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Bridging Soil Suitability Recommendations and Farmer Crop Choices: Evidence from Palayan City, Nueva Ecija

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ABSTRACT: This study examined the alignment between soil suitability recommendations and the crop practices of farmers in selected agricultural areas of Palayan City, Nueva Ecija. It described prevailing soil conditions in terms of pH, texture, fertility, drainage, and nutrient availability, identified recommended crops for existing soil conditions, documented the crops currently cultivated by farmers, and determined the factors influencing crop selection decisions. The study employed a descriptivecomparative research design using secondary soil data and primary data gathered through surveys and interviews with selected farmers. Descriptive and comparative analyses were used to assess the level of alignment between recommended and actual farming practices. The study provides insights that may support improved soil-based crop planning and agricultural support services in the area.

KEYWORDS: Soil Suitability, Crop Selection, Farming Practices, Agricultural Planning, Palayan City, Sustainable -Agriculture

I. INTRODUCTION

1.1 Background of the Study

Agriculture remains a vital sector in the Philippines, serving as a primary source of livelihood for many rural communities and contributing significantly to both local and national economies. In the province of Nueva Ecija, often referred to as the “Rice Granary of the Philippines,” farming is deeply embedded in the socio-economic structure. Among its cities, Palayan City plays an important role in agricultural production, with vast areas devoted to rice, corn, and other crops. Its agricultural landscape consists of fertile plains and gently rolling terrain, supporting various agricultural production activities. (Santos et al. 2020).

The soils in Palayan City vary in texture, fertility, and drainage capacity, which significantly influence the types of crops that can be successfully cultivated. The area is generally dominated by alluvial soils favorable for rice production due to their ability to retain water, while some upland areas are better suited for crops such as corn and vegetables (Reyes et al. 2018). These soil characteristics, combined with climatic factors such as seasonal rainfall and temperature, shape the agricultural practices of local farmers. However, soil variability across different barangays creates differences in crop suitability, requiring careful consideration in land use and crop selection.

Over the years, agricultural institutions and government agencies in the Philippines have developed soil suitability classifications and crop recommendations based on scientific studies. These guidelines aim to support crop planning and improve the efficient use of agricultural land resources (Department of Agriculture 2021). Despite the availability of such scientific guidance, farming practices in Palayan City are strongly influenced by traditional knowledge and longstanding experience passed down through generations. Farmers often rely on methods that have historically worked for them, even when these differ from formal recommendations (Cruz et al. 2020).

Additionally, several socio-economic and environmental factors affect farming decisions in the area. Limited access to modern technologies, financial constraints, fluctuating market prices, and the impacts of climate variability all shape how farmers manage their land (Lopez et al. 2022). These realities contribute to variations in agricultural practices, even within areas that share similar soil characteristics. As a result, the interaction between scientific recommendations and actual farming practices becomes complex and context dependent.

Despite the availability of soil suitability frameworks and crop recommendations developed by agricultural institutions, there is limited localized assessment of how these scientific guidelines align with actual farmer practices at the barangay level. Most existing studies focus on broader regional or national scales, often overlooking the practical realities and decision-making processes of farmers in specific communities. This gap highlights the need for a localized investigation that examines how soil-based recommendations correspond with actual farming practices in Palayan City.

1.2 Statement of the Problem

Despite the availability of soil suitability recommendations, many farmers in Palayan, Nueva Ecija continue to select crops based on personal experience and traditional practices, which

do not always align with scientific guidance. This mismatch between recommended and actual crops raises concerns about productivity, resource efficiency, and long-term soil sustainability. Understanding the reasons behind this gap is essential for developing more practical and applicable agricultural strategies for local farmers.

Specifically, this study seeks to answer the following questions:

1. What are the prevailing soil conditions in selected areas of Palayan, Nueva Ecija in terms of pH. texture, and nutrient content?
2. What crops are recommended based on these soil conditions?
3. What crops are actually cultivated by farmers in these areas?
4. What is the degree of alignment or mismatch between recommended and actual crops?
5. What factors influence farmers' crop selection practices?
6. What strategies may be proposed to improve crop planning and align farming practices with soil suitability?

1.3 Significance of the Study

This study is beneficial to:

Agricultural Extension Workers. This study helps extension personnel provide more appropriate recommendations on crop selection, soil management, and sustainable farming practices based on local soil conditions.

