Land Tenure | Owned/Inherited | | 141 | 45.0 |
| | Tenant | | 155 | 49.5 |
| | Owned/Inherited & Tenant | | 17 | 5.4 |
| Land Parcel | 1-2 | | 278 | 88.82 |
| | 3-4 | | 28 | 8.95 |
| | 5-6 | | 7 | 2.24 |
| | | Mean | 1.59 | |
| | | SD | 0.912 | |
| | | Range | 1-6 | |
| Farm Size | Less than 1 ha | | 235 | 75.08 |
| | 1-2 ha | | 72 | 23 |
| | 2-3 ha | | 6 | 1.92 |
| | | Mean | 0.59 | |
| | | SD | 0.515 | |
| | | Range | 0.015-3 | |
| Household Income | Less than 15,375 | | 308 | 98.4 |
| | 15,375-30,251 | | 5 | 1.6 |
| | | Mean | 3,500 | |
| | | SD | 3,945 | |
| | | Range | 300-30,000 | |
| Members of Organization | No | | 151 | 48.2 |
| | Yes | | 162 | 51.8 |
| Attended Trainings | No | | 237 | 75.7 |
| | Yes | | 76 | 24.3 |
| Access to Financial Assistance | No | | 146 | 46.6 |
| | Yes | | 167 | 53.4 |
| | Grant | | 163 | 97.6 |
| | Credit/Loan | | 4 | 2.4 |
| Extension services | No | | 108 | 34.5 |
| | Yes | | 205 | 65.5 |

Source: Author's computations (2024).

Moreover, Table 3 revealed that many farmers have access to financial assistance (53.4%), in particular, in the form of grants (97.6%) while only 2.4% is in the form of credit or loan.

Finally, a significant portion (65.5%) have access to extension services in the area while 34.5% may have not experienced or have not recognized extension service.

In [6], it is mentioned that extension services are helpful assistance in progressing production by providing their needs and necessary technology.

Fig. 1 presents a breakdown of farmer participation or access to various financial assistance programs offered in Lazi, Siquijor. The figure reveals that few farmers have availed themselves of financial assistance programs such as for Senior Citizens, 4P's, PCIC, DSWD AICs, and fewer farmers tried to acquire financial assistance in the form of credit or loan like ASA Microfinance, GSIS, and CARD.

A previous study mentioned that financial assistance is badly needed by farmers to start planting and endure the agricultural inputs for the whole season until harvesting [1].

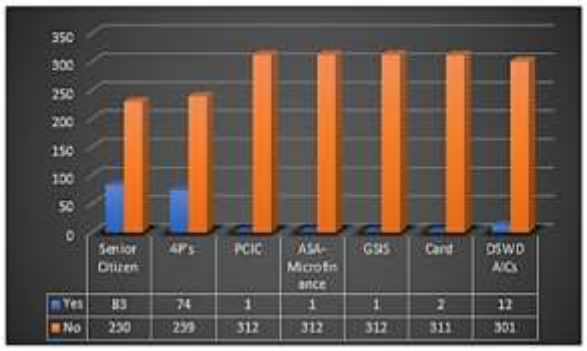



Fig. 1. Availability of financial assistance.
Source: Author's construction (2024).

Fig. 2 illustrates the distribution of labor utilized by farmers across various farming activities in Lazi, Siquijor.

The data suggests a strong reliance on family labor for most tasks, including land preparation, planting, fertilization, harvesting, and post-harvest activities.

However, a notable amount of hired labor is evident in land preparation and this finding is consistent in [14].

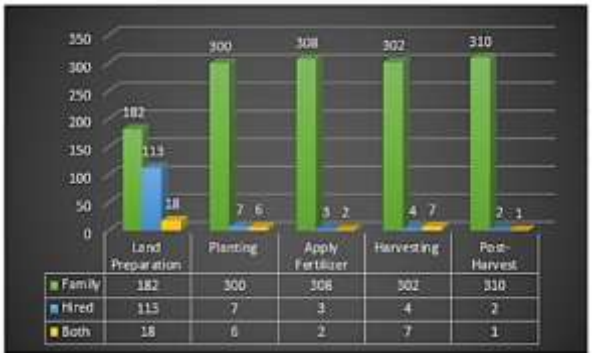



Fig. 2. Available labor across farming activities. Source: Author's construction (2024).

