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ASSESSMENT OF RICE EXTENSION PROGRAM OF AYALA AGRICULTURAL DISTRICT, ZAMBOANGA CITY, PHILIPPINES

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ABSTRACT

The study assessed the demographics, awareness, participation, and perceived impact of the Local Extension Program among rice farmers in Zamboanga City. The respondents were predominantly male farmers aged 41–60 years. They were active members of two lowland rice farmers' associations, along with six (6) respondents from the Barangay Local Government Units serving on Agricultural Committees. Most respondents had attained a high school to college level of education and had been farming for 11–15 years. They operated medium-sized farms (1–3 hectares) and primarily relied on irrigation systems. The findings revealed that farmers were fully aware of and actively participated in the Local Extension Program, receiving training, technical support, farm input distribution, and pest management assistance. Although respondents reported moderate increases in rice production, yields remained below 70 sacks (3.5 MT) per harvest. Farmers adopted improved rice varieties, fertilizer application practices, irrigation management techniques, and post-harvest practices, but these were perceived as only somewhat effective. Program services received a 100% satisfaction rating, particularly the visits conducted by Agricultural Extension Workers. However, the study recommends reducing farmers' dependence on distributed inputs on distributed inputs and strengthening sustainability through capacity-building initiatives and tailored training programs. Strengthening monitoring mechanisms, promoting cooperative development, integrating market linkages, and expanding Farmer Field Schools (FFS) may further enhance productivity, farmer self-reliance, and sustainable rice farming practices in Zamboanga City.

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1. INTRODUCTION

Achieving food security and improved nutrition through sustainable agriculture by 2030 is a key target of the United Nations Sustainable Development Goal (SDG) 2 [1], which aims to end hunger. Governments are encouraged to enhance agricultural production and resilience through integrated and inclusive measures. In the Philippines, government efforts through *AmBisyon Natin 2040* and its socioeconomic agenda for the agricultural sector continue to face challenges, including declining productivity, climate-related shocks, limited access to technology, and weak institutional support. These challenges directly affect rice farmers and have significant implications for food security in the country [2].

The government aims to alleviate poverty and improve the socioeconomic conditions of rural communities through enhanced agricultural support and modernization initiatives, as outlined in the Philippine Development Plan 2023–2028. Several national measures have been implemented to address the declining productivity of the rice sector. These include the Rice Competitiveness Enhancement Fund (RCEF) [3], the Masagana Rice Industry Development Program [4], and the Rice Farmers Financial Assistance (RFFA) Program [5]. These interventions provide rice farmers with access to quality seeds, fertilizers, machinery, financial assistance, and training opportunities to enhance productivity and competitiveness. In addition, technological adoption, digitization, and science-based agricultural practices are integral components of these modernization programs, aimed at improving the long-term sustainability of rice production.

Agricultural Extension Workers (AEWs) provide farmers with technical knowledge, skills, and resources to adopt sustainable farming practices and maximize crop yields, thereby contributing to long-term food security. This is made possible through collaborative efforts with various government agencies. Participants favorably rated agricultural extension workers as facilitators, educators, motivators, and organizers [6]. According to the AEW Profile Report published by the Agricultural Training Institute (ATI) in 2021, each AEW serves approximately 500 farmers across a median of 10 barangays, making field implementation and monitoring particularly challenging, especially in rural and hard-to-reach areas [7]. Farming groups were assessed as “quite good” in terms of goals, organizational structure, task performance, coaching and development, cohesion, work atmosphere, and overall effectiveness. The role of AEWs was found to have a significant influence on farmer group dynamics. In Magsaysay, Occidental Mindoro, agricultural extension workers are predominantly middle-aged and experienced professionals [8]. These practitioners utilize various extension approaches, including group meetings, method demonstrations, farmer field schools, demonstration farms, farm and home visits, and communication-based activities to introduce farmers to new technologies and agricultural practices. With the support of Local

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Government Unit–Municipal Agriculture Offices (LGU-MAOs) and enhanced technical knowledge and skills, AEWs are able to deliver more effective services [9]. However, a study conducted in the provinces of Eastern Samar and Leyte found that AEWs were dissatisfied with the current extension system and supported the renationalization of agricultural extension services, citing inadequate local funding, low prioritization of agricultural programs, and political interference as major concerns [10].