Local Government Units (LGUs). This study assists in land use planning by identifying areas suitable for crops and areas needing proper soil management.

Urban and Rural Planners. This study provides useful information for planning productive and sustainable land use.

Policy-makers. The findings may assist in creating practical programs by addressing farmers' common challenges.

Farmers and Local Communities. This study helps them choose suitable crops and improve farming practices based on soil conditions.

1.4 Scope and Limitations

Scope and Limitations This case study focuses on the farming practices and soil conditions in selected agricultural areas of Palayan, with the primary goal of examining how soil suitability recommendations align with the crops actually planted and the methods used by local farmers. It analyzes soil characteristics such as texture, fertility, pH, and drainage, and compares these with the crops recommended by agricultural assessments. The study also reviews farming practices including land preparation, planting, and soil management while considering factors that influence farmers' decisions, such as experience, access to information, financial capacity, and environmental conditions. The study does not establish causal relationships between soil suitability and farmer crop decisions.

However, the study is limited to specific barangays and farms in Palayan, so the findings may not represent all agricultural areas in Nueva Ecija. Data collection relies partly on farmers' self-reported practices and field observations, which may involve subjective judgment or incomplete information. The focus is primarily on soil suitability and crop practices and does not fully address other factors such as pest management, market access, or climate-related challenges.

Additionally, time and resource constraints may limit the number of farms and soil samples analyzed. Despite these limitations, the study provides valuable insights into the practical use of soil suitability recommendations and highlights opportunities for improving agricultural practices in Palayan.

1.5 Conceptual Framework

Figure 1. Paradigm of the Study

II. REVIEW OF RELATED LITERATURE

Agriculture remains a major contributor to food security, employment, and rural development in the Philippines. In Central Luzon, particularly in Nueva Ecija, farming systems are predominantly rice-based because of favorable climatic conditions and irrigation infrastructure. According to the Philippine Statistics Authority (2023), Nueva Ecija continues to be one of the country's leading rice-producing provinces, emphasizing the importance of effective agricultural planning and crop suitability assessment.

Soil suitability is a critical factor influencing agricultural productivity. Soil properties such as pH, texture, fertility, drainage, and nutrient availability directly affect crop growth and yield. Slightly acidic to neutral soils are generally considered favorable for most crops because they support nutrient availability and plant uptake. Soil texture also determines water retention and aeration; clay soils commonly favor rice production due to high water-holding capacity, while sandy soils are more suitable for crops requiring faster drainage (PhilRice, n.d.). Brady and Weil (2016) further explained that soil texture and structure influence root development, nutrient movement, and water availability.

The Food and Agriculture Organization (FAO, 2017) emphasized that land evaluation and soil suitability assessment are essential in matching crops with appropriate environmental conditions to improve sustainability and productivity. In the Philippine context, agencies such as the Department of Agriculture (DA), the Bureau of Soils and Water Management (BSWM), and the Philippine Rice Research Institute (PhilRice) provide soil maps, crop advisories, and technical guidelines that support agricultural planning. Recent localized studies in Central Luzon also recommend the use of Geographic Information Systems (GIS) and soil suitability

mapping to guide crop selection and land-use planning (Garcia et al., 2021).

Farmers' crop selection decisions are influenced not only by soil suitability but also by economic and social factors. Mapiye et al. (2019) found that farmers often prioritize market demand, profitability, and income stability when selecting crops. Similarly, Valbuena et al. (2020) noted that farming decisions are shaped by farmers' experiences, available resources, labor requirements, and risk management strategies. In many farming communities, traditional practices and familiarity with rice cultivation continue to influence crop selection despite recommendations for diversification. Laborte et al. (2018) observed that rice-based systems remain dominant in Central Luzon because farmers consider rice a more secure and established source of income. This demonstrates that practical and economic considerations often outweigh technical recommendations.

Although soil suitability assessments provide scientific guidance, several barriers limit their adoption. Financial constraints, high production costs, irrigation limitations, and unstable market conditions discourage farmers from shifting to alternative crops. Laborte et al. (2018) reported that many farmers are unable to fully implement soil-based recommendations because of limited capital and access to farm inputs.