Fig. 3 shows the various extension services received by farmers in Lazi, Siquijor. The data reveals that a significant portion of farmers did not access services from MAO, DA OPA, SAAD, DAR, and PCA. However, while the majority of farmers did not benefit from services offered by MAO, DA OPA, and SAAD, a noteworthy number still received them. This implies that corn production in Lazi, Siquijor is capable of being improved if more extension services are provided by the local government that will support their needs [1], [6].

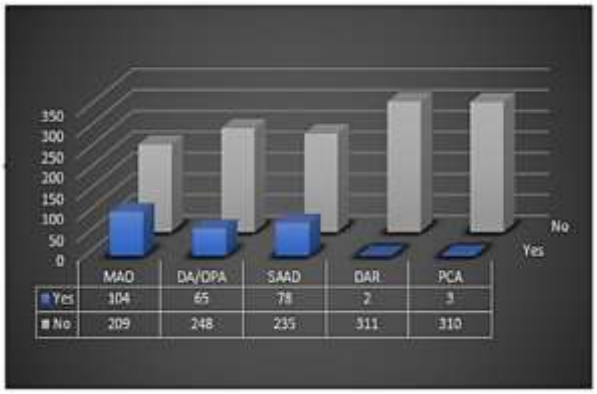



Fig. 3. Extension services provider
Source: Author's construction (2024).

Fig. 4 below details the various farming inputs utilized by surveyed farmers. When it comes to fertilizers, most farmers rely on options like complete and urea. Chicken dung, vermicast, muriate of potash, and ammonium phosphate appear to be less popular choices. Only a very few farmers used herbicides and insecticides as pest repellants. For seeds, traditional OPV seeds seem to be widely used compared to hybrid white and yellow and sige-sige seeds. Regarding farm machinery, most of the farmers have no tractors, corn shellers, or sprayer machines. Moreover, watering tools, sprayers, and wheelbarrows are not common tools and equipment for farmers. A significant number of farmers used digging tools, trapal, drums, and plows but not many. Finally, the data highlights majority of the farmlands are accessible by road. Despite this accessibility, most farmers have limited storage areas and milling facilities. All of the farmers practice sun drying as their drying method for corn. It is stated in [8] and [19] that modern technology in farming is necessary to increase farmers' production and profitability.

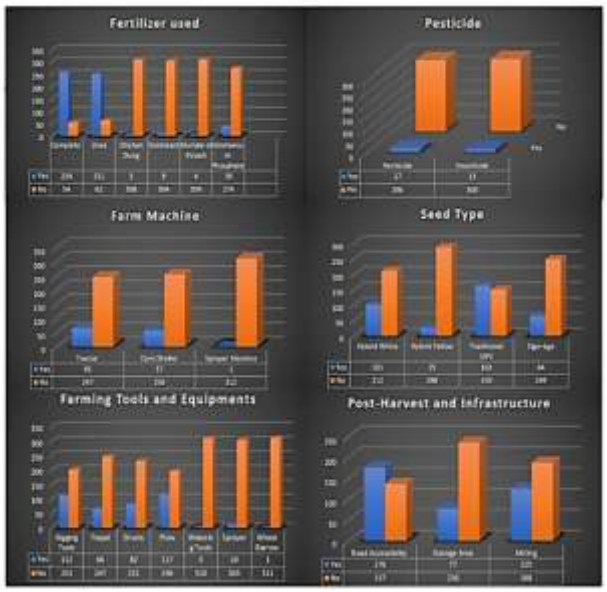



Fig. 4. Availability of farming inputs, post-harvest, and infrastructures.
Source: Author's construction (2024).

## Corn Production Trends in Lazi, Siquijor

Fig. 5 presents the average corn production in Lazi, Siquijor, for the years 2020 to 2022 in terms of kilogram per hectare per year (kg/ha/year). In that case, in year 2020, the average corn yield is 2,544.07 kg/ha. This yield decreased to 2,377.97 kg/ha in year 2021 and further down to 2,125.42 kg/ha in year 2022. The series of data indicates a decreasing trend in corn yield over the observation period. This decreasing trend supports the data shown from the Office of the Provincial Agriculture in Lazi, Siquijor.