Farmers [11] reported that firsthand, experience-based learning is driven by the need to save time and resources, participate in social learning, and acquire up-to-date knowledge. In the United States, the convergence of environmental degradation, public health challenges, and rural economic decline has made sustainable agriculture one of the most critical priorities [12]. The transition toward sustainable agriculture is expected to require a larger agricultural workforce due to the aging farming population and the knowledge-intensive nature of sustainable farming practices [13]. Furthermore, row crop farmers, users of irrigation infrastructure, and farmers engaged in crop diversification were found to be more likely to adopt sustainable agricultural practices [14].

Evaluation practices should focus more on long-term transitions rather than short-term incremental changes to effectively contribute to the body of knowledge that supports sustainable transitions [15]. The effectiveness of policymaking is rarely questioned. However, international literature and practical evaluation experiences suggest that evaluation reports are often commissioned, approved, and subsequently overlooked, remaining unused on institutional shelves. Moreover, available evidence is frequently selected to support a particular position, while contradictory findings are disregarded [16]. This paper examined evidence, policy, and their interrelationships in an objective manner, while also exploring the valid motivations behind the adoption of specific conceptual frameworks. A clearer discourse on these concepts may enhance the understanding and exploration of the relationship between evidence and policy development [17].

This paper examines the effects of the Local Extension Program of Zamboanga City on lowland rice farmers in the Ayala Agricultural District. It investigates the farmers' demographics, awareness, level of participation, adoption of agricultural technologies, and perceptions of the program's influence on farming practices and productivity. The study also analyzes existing challenges and opportunities for improving agricultural extension services and promoting sustainable rice production. The findings may serve as a valuable reference for policymakers, extension workers, and local government units in enhancing agricultural programs and strengthening food security in remote farming communities.

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2. MATERIALS AND METHODS

2.1 Study sites

The study was conducted in six (6) barangays within the Ayala Agricultural District, Political District I of Zamboanga City. Respondents from the *Barangays* of *Cawit, Recodo, Ayala, Tulungatung, Pamucutan,* and *Talisayan* were surveyed using a structured questionnaire. The questionnaire's parameters and content were validated by Rice Technicians (experts) from the Office of the City Agriculturist, Field Office I, Zamboanga City.