Limited awareness and technical knowledge also contribute to low adoption rates. Cruz et al. (2017) identified insufficient access to agricultural extension services and technical assistance as major constraints affecting farmers' use of recommended practices. In addition, climate variability and uncertainty in market prices further affect farmers' willingness to adopt diversified cropping systems.

Agricultural extension services play an important role in improving farmers' understanding of soil suitability and appropriate crop management practices. Institutions such as the DA, PhilRice, and local agriculture offices provide training programs, soil information, and crop advisories to support farmer decision-making. According to the Food and Agriculture Organization (2021), effective extension programs improve technology adoption and strengthen sustainable farming practices.

However, studies suggest that extension services in rural communities are often constrained by limited manpower, insufficient funding, and inconsistent farmer participation. Strengthening technical outreach and improving access to localized agricultural information may therefore enhance the adoption of soil-based recommendations and improve farm productivity.

Recent studies emphasize crop diversification as an important strategy for improving income stability, soil management, and climate resilience. Diversification involves integrating crops such as corn, vegetables, legumes, and root crops alongside rice production where soil conditions are suitable. According to the Department of Agriculture (2022), diversified farming systems can reduce economic risk and improve long-term sustainability.

Research in Central Luzon also highlights that diversification can enhance land productivity when aligned with soil capability and market opportunities (Garcia et al., 2021). Despite these advantages, many farmers still prefer monocropping because of familiarity, limited resources, and existing market systems.

Overall, existing literature establishes that soil suitability assessments provide a strong scientific basis for agricultural planning; however, actual farming practices are influenced by economic, environmental, and social considerations. While previous studies discuss crop suitability and farmer decisionmaking, there remains limited localized research examining how soil suitability recommendations align with actual cropping practices at the barangay level in Palayan City. This study addresses this gap by analyzing the relationship between recommended crops and the farming practices of local farmers.

III. METHODOLOGY

3.1 Research Design

This study uses descriptive and comparative analysis and does not aim to establish cause-and-effect relationships. Instead, it focuses on identifying patterns between recommended and actual crop practices. It describes the soil conditions in selected areas of Palayan City, including pH, texture, and nutrient content, along with the recommended crops and the current farming practices of farmers. It then compares the recommended crops with what farmers actually plant to determine whether there is alignment or mismatch.

The study also uses both secondary data from soil and agricultural reports and primary data gathered from farmer surveys or interviews. This combination helps provide a clearer understanding of both technical recommendations and the real conditions influencing farming decisions.

3.2 Data Sources

This study used both secondary and primary data to understand soil conditions and farming practices in the study area.

Secondary data were used to describe soil conditions and identify recommended crops. These came from the Philippine Rice Research Institute (PhilRice), Department of Agriculture (DA), Bureau of Soils and Water Management (BSWM), and other agricultural reports. The data included soil pH, texture, fertility, nutrient trends, and drainage, which served as the basis for crop suitability.

It is important to note that these soil data are general references from institutional sources and not based on direct soil testing from individual farms. They represent typical conditions in Palayan City and may not reflect exact conditions in every farm or barangay.

Additional agricultural data were obtained from the City Agriculture Office of Palayan City, which provided

information on common crops, general farming conditions, and support in reaching farmer respondents.

Primary data were gathered directly from farmers through questionnaires and interviews. This included information on current crops, awareness of soil conditions, factors affecting crop choice, and reasons for following or not following recommendations. These responses helped explain real farming practices, but the study does not establish cause-and effect relationships.

3.3 Respondents of the study

Table 1. Respondents of the study

Barangay	No. of Respondents (100%)	Percentage	N
Singalat	5	20.83%	5
Atate	5	20.83%	5
Caballero	5	20.83%	5
Manacnac	5	20.83%	5
Santolan	4	16.67%	4
Total Population	24	100.00%	24

The respondents of this study were 24 farmers from selected agricultural barangays in Palayan City, namely Barangay Singalat, Atate, Caballero, Manacnac, and Santolan. These barangays were chosen because of their active farming activities and accessibility for data collection.

Although the study uses secondary data covering multiple barangays in Palayan City, the primary survey and interviews are limited only to these 24 farmers .The findings from the survey are intended to reflect localized farmer observations and selected farmer experiences rather than citywide statistical representation

The respondents were identified with the help of the City Agriculture Office and were selected based on their active involvement in farming, participation in crop decision making, and at least one year of farming experience.