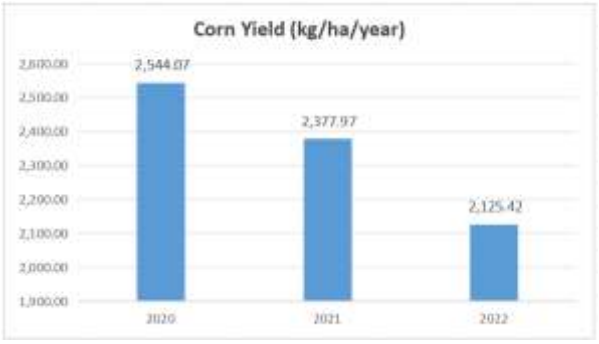



Fig. 5. Corn production (kg/ha/year) in Lazi, Siquijor, 2020-2022.
Source: Author's construction (2024).

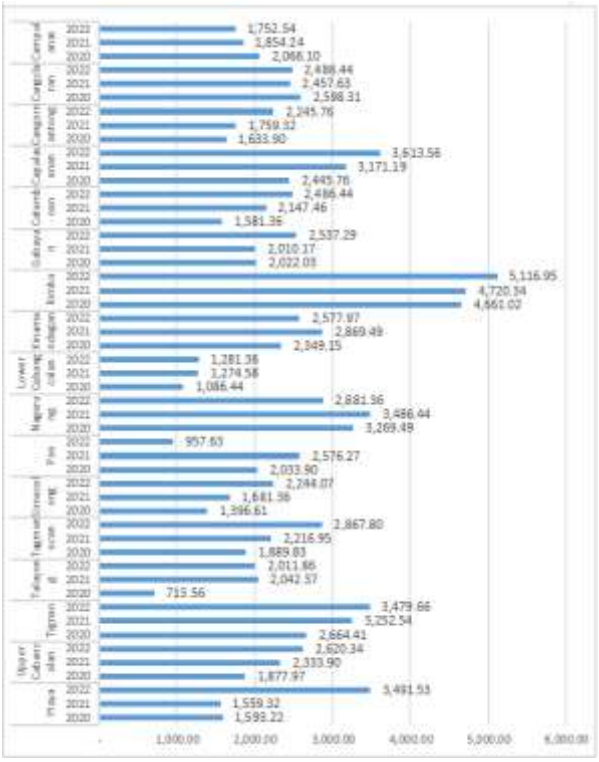



Fig. 6. Corn production (kg/ha/year) per Barangay in Lazi, Siquijor, 2020-2022.
Source: Author's construction (2024).

Fig. 6 suggests that Barangay Kimba had the highest average corn yield across the years 2020-2022, followed by Barangays Capalasanan, Nagerong, and Tignao. Conversely, Barangay Lower Cabangcalan appears to have had the lowest average yield during the observation period. Interestingly, Barangay Campalanas exhibits a distinct trend. While the majority of barangays show a decreasing yield in corn production from 2020 to 2022, Barangay Campalanas demonstrates a positive trend with increasing yield over the same period.

**Problems Faced by Corn Farmers**

As illustrated in Fig. 7, corn farmers in Lazi, Siquijor face several significant issues that contribute to lower crop yields. These challenges include a lack of support from relevant organizations, limited resources, insufficient access to fertilizer, low overall yield, soil infertility, and persistent pest problems. In [3] and [23], local farmers must be guided and supported by extension agents to be more competitive in solving their agricultural problems and improving their profitability.

