# Attributions to Main Crop Planted by Farmers in Region XII (SOCCSKSARGEN), Philippines

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**Abstract:** Socio-economic and farm management factors influence the decisions and practices made by farmers which in turn affect sustainability of their crop production system. This study was conducted to assess different factors attributed to the choice of main crop planted by farmers in Region XII. The study involved 217 farmers of Region XII who were selected by purposive sampling in collaboration with the Municipal Agriculturists and barangays. These farmers were interviewed to gather relevant data. Descriptive statistics and multiple regression techniques were used to analyse the data gathered. Most of the farmers are male (58%), already married, and matured as farmers. Majority reached secondary level and do not have access to post-secondary education due to financial constraints. More so, crops planted by farmers are mostly corn (37%) and rice (31%). Socio-economic characteristics of farmers do not influence the choice of main crop planted by farmers in the region. Meanwhile, farm management characteristics such as farm income, number of years in farming the main crop, topography of land and water source are statistically significant ($p<0.05$). Most of the farmers are still poor only earning less than Php10,000 per cropping of their main crop. Hence, farmers should utilize their lands by practicing multiple cropping including planting cash crops to ensure additional income and increase farm productivity.

# 1. Introduction

The Philippines can be classified as an agricultural country, of which the total area devoted to agricultural crop production is 13 million hectares (Quilang, 2011). This area was distributed into three (3) production classifications: food grains (4.01 million hectares), food crops (8.33 million hectares) and non-food crops with 2.2 million hectares (www.fftc.agnet.org). Basically, the Philippine agriculture consisted of rice, corn, coconut, sugar, banana, livestock, poultry, other crops and fishery production activities.

It is evident that the agricultural sector in the country, aside from the service and manufacturing sectors, remains to be one of the major contributors to economic growth of many countries in the Asia-Pacific region. Almost one-third (1/3) of the world's population depend on smallholder farming which is also true for many developing agricultural countries (www.esfim.org). The Philippines, as a developing country, has more than 70% of its population dependent on agriculture (Rola, 2014). Despite the fact that farmers are considered the backbone of the economy, majority of the poor in the country are small landholder farmers and fisherfolks with a monthly income of Php 4,500.00 (Villar, 2017). Meanwhile, the agriculture industry in the ASEAN counterparts is highly developed; which implies that sustained expansion of the national economy requires sustained growth in the agricultural sector (Francisco et al., 2013).

The Region XII (SOCCSKSARGEN Region), given its natural endowment, indeed has great potentials for high levels of agricultural production. It is among the leaders in terms of palay and corn production in the country (NEDA R12, 2011). Moreover, it is also a top producer of high value crops such as coffee, banana, asparagus and oil palm. Its economic productivity is measured by the gross regional domestic product (GRDP) which, over the years, showed irregular trends and a slight shift in the structure which remains predominantly agriculture (NEDA XII, 2011). The agriculture, fishery and forestry sectors contributed the biggest share to its total GRDP. However, it can be observed that there is a decrease in its contribution to the regional output from 43.6% in the year 2004 to 41.5% in the year 2009 (NEDA XII, 2011).

Hence, with all of these conditions, this study was conducted to assess the different factors attributed to the main crop planted by Region XII farmers in their farm area. This study focused only on 217 farmers who were identified as partner/beneficiaries for integrated pest management, environmental conservation technology and entrepreneurial capabilities building program which was commissioned by the Commission on Higher Education of the Republic of the Philippines.

Specifically, this study aimed to determine the socio – economic farm management characteristics of the farmer – respondents in Region XII, determine the influence of socio-economic characteristics on the main crop planted by farmers in Region XII, and determine the influence of farm characteristics on the main crop planted by farmers in Region XII

## 2. Methodology

*Sampling Procedure*

There were 217 farmer – respondents identified in Region XII as part of the beneficiaries of the extension program funded by Commission on Higher Education (CHED) of the Republic of the Philippines. These farmers were chosen based on the criteria set by the program implementers.

*Source of Data*

All data gathered were purely primary data. These were obtained through personal interview with the 217 farmer – beneficiaries of the extension program using the structured survey questionnaire.

*Data Gathering Procedure*

The farmer – beneficiaries of the extension program were identified based on the criteria set by the program implementers after consultation with the Department of Agriculture Region XII. The study covered five (5) municipalities/city with at most three barangays per municipality to represent the entire Region XII. The municipalities were the Municipality of Maitum in Sarangani Province, General Santos City, Surallah in South Cotabato Province, Bagumbayan in Sultan Kudarat Province and Midsayap in Cotabato Province (North Cotabato). After identification of the municipalities, coordination with the municipal or city mayors down to the barangay officials was done to identify the farmer-beneficiaries and conduct one-on-one interview with individual farmer as part of the stakeholder's analysis.