3.4. Research Instrument

The primary research instrument used in this study was a structured questionnaire given to farmer-respondents in Palayan City. It was designed to collect data aligned with the study's objectives.

The questionnaire included basic information about the respondents such as age, sex, farming experience, farm size, and barangay. It also gathered data on their current crops and cropping patterns, as well as their awareness of soil conditions and soil testing.

It further assessed whether farmers know the recommended crops for their soil and where they get this information, such as from agricultural offices or training programs. Another part used a Likert scale to identify factors affecting crop choice, including market demand, cost, weather, soil type, water availability, seed access, and expected profit.

The last part included open-ended questions about farming challenges, needed support, and suggestions for improvement. Overall, the questionnaire allowed both numerical and descriptive data to be collected in a consistent way.

3.5 Framework for Determining Alignment

The determination of crop alignment in this study was based on a comparison between the crops actually grown by farmers and the crops recommended for the prevailing soil conditions in Palayan City. The recommended crops were taken from secondary sources such as the Philippine Rice Research Institute, Department of Agriculture, and the Bureau of Soils and Water Management, which provide guidelines based on soil properties like pH, texture, fertility, and drainage.

Each reported crop was checked against these references to determine if it was suitable for the soil conditions. The level of alignment was then classified using set criteria. The alignment classifications applied in this study were researcher-developed interpretations used solely for comparative analysis and were not based on official standardized suitability models.

Table 2. Alignment Criteria

Condition	Interpretation
Crop matches recommended crop	High alignment
Crop is partially suitable under soil conditions	Moderate alignment
Crop is not generally recommended for the soil type	Low alignment

3.6 Data Analysis Techniques

The data gathered in this study were analyzed using both quantitative and qualitative techniques to ensure a comprehensive interpretation of the findings.

A Likert scale interpretation was used to measure the level of influence of various factors affecting crop selection. The mean scores were interpreted using the following scale:

Mean Score	Interpretation
4.21–5.00	Very High Influence
3.41–4.20	High Influence
2.61–3.40	Moderate Influence
1.81–2.60	Low Influence
1.00–1.80	Very Low Influence

IV. RESULTS AND DISCUSSION

4.1 Prevailing Soil Conditions and Agricultural Implications in Palayan City

Table 3. Summary of Soil Characteristics by Barangay/Area

Barangay	Soil Type	pH Range	Nutrient Status	Texture	Drainage
Atate	Clay Loam	5.4-6.4	Low	Medium-Heavy	Moderate
Aulo	Clay Loam	5.8-6.0	Low	Medium-Heavy	Moderate
Bagong Buhay	Clay Loam	6.0-6.5	Low	Medium-Heavy	Moderate
Caballero	Clay Loam	5.4-6.4	Low	Medium-Heavy	Moderate
Caimito	Clay Loam	5.0-5.8	Low	Medium-Heavy	Moderate
Dona Josefa	Clay Loam	5.4-6.0	Low-Medium	Medium-Heavy	Moderate
Ganaderia	Clay Loam	6.0-6.5	Low	Medium-Heavy	Moderate
Imelda Valley	Clay Loam	6.0-6.6	Low	Medium-Heavy	Moderate
Langka	Clay Loam	6.0-6.5	Low	Medium-Heavy	Moderate
Malate	Clay Loam	5.0-6.0	Low	Medium-Heavy	Moderate
Maligaya	Clay Loam	6.0-6.5	Low	Medium-Heavy	Moderate
Manacnac	Clay Loam	5.8-6.4	Deficient-Medium	Medium-Heavy	Moderate
Mapaet	Clay Loam	5.2-5.8	Low	Medium-Heavy	Moderate
Marcos Village	Sandy Loam	6.0-7.0	Deficient-Medium	Light-Medium	Well-drained
Militar	Clay Loam	5.5-6.5	Low	Medium-Heavy	Moderate
Popolon	Sandy Loam	6.0-7.0	Deficient-Medium	Light-Medium	Well-drained
Santolan	Clay Loam	5.8-6.4	Low-Medium	Medium-Heavy	Moderate
Sapang Buho	Sandy Loam	6.0-7.0	Deficient-Medium	Light-Medium	Well-drained
Singalat	Sandy Loam	6.0-7.0	Deficient-Medium	Light-Medium	Well-drained

Source: City Agricultural Office, Palayan City, Nueva Ecija

The analysis of soil conditions in Palayan City indicates that most barangays are characterized by clay loam soils with moderate drainage and good water-holding capacity, suggesting suitability for agricultural production. These soil characteristics generally indicate suitability for the cultivation of water dependent crops, particularly rice, which remains widely practiced across the study area.