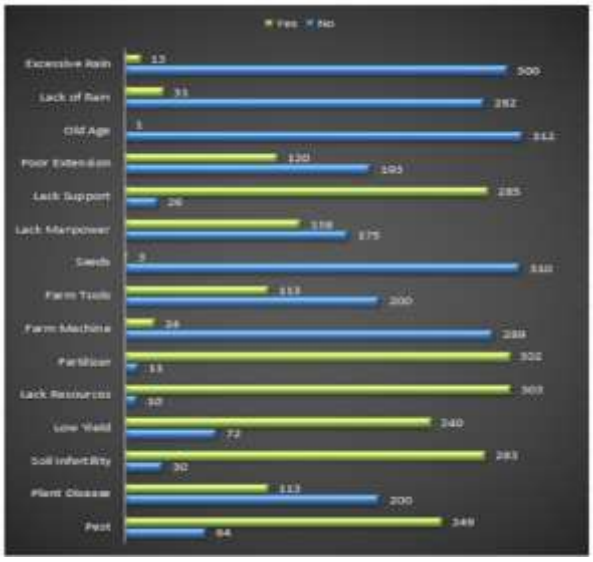



Fig. 7. Problems encountered in Lazi, Siquijor.
Source: Author's construction (2024).

Fig. 8 depicts the recommendations proposed by the farmers themselves to address these challenges. Interestingly, the majority of farmers highlighted the need for increased governmental support and improved availability of fertilizer. While a significant portion also expressed a desire for assistance with traditional farming practices, personal effort improvement, access to cheaper fertilizer options, and financial aid, the majority did not prioritize these additional forms of help. In that case, to increase the efficiency of the farmers, extension agents must be sent by the local government to help and guide them with the right information on how to solve agricultural problems [6].

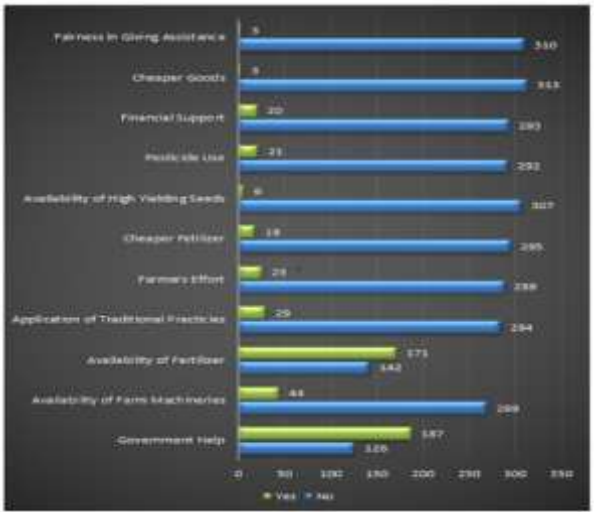



Fig. 8. Recommendations perceived by the farmers in Lazi, Siquijor.
Source: Author's construction (2024).

## Corn Production and its Predictors

Table 4 shows the results of a robust regression model examining the socio-demographic and socio-economic factors influencing corn production among farmers in Lazi, Siquijor. The dependent variable in this regression model is the corn yield for the year 2022 and it is calculated as bags per average farm size (ha) where 1 bag (bulk) is equal to 35 kg. Out of the tested socio-demographic variables, only sex has exhibited a significant relationship to corn production (corn yield). However, age, civil status, educational attainment, and household size did not significantly predict corn production. Among the socio-demographic factors, only sex showed a significant effect. Male farmers were found to produce more corn compared to their female counterparts (β=0.238, p=0.009). This means that male farmers are predicted to have corn yields that are about 27% higher than female farmers, on average, controlling for other factors. This agrees with the result of the study of [10], which stated that the production will likely become lower when a female leads the household, especially in farming in contrast to male headed family. Female farmers have other responsibilities in the household but male farmers can focus on farming. In general, male farmers engage in farming while female farmers engage in household activities.

Additionally, there are more men farmers due to the assumption that farming is a heavy work that requires male strength leaving women to the less heavy job. Households with a male in the lead are more expectedly to gain access to much more farm resources than households with a female as the head. Additionally, males may be productive since they have the propensity to be more competent in terms of labor efficiency [21].

Socio-economic factors, on the other hand, presented a clearer picture. Among the socioeconomic factors, household income (β<0.001, p=0.004), major occupation, land tenure, and farm size (β=0.421, p<0.001) were found to have a significant effect on corn production. On the other hand, farming experience (β=-0.002, p= 0.690), participation in organizations (β=-0.064, p=0.553), attendance at training (β =-0.135, p=0.246), access to financial assistance (β=-0.095, p= 0.294), and access to extension services (β= 0.117, p=0.243) did not significantly influence corn production.