*Data Analysis*

Data were collated and descriptive statistics were used as the basic statistical tool. Moreover, Multiple Regression Analysis was used to analyze the influence of socio-economic and farm characteristics on the yield of farmers. Multiple regression analysis was based on the following multiple regression model:

For Socio Economic Factors, $Y = a + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + e$,

Where:

$Y$ = yield of main crop planted

$a$ = constant

$\beta_1$ = slope/elasticity

$x_1$ = age $\qquad\qquad$ $x_4$ = educational attainment

$x_2$ = gender $\qquad\qquad$ $x_5$ = household size

$x_3$ = civil status $\qquad\qquad$ $x_6$ = religion

e = error (0.05)

Whereas for the Farm Management Factors,

$Y = a + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \beta_{11} x_{11} + e,$

Where:

Y = yield of main crop planted

a = constant

$\beta_1$ = slope/elasticity

$x_1$ = area planted $\qquad\qquad$ $x_7$ = frequency of fertilizer application

$x_2$ = no. of years in farming the main crop $\quad$ $x_8$ = farm income

$x_3$ = total farm area $\qquad\qquad$ $x_9$ = attended seminars and trainings

$x_4$ = tenural status $\qquad\qquad$ $x_{10}$ = water source for crops

$x_5$ = topography $\qquad\qquad$ $x_{11}$ = membership in organization

$x_6$ = visited by technician

# 3. Results and Discussion

*Socio – Economic Characteristics of Farmers in Region XII*

Analysis of the socio – economic characteristics of the farmer – respondents revealed that many farmers in Region XII (37%) are already old or matured with ages ranging from 46 to 55 years old (Table 1) while majority are male (58%) and married (89%). Furthermore, most of the farmers reached the secondary level (40%) and are Roman Catholics by religion (65%). In terms of households, most of their households have 1 to 4 members per household (54%) but a number (42%) have 5 to 8 members per household. A few of them (4%) have 9 and more members in a household. Most of the farmer – beneficiaries have an average-sized household like the rest of the country where the average household size is 4.4 members per household (www.psa.gov). For farmer-beneficiaries with a large family (5 members or more per household), household maintenance becomes costly especially in the part of the farmer who is often the breadwinner of the family. A large household needs to support more people, but with fewer resources, the family lives in inherited poverty (Rivera and See, 2011).

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In terms of the tenural status, majority of the farmers (80%) owned the land that they till, and only 18% and 2 % are tenants and leases, respectively. It means that most farmers of the locality is free from the burden of paying rent or giving shares to landowners. Further, this implies that majority of the farmers have all the right in terms of decision making in their farming activities.

Table 1. Socio – demographic and economic characteristics of farmer-beneficiaries in Region XII

| Characteristic | Frequency | Percentage |
|---|---|---|
| **Age (years old)** | | |
| 26 to 35 | 18 | 8 |
| 36 to 45 | 40 | 19 |
| 46 to 55 | 81 | 37 |
| 56 to 65 | 60 | 28 |
| 66 and above | 18 | 8 |
| **Gender** | | |
| Female | 92 | 42 |
| Male | 125 | 58 |
| **Civil Status** | | |
| Single | 9 | 4 |
| Married | 193 | 89 |
| Widower | 15 | 7 |
| **Educational Attainment** | | |
| Primary | 28 | 13 |
| Secondary | 87 | 40 |
| College Level | 44 | 20 |
| College Graduate | 58 | 27 |
| **Religion** | | |
| Roman Catholic | 142 | 65 |
| Islam | 4 | 2 |
| Others (SDA, Protestants etc.) | 71 | 33 |
| **Household Size** | | |
| 1 to 4 members | 118 | 54 |
| 5 to 8 members | 91 | 42 |
| 9 members or more | 8 | 4 |
| **Tenural Status** | | |
| Owned | 173 | 80 |
| Leases | 5 | 2 |
| Tenant | 39 | 18 |

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As to the farm management practices of farmer–respondents, most of the farmers owned the land that they till with a farm area ranging from 1 to 2 hectares which are planted with either corn or rice intercopped with other crops. Most farms are characterized as upland (57%) and the rest could be classified as lowland (43%); indicating that farmers are already utilizing upland areas which further implies the need for assessing their management practices and the potential for extending knowledge on upland conservation. This is essential since severe soil erosion is a threat in permanent cultivation systems in the absence soil fertility management techniques and conservation practices (Brookfield and Byron, 1993).