In contrast, selected barangays with sandy loam soils exhibit better drainage but lower water retention, making them more suitable for vegetables and other upland crops. These variations in soil characteristics suggest that while staple crop production is viable across much of the area, certain locations have the potential to support more diversified cropping systems.

However, despite this potential, actual farming practices remain largely concentrated on staple crops, indicating that soil suitability is only one of several factors considered in crop selection.

4.2 Recommended Crops Based on Soil Suitability

Table 4. Recommended Crops

Barangay	Highly Suitable Crops	Moderately Suitable Crops	Limited Suitability crops
Atate	Rice	Corn, Vegetables	High-Value upland crops
Aulo	Rice	Corn	Vegetables, legumes
Bagong Buhay	Rice	Corn, Vegetables	Upland crops
Caballero	Rice	Corn	Vegetables
Caimito	Rice	Corn	Vegetables, legumes
Dona Josefa	Rice	Corn, Vegetables	Upland crops
Ganaderia	Rice	Corn	Vegetables
Imelda Valley	Rice	Corn, Vegetables	Upland crops
Langka	Rice	Corn	Vegetables
Malate	Rice	Corn	Vegetables
Maligaya	Rice	Corn, Vegetables	Upland crops
Manacnac	Rice	Corn	Vegetables
Mapaet	Rice	Corn	Vegetables, legumes
Marcos Village	Rice	Root crops	Rice(limited suitability)
Militar	Rice	Corn	Vegetables
Popolon	Rice	Root crops	Rice(limited suitability)
Santolan	Rice	Corn, Vegetables	Upland crops
Sapang Buho	Rice	Root crops, legumes	Rice(limited suitability)
Singalat	Rice	Root crops	Rice(limited suitability)

Source: *(FAO, 2017;PhilRice,2020;Haifa Group,2022)*

Across most barangays in Palayan City, rice is commonly recommended based on institutional references, especially in areas with clay loam soil, moderate drainage, and good water retention. Corn is also commonly recommended for areas with better drainage or higher elevation.

Vegetables and root crops are generally recommended in some areas, although they often require better soil management and irrigation.

However, barangays such as Marcos Village, Popolon, Sapang Buho, and Singalat show soil conditions that may better support vegetables , root crops, and other high-value crops due to sandy loam soils and better drainage.

Overall, while rice remains the dominant crop recommendation, some areas in Palayan City have soil conditions that support more diversified farming systems, especially in well-drained upland areas.

4.3 Existing Crops Grown in Palayan City

Table 5. Crops Grown in Palayan City

Barangay	Crops grown in Barangay
Atate	Rice, Eggplant, Corn, Hot Pepper, Mango
Aulo	Rice, Eggplant, Corn, Hot Pepper, Green Pepper, Calamansi, Bitter Gourd Pole Sitao, Mango, Tomato
Bagong Buhay	Rice, Green Pepper, Pole Sitao
B.O Militar	Rice, Mango, Calamansi
Caballero	Rice, Eggplant, Corn, Green Pepper
Caimito	Rice, Eggplant, Wing bean
Dona Josefa	Rice, Corn, Pole Sitao, Bitter Gourd, Camote, Cassava, Ginger, Banana
Ganaderia	Rice, Mango
Imelda Valley	Rice, Pole Sitao, Okra, Green Pepper, Hot Pepper, Mango, Bitter Gourd
Langka	Rice, Corn, Camote, Cassava, Ginger, Banana, Ube
Malate	Rice, Mango
Maligaya	Rice, Green Pepper, Pole Sitao, Hot Pepper, Eggplant, Calamansi
Manacnac	Rice, Mango, Calamansi, Corn
Mapait	Rice, Corn, Cassava, Calamansi, Banana, Green Pepper, Eggplant,
Marcos Village	Rice, Corn, Eggplant, Hot Pepper, Green Pepper, Bitter Gourd, Onion, Pole Sitao, Tomato, Okra, Cucumber, Mango, Wing Bean, Pechay
Popolon	Rice, Corn, Eggplant, Hot Pepper, Green Pepper, Bitter Gourd, Calamansi, Pole Sitao, Tomato, Okra, Cucumber, Mango, Wing Bean
Santolan	Rice, Mango, Calamansi
Sapang Buho	Rice, Corn, Eggplant, Hot Pepper, Green Pepper, Bitter Gourd, Onion, Pole Sitao, Tomato, Okra, Cucumber, Mango, Wing Bean, Pechay, Mustasa
Singalat	Rice, Corn, Eggplant, Hot Pepper, Green Pepper, Bitter Gourd, Calamansi, Pole Sitao, Tomato, Okra, Cucumber, Wing Bean