Household income demonstrated a positive and significant relationship with corn production (β< 0.001, p=0.004), implying that higher income allows farmers to invest in resources that can boost production. The study of [10] also found a significant relationship between income and agricultural production. This could be further supported by the study in [19] that stated that income or profit is seen to be the driving force for farmers to invest more in farming. The author also added that farmers who have higher incomes will have more demand for extension services thus improving their farming and will cause higher production.

The major occupation significantly predicted corn yield. Corn farming is found to have a positive relationship with the production. Compared to corn farmers, those engaged in livestock farming (β=-0.705, p=0.008), vegetable farming (β=-1.572, p<0.001), rice farming (β=-0.339, p=0.003), and fishing (β=-0.529, p=0.013) produced significantly less corn. In particular, livestock farmers yielded 51% less corn, vegetable farmers yielded 79% less corn, rice farmers yielded 29% less corn, and fishers yielded 41% less corn compared to corn farmers. Farmers with other occupations also yielded less corn, producing about 23% less than corn farmers, β = -0.265, p = 0.026. This could be justified by the claim in [5] that stated that when farmers engage in other occupations, their production would be lesser due to competition for labor in farming. Major occupation being a significant variable agrees with the results in [2] and [10], which also found a significant and positive influence on the major occupation of farmers.

Land tenure significantly influenced corn production. Farmers who rented their land (β= 0.247, p=0.021) produced more corn compared to those who solely owned/inherited their land. Holding other factors constant, tenants yielded about 28% more corn compared to sole owners/inheritors. This could be the fact that tenant farmers

would double their efforts because it will be a great loss to them if the production is low since the yield will be divided according to their agreement with the owner. In this sense, the share of the tenant is usually lower than that of the owner. A distinguished ability of the farmers to persevere and be diligent in utilizing the land or to a greater extent, proving themselves dependable by following their agreement with the owner.

Tenant farmers were also found to be efficient in making use of the farm inputs [10] and in general work in farming to increase production which could lead to maximizing revenue, profit increase, and minimizing farm spending [19]. In contrast, those who both owned/inherited and rented land (β=-0.202, p=0.445) had no significant difference from those who solely owned or inherited their land.

Table 4. Robust regression model of corn production (corn yield) of Lazi, Siquijor, Philippines.

| PREDICTORS | | SE | -value | -value |
|---|---|---|---|---|
| Intercept | 2.988 | 0.282 | 10.604 | < .001* |
| **Socio-demographic** | | | | |
| Age | -0.009 | 0.006 | -1.592 | 0.112 |
| Sex | | | | |
| Female[a] | - | | | |
| Male | 0.238 | 0.090 | 2.636 | 0.009* |
| Civil Status | | | | |
| Single[a] | - | | | |
| Married | 0.164 | 0.122 | 1.345 | 0.180 |
| Widowed | 0.262 | 0.212 | 1.234 | 0.218 |
| Separated | 0.429 | 0.503 | 0.854 | 0.394 |
| Highest Educational Attainment | | | | |
| Vocational[a] | | | | |
| Elementary | -0.118 | 0.187 | -0.633 | 0.527 |
| High School | -0.123 | 0.168 | -0.732 | 0.465 |
| College | -0.130 | 0.209 | -0.620 | 0.536 |
| Household size | -0.005 | 0.019 | -0.260 | 0.795 |
| **Socio-economic** | | | | |
| Farming years | -0.002 | 0.005 | -0.399 | 0.690 |
| Household income | < .001 | < .001 | 2.937 | 0.004* |
| Major Occupation | | | | |
| Corn farmer[a] | - | | | |
| Livestock farmer | -0.705 | 0.264 | -2.666 | 0.008* |
| Vegetable farmer | -1.572 | 0.386 | -4.070 | < .001* |
| Rice farmer | -0.339 | 0.111 | -3.050 | 0.003* |
| Fisherman/seller | -0.529 | 0.212 | -2.495 | 0.013* |
| Others | -0.265 | 0.118 | -2.243 | 0.026* |
| Land Tenure | | | | |
| Owned/Inherited[a] | - | | | |
| Tenant | 0.247 | 0.107 | 2.312 | 0.021* |
| Owned/Inherited & Tenant | -0.202 | 0.265 | -0.765 | 0.445 |
| log(Farm size) | 0.421 | 0.046 | 9.179 | < .001* |
| Members of association | | | | |
| No[a] | - | | | |
| Yes | -0.064 | 0.108 | -0.595 | 0.553 |
| Attended trainings | | | | |
| No[a] | - | | | |
| Yes | -0.135 | 0.117 | -1.163 | 0.246 |
| Access to financial assistance | | | | |
| No[a] | - | | | |
| Yes | 0.095 | 0.090 | 1.052 | 0.294 |
| Extension services | | | | |
| No[a] | - | | | |
| Yes | 0.117 | 0.100 | 1.170 | 0.243 |
| Adjusted $R^2$ | 0.435 | | | |
| Convergence in 25 IRWLS iterations | | | | |