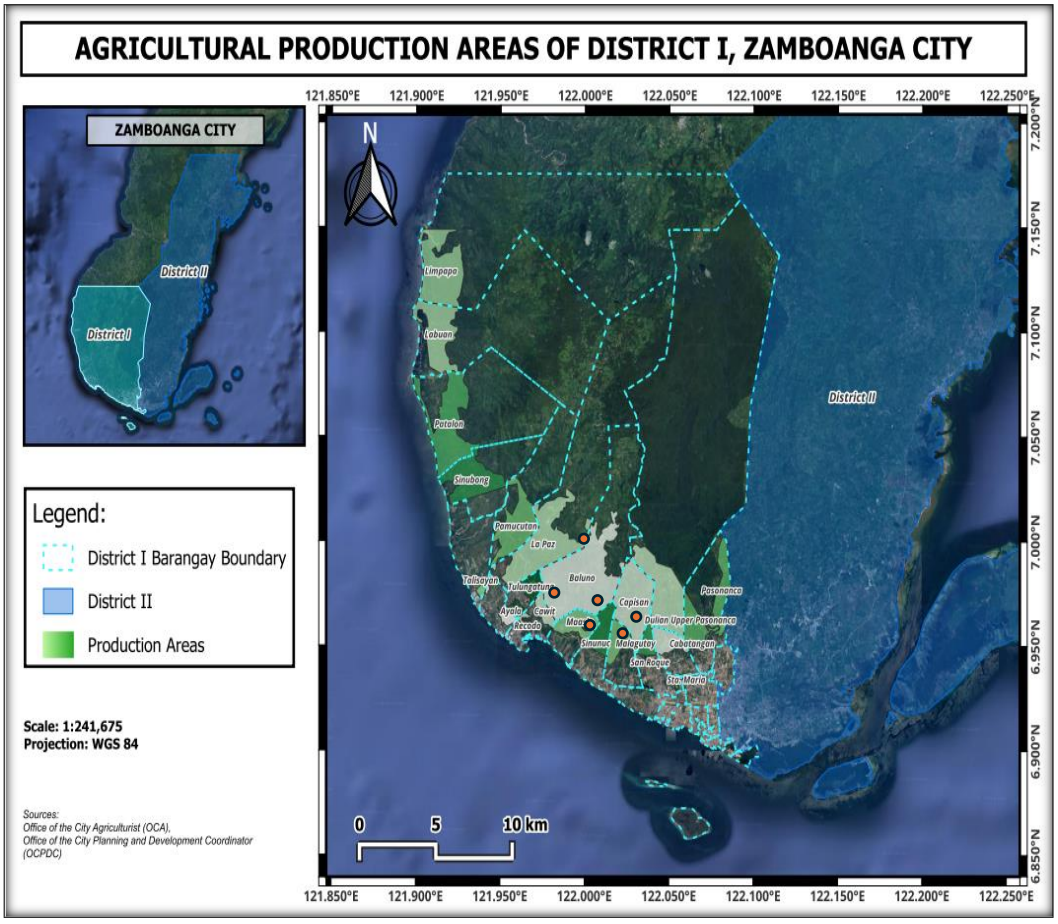

Figure 1: Map of study sites[18].

2.2 Respondents and Instrumentation

Respondents are from the Lowland Rice Farmers Association and Barangay Local Government Units specifically the Committee Chairs on Agriculture served as respondents of the study. These included members of the Dumalon River Irrigators Farmers Association (DRIA), Pamucutan Talisayan Camacop Irrigators Farmers Association (PTCIA), and the Barangay Local Government

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Units of Cawit, Recodo, Ayala, Tulungatung, Pamucutan, and Talisayan. A letter of intent, together with the survey questionnaire, was submitted to the Office of the City Agriculturist to secure approval for the conduct of the study, access relevant data, and coordinate the scheduling of survey interviews with the identified respondents. The study followed a framework for baseline data collection, rice program evaluation, impact analysis, and feedback mechanisms. The research instrument underwent validation by Rice Technicians (subject-matter experts) from the Office of the City Agriculturist, Field Office I, Zamboanga City. The validation assessed the questionnaire's relevance, clarity, and alignment with the study objectives. Expert feedback was incorporated to refine the structure, wording, and content of the instrument, ensuring its reliability and content validity prior to administration.

2.3 Sampling and Statistical Analysis

The study employed purposive sampling to identify target respondents based on their direct experience and involvement in rice farming and agricultural extension activities [19]. Respondents were selected from the Lowland Rice Farmers Association and the Councilors on Agriculture of various Barangay Local Government Units (BLGUs) within the Ayala Agricultural District, Field Office I, Zamboanga City. A total of eight (8) respondents were included in the study, consisting of two (2) members from the Lowland Rice Farmers Association and six (6) representatives from the BLGUs. Data were analyzed using descriptive statistical methods, primarily frequency counts and percentage distribution, to summarize responses related to demographic characteristics, awareness and participation in the extension program, perceived impact on rice production, adoption of farming practices and technologies, and level of farmer satisfaction. However, the study was limited by the absence of direct or verified field-level productivity data on rice yield, and therefore relied on self-reported assessments from respondents. This limitation constrains the extent of comparative statistical analysis that can be performed, but provides valuable baseline insights for program evaluation and future research.