Source: *City Agricultural Office, Palayan City ,Nueva Ecija*

The table shows the crops grown across barangays in Palayan City based on actual records from the City Agriculture Office. Rice is the dominant crop, being cultivated in all barangays, indicating its importance as the primary agricultural product in the area.

In addition, a variety of vegetables such as eggplant, corn, green pepper, hot pepper, bitter gourd, and pole sitao are widely grown, especially in barangays like Marcos Village, Popolon, Sapang Buho, and Singalat, which exhibit high crop diversity. Fruit crops, particularly mango and calamansi, are also commonly cultivated, highlighting their economic value.

Root crops like cassava, camote, and ginger are concentrated in selected barangays such as Doña Josefa, Langka, and Mapait, suggesting adaptation to specific soil conditions. Meanwhile, some barangays like Ganaderia, Malate, and Santolan show limited crop variety, focusing mainly on rice and mango.

4.4 Alignment Between Recommended and Existing Crops by Barangay

The table presents the level of alignment between soil based recommended crops and the actual crops grown b

Barangay	Recommended Crops	Existing Crops	Alignment Level
Atate	Rice,Corn, Vegetables	Rice, Eggplant, Corn, Hot Pepper, Mango	High
Aulo	Rice,Corn, Vegetables	Rice, Eggplant, Corn, Hot Pepper, Green Pepper, Calamansi, Bitter Gourd Pole Sitao, Mango, Tomato	Moderate
Bagong Buhay	Rice, Corn	Rice, Green Pepper, Pole Sitao	High
B.O Militar	Rice, Corn	Rice, Mango, Calamansi	Moderate
Caballero	Rice,Corn	Rice, Eggplant, Corn, Green Pepper	High
Caimito	Rice,Corn	Rice, Eggplant, Wingbean	High
Dona Josefa	Rice,Corn,Vegetables	Rice, Corn, Pole Sitao, Bitter Gourd, Camote, Cassava, Ginger, Banana	Moderate
Ganaderia	Rice	Rice, Mango	High
Imelda Valley	Rice,Corn,Vegetables	Rice, Pole Sitao, Okra, Green Pepper, Hot Pepper, Mango, Bitter Gourd	Moderate
Langka	Rice,Corn	Rice, Corn, Camote, Cassava, Ginger, Banana, Ube	High
Malate	Rice,Corn	Rice, Mango	Moderate
Maligaya	Rice,Corn,Vegetables	Rice, Green Pepper, Pole Sitao, Hot Pepper, Eggplant, Calamansi	High
Manacnac	Rice,Corn	Rice, Mango, Calamansi, Corn	High
Mapait	Rice,Corn	Rice, Corn, Cassava, Calamansi, Banana, Green Pepper, Eggplant,	High
Marcos Village	Vegetables, Rootcrops	Rice, Corn, Eggplant, Hot Pepper, Green Pepper, Bitter Gourd, Onion, Pole Sitao, Tomato, Okra, Cucumber, Mango, Wing Bean, Pechay	High
Popolon	Vegetables, Rootcrops	Rice, Corn, Eggplant, Hot Pepper, Green Pepper, Bitter Gourd, Calamnsi, Pole Sitao, Tomato, Okra, Cucumber, Mango, Wing Bean	High
Santolan	Rice,Corn	Rice, Mango, Calamansi	Moderate
Sapang Buho	Vegetables, Rootcrops	Rice, Corn, Eggplant, Hot Pepper, Green Pepper, Bitter Gourd, Onion, Pole Sitao, Tomato, Okra, Cucumber, Mango, Wing Bean, Pechay, Mustasa	High
Singalat	Vegetables, Rootcrops	Rice, Corn, Eggplant, Hot Pepper, Green Pepper, Bitter Gourd, Calamnsi, Pole Sitao, Tomato, Okra, Cucumber, Wing Bean	High

demand, expected profit, and production cost. Other factors such as water availability and weather conditions also play important roles.

farmers in each barangay of Palayan City. whether farming practices align with crop recommendations from institutional soil references.