Source: Author's computations (2024).

Farm size showed a strong positive association with corn production (β=0.421, p<0.001), suggesting economies of scale where larger farms are associated with higher yields. On average, for every 20% increase in farm size, corn yield increases by approximately 8%. In [9], it is mentioned that farm size significantly influences, but their study found that farm size was negatively related which means that small farmers adopt and do more than large farmers.

## CONCLUSIONS

The main aim of this study is to capture the different factors affecting corn production in Lazi, Siquijor, Philippines. In terms of the socio-demographic profile of the respondents from Lazi, Siquijor belonged to age 51-60, the great majority are married and are high school graduates. The majority of them have a household size of 4 to 6 members. In terms of the socioeconomic profile, the majority of them are tenants to the land they tilled with sizes less than 1 hectare with 1-2 parcels of land. In terms of farming years, the majority have 16-30 years and have the major occupation of corn farming with the great majority of farmers with an income of less than 15,375 pesos. The majority of farmers have joined the association but most (75.7%) of them have not attended training. A great number have access to financial assistance, in particular, in the form of grants and the majority have access to extension services in their area. The corn production in Lazi from 2020-2022 was found to be decreasing. From the average of 15.01 kg in 2020, 14.03 kg in 2021 to 12.54 kg in the year 2022. The challenges that the corn farmers faced included limited resources, lack of support from the government, insufficient access to fertilizer, low overall yield, soil infertility, and persistent pest problems. As for their recommendations, farmers suggested increased governmental support and improved availability of fertilizer.

Only sex was found to be significant while age, civil status, educational attainment, and household size were found not significant. However, socioeconomic, household income,

major occupation, land tenure, and farm size were found to have a significant relationship with corn production. Participation in associations, attendance at training, access to financial assistance and extension services, and years of farming experience were found to have no significant influence. Household income was also found to be significant thus farmers must have funds to be used for farming like the ones from rice farmers where they have Seed, Fertilizer and Ameliorant discount voucher and Bio-fertilizer voucher. Especially for the availability of fertilizer since it is one of the top problems that the corn farmers were facing. Even though in this sense, the farmer's income won't go higher they will have money or ways to still acquire the important inputs for their farming. Same as to the tenurial of the farmers, farmers who were tenants have higher yields compared to those who owned their land since when a farmer is a tenant to the land, the owner of the land could help in providing the outputs that the farmers need. The fund is also applicable to this in that even if the farmer is the owner of the land, they still have available support for their farming. Corn farming as the major occupation was seen to have more yield than other occupations. Thus, giving more attention to corn farmers for more interventions will help the production to increase. After the data collection, it was found that there were still corn farmers who were not registered in the Registry System for the Basic Sectors in Agriculture (RSBSA), and some of the registered ones were not corn farmers or did not plant corn. Corn farmers that were currently planting corn must be registered in this system so that if interventions are ready for them, they can acquire the help that they need.

In this study, farmers with larger farm sizes have higher yields. According to the data from DENR and as depicted in their cadastral map, the government owns a total of 103 public lands in Lazi, Siquijor, and sharing it with those corn farmers who only have a small piece of land might be a good solution. Since the existence of pests is prevalent in the area, cropping calendar, crop rotation as well as intercropping patterns must be further studied in the area. Since the majority of the corn farmer respondents were female but the study yielded a negative relationship between women and production, gender-sensitive studies are recommended in order to recognize the reason behind this result.

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