In addition, many farmers (32%) are earning only from 6,000 to 10,000 pesos per month. This means that farming bring in only a small income for the farmers, hence, this income is not enough to sustain the needs of their family. Unfortunately, a family of five needs at least 42,000 pesos per month to survive according to the June 8, 2018 report of The Philippine Star quoting Socioeconomic Planning Secretary Ernesto Pernia (www.philstar.com) implying that many farmers are still living in poverty. Moreover, the average monthly expenses of a household are estimated at 13,000 pesos per month (www.psa.gov) which, obviously, the farmers cannot afford, thus, they tend to look for other sources of funds which often include taking credits from high interest creditors.

Moreover, the survey also revealed that majority of the farmer – respondents have been into farming corn or rice with other crops, for 21 to 30 years. These crops are mostly rainfed, thus rain is the main source of water for their crops. This implies that environmental factors, particularly rainfall, greatly affect the management and yield, and eventually, the income of the farmers.

Since rice and corn are the two staple crops of the farmers, not just of the locality but for the most part of the Philippines, development programs in agriculture are largely directed towards improvement of rice and corn production which is evident in the research, development and extension programs of the Department of Agriculture (DA-BAR, 2016).

In addition, majority of farmer – respondents (65%) have attended trainings and seminars. They are also members of organizations and many availed extension services provided and conducted by agricultural technicians in their respective areas. This suggests that the farmers of the community are regularly educated about new farming technologies and most of their decisions are reliant on the information provided to them by the techinicians. Therefore, problems of farmers such as low income and poverty are not directly due to lack of trainings, seminars or assistance/extension services but rather due to other factors.

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*Influence of Socio-Economic and Farm Characteristics on the Choice of main crops and yield of Farmers*

Most of the farmers interviewed are growing corn and rice in their farmlands. They regularly apply fertilizers twice per cropping season. Their main reasons for choosing rice and corn as their main crops are the availability of resources for rice and corn growing and suitability of these crops in their area.

Regression analysis revealed that among the six independent socio-economic variables, there is no factor that significantly influences the yield of the main crops planted by the farmers in Region XII. Hence, socio-economic factors do not influence the yield of farmers in Region XII.

Moreover, among the eleven (11) farm management variables, there were four (4) factors that significantly influence the yield of the main crop planted by farmers in Region XII (Table 2). These factors include the number of years in farming the main crop, topography, farm income and water source for crops ($p<0.05$). The positive beta coefficient found in the number of years in farming implies that as a farmer tills the land, through the years, his management system becomes more efficient which produces a higher yield percentage. In addition, since most farms are found to be classified as upland, it could be inferred that upland farms are much more effective in utilizing the given inputs and convert these to optimum yields. Furthermore, as a farmer gains a higher level of income, his capability to purchase quality inputs and sufficient supplies rises, which in turn may give him a higher yield. Lastly, since the agricultural industry, in itelf, is highly reliant on environmental factors, the source of water and irrigation greatly affects the yield of farmers in the locality.

Table 2. Multiple regression analysis on farm management factors and yield of main crop grown by farmers in Region XII, 2017

| Variables | Beta | Standard error | Sig |
|---|---|---|---|
| Constant | 1.063 | .220 | .000 |
| Area planted | .042 | .031 | .175 |
| Number of years in farming main the crop | .007 | .004 | .044* |
| Total farm area owned | .009 | .023 | .684 |
| Tenural status | -.170 | .138 | .219 |
| Topography | .306 | .105 | .004** |
| Number of visits by the agricultural technician | .107 | .103 | .301 |
| Frequency of fertilizer application | -.130 | .078 | .100 |
| Membership in organization | -.145 | .110 | .190 |
| Farm income | 3.98 | .000 | .005** |
| Number of related seminars and trainings attended | -.071 | .106 | .501 |
| Source of water | .355 | .104 | .001*** |

Significant at 1%*** and 5%** level

## 4. Conclusions and Recommendations

Among the variables tested, the number of years in farming the main crop, topography, farm income derived from the main crop planted and water source for crops are found significantly influencing yield, therefore, the decisions made by farmers in their farm. Whereas, the socio – economic characteristics of the farmers do not influence the decisions made by the farmers regarding their farming activities. Therefore, these significant factors should be the focus of interventions in order to attain change.

Hence, it is recommended that that farmers should utilize their farm area, both lowland and upland, in a way that reflects their experience in farming and, also in a way that will achieve optimum yield and income such as practicing multiple cropping and growing other cash crops. Farmers should also work hand-in-hand and come up with strategies to obtain a good source of water supply for both lowland and upland areas. Moreover, the farmers should be encouraged to form their own cluster in order to help one another and strengthen their farm activities. Lastly, government should continue providing farm inputs and other resources and more accessible soft loan programs to the small farmers to increase their income

## Acknowledgment

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