Table 6. Alignment Analysis by barangay

The comparison generally showed that many barangays show a high level of alignment, where the crops commonly grown match those recommended based on soil characteristics. However, barangays such as Aulo, B.O. Militar, Doña Josefa, Imelda Valley, Malate, and Santolan show moderate alignment, as farmers cultivate both recommended crops like rice and corn and less recommended crops such as mango and other fruit trees. This may be influenced by market demand, economic preferences, or traditional farming practices.

4.5 Farmer Interviews: Decision Factors, Awareness, and Challenges

Table 7. Respondent Characteristics

Variable	Category	Frequency	%
Age	18-30	3	12.5%
	31-40	6	25%
	41-50	9	37.5%
	51-60	5	20.8%
	60 and above	1	4.2%
Sex	Male	24	100%
	Female		0%
Farming Experience	<5 years	4	16.7%
	5-10 years	7	29.2%
	11-20 years	9	37.5%
	>20 years	4	16.7%
Farm Size	<1 hectare	9	37.5%
	1-2 hectares	10	41.7%
	3-5 hectares	4	16.7%
	>5 hectares	1	4.2%

Table 7. Influence Ratings on Crop Selection

Factor	Mean	Rank	Interpretation
Market demand	4.7	1	Very High Influence
Expected Profit	4.6	2	Very High Influence
Cost of Production	4.3	3	High Influence
Water Availability	4.2	4	High Influence
Weather Conditions	4.0	5	High Influence
Availability of Seeds	3.8	6	Moderate Influence
Soil Type	3.5	7	High Influence
Government Recommendations	3.2	8	Moderate Influence

Farmers reported that crop selection decisions are primarily based on economic considerations, particularly market

Table 8. Awareness of Soil Recommendation

Indicator	Yes	No	% Yes
Aware of Soil Type	16	8	66.7%
Conducted Soil Testing	5	19	20.8%
Received Crop recommendations	9	15	37.5%
Follow Recommendations	14	10	58.3%

Most farmers (66.7%) are aware of their soil type, but only a small portion (20.8%) have conducted soil testing. This indicates limited access to formal soil analysis services. Less than half received official recommendations, suggesting weak extension coverage. However, over half still follow recommendations when available, showing that compliance exists when support systems are present.

Table 9. Challenges and Needed Support

Theme	Frequency	Sample Statement
High fertilizer cost	17	"Mahal ang abono kaya tipid sa gamit."
Unstable market price	16	"Hindi stable ang presyo ng ani."

The most common challenge is the high cost of fertilizers, followed by unstable market prices and water scarcity. These issues directly affect farmers' productivity and often force them to prioritize short-term income over soil suitability recommendations. Lack of technical guidance also remains a concern, indicating gaps in agricultural extension services and training.

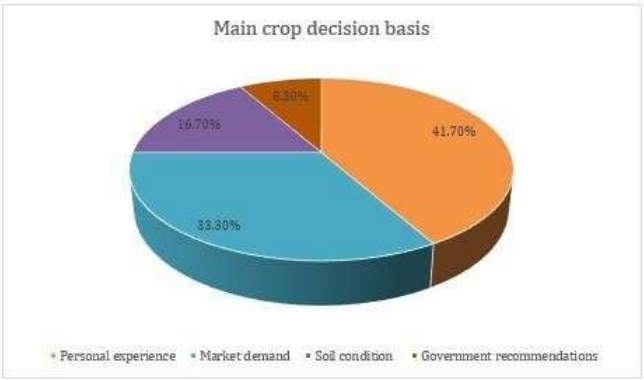

Figure 2. Crop Decision Practices and Awareness

The findings show that farmers' crop decisions are influenced more by economic needs, available resources, and farming experience than by soil suitability recommendations.

Although many farmers are aware of their soil type, only a few have undergone soil testing or regularly received formal crop recommendations, indicating that most soil knowledge is based on experience rather than scientific assessment.

Market demand, expected profit, and production cost were identified as the main factors affecting crop selection, while soil suitability had less influence. Farmers often prioritize crops that provide better income, even if they are not ideally suited to the soil. Many also diversify crops to manage risks related to weather, pests, and irrigation, resulting in mixed cropping systems instead of strict soil-based farming.

The study also highlights limited access to soil testing and agricultural extension services, causing many farmers to rely on traditional practices and peer advice. In addition, the high number of farmers who changed crops in recent years reflects how farming practices adapt to market and environmental conditions rather than soil suitability alone.

Overall, the findings suggest that available soil suitability references and institutional recommendations generally support agricultural production in Palayan City, but actual farming practices only partially align with these recommendations. The gap is mainly influenced by economic pressures, limited technical support, and practical farming realities. This suggests that agricultural recommendations should be not only scientifically appropriate but also economically practical and accessible to farmers.

V. SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Summary

This section summarizes the major findings of the study based on secondary data from institutional references and soil maps, and primary data from farmer surveys and interviews conducted in Palayan City.

Palayan City is mainly composed of clay loam and sandy loam soils with slightly acidic to near-neutral pH, suggesting suitability for various crops. However, common nutrient deficiencies in nitrogen, phosphorus, and potassium indicate the need for proper soil management and fertilization.

Rice is the most recommended crop, especially in clay loam areas. Corn, vegetables, legumes, and root crops are also suitable in several barangays, showing the city's potential for diversified farming systems.

Rice remains the dominant crop across all barangays, followed by corn, vegetables, fruits, and root crops. Although some areas practice diversified farming, staple crops still dominate overall production.

The study found a moderate to high alignment between recommended and actual crops. Most barangays follow soil suitability recommendations for rice, but the potential for diversified crop production is not fully utilized.

Farmers primarily choose crops based on market demand, expected profit, and production cost. Water availability and weather conditions also influence decisions, while soil suitability and government recommendations have only moderate influence.

Implications and Practical Strategies

The findings suggest that soil suitability alone does not determine crop selection in Palayan City. Farmers also consider economic conditions, market demand, accessibility

of resources, and practical farming experience when making agricultural decisions. This highlights the importance of combining scientific soil-based planning with localized agricultural support and economic considerations to improve productivity and sustainability.

5.2 Conclusions

Based on the findings of the study, the following conclusions are drawn:

1. Available soil suitability references suggest that many areas in Palayan City are generally favorable for multiple crops, particularly rice, corn, vegetables, and root crops due to its suitable soil types and pH levels.
2. Published suitability references indicate opportunities for diversified cropping across barangays, especially in areas with sandy loam soils and better drainage.
3. Existing crop patterns remain concentrated in staple crops ,particularly rice, despite the availability of soil conditions suitable for diversification.

   Alignment between recommended and existing crops was generally moderate to high, indicating partial but not full utilization of soil suitability recommendations.

   Crop decisions were strongly influenced by economic and operational factors, particularly market demand, expected profit, production cost, and water availability.

Practical support is necessary to improve adoption of suitable crops, including better access to soil information, technical guidance, and agricultural resources.

5.3 Recommendations

Based on the findings of the study, the following recommendations are proposed:

1. The City Agriculture Office should develop barangay specific crop advisories using updated soil suitability data and conduct diversification training programs to encourage the adoption of alternative crops suited to local soil conditions. Improved agricultural extension and technical support services are also recommended to improve farmer access to reliable agricultural information and support.

2. Farmers are encouraged to increase their awareness and understanding of soil conditions by participating in soil testing and agricultural training programs. They may also consider adopting alternative crops that are compatible with their soil conditions, particularly in areas with strong potential for crop diversification.

3. For the Local Government Unit (LGU), investment in irrigation infrastructure is recommended to support both staple and diversified cropping systems. Market support and linkage programs should also be strengthened to help farmers achieve stable demand and better pricing for their products.

4. Future researchers are encouraged to conduct studies with larger sample sizes and wider coverage to improve representativeness. Including farm-level soil laboratory testing is also recommended for more accurate and site specific analysis. In addition, future studies may explore the yield and economic performance of crop choices to better evaluate profitability and sustainability in relation to soil suitability.

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