3.0 RESULTS AND DISCUSSION

3.1 Demographic information of respondents

Table 1 presents the demographic data of the study respondents, gathered from two (2) Lowland Rice Farmers Associations and six (6) Councilors on Agriculture from the *Barangay* Local Government Units (BLGUs) situated in the Ayala Agricultural District, Political District I, Zamboanga City.

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Table 1: Respondents of demographic information

Age	41 – 50 (50%) and 51-60 (50%)
Gender	Male (100%)
Educational Attainment	Highschool (50%) and College (50%)
Years engaged in farming	11 – 15 years (100%)
Farm size	1-2 ha (50%) and 2-3 ha (50%)
Source of Irrigation	Irrigated (100%)

Table 1 shows that the age range of the respondents was 41–50 years (50%), indicating that the study was predominantly composed of middle-aged and older farmers who likely possess substantial farming experience and stability in their agricultural practices. All respondents were male, reflecting the conventional gender roles in agriculture within the study areas. Educational attainment was evenly distributed between high school and college graduates, each comprising 50%, suggesting that the farmers possess a basic to moderate level of education that may enhance their ability to understand and apply technical knowledge provided through extension services. All respondents had 11–15 years of experience in rice farming (100%), indicating strong familiarity with agricultural operations, which may also contribute to higher receptiveness to extension interventions. In terms of farm characteristics, respondents operated medium-scale rice farms ranging from 1–2 hectares (50%) to 2–3 hectares (50%), which are typical farm sizes within the Ayala Agricultural District. All respondents relied on irrigated farming systems (100%), underscoring the critical role of irrigation infrastructure in sustaining rice production in the area. Overall, the findings suggest that respondents are experienced farmers operating within relatively uniform production systems, which may facilitate the implementation of extension programs but may also limit inclusivity, particularly in terms of gender representation and farm diversity. These findings are consistent with studies indicating that farmers' demographic characteristics, including age, education, and gender, significantly influence technology adoption and adaptation strategies. Farmer organizations also play a key role in shaping adoption behavior and strengthening adaptive capacity, particularly in peri-urban agricultural settings [20]. Similarly, community-based agricultural development initiatives have been shown to benefit from strong social linkages, active participation, and collective knowledge sharing among members [21]. These insights highlight the importance of strengthening farmer-based organizations, promoting inclusive participation, and tailoring extension services to diverse farmer needs to enhance resilience and sustainability.

Table 2 shows complete awareness (100%) and participation (100%) in the Local Extension Program of the Office of the City Agriculturist (OCA) among respondents, reflecting the program's strong outreach and effective engagement within the farming community.

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Table 2: Summary of Awareness and participation in the extension program

Awareness to Local Extension program of OCA	Yes (100 %)
Participated to the Local Extension program	Yes (100%)
No of years participated on the program	1-3 years (50%) and < 6 years (50%)
Following services received	Training on new farming technologies (100%), Distribution of farm inputs (100%), Technical assistance on rice production (100%), FFS (100%), Pest and Disease Management support (50%) and post-harvest technology (100%)
Frequent engagement with extension officer	Every week (100%)

Fifty percent (50%) of the respondents had participated in the program for 1–3 years, while the remaining 50% had been involved for up to six years. All respondents reported receiving various program services, including training on new agricultural technologies, provision of farm inputs, technical assistance in rice cultivation, participation in Farmer Field Schools (FFS), and post-harvest technology support (100%). In addition, 50% of the participants received assistance in pest and disease management. These findings highlight the program's comprehensive approach in addressing the diverse needs of rice farmers. All respondents reported weekly interactions with extension staff, indicating consistent and proactive engagement between implementers and farmers. The high level of awareness, participation, and service utilization suggests that the program is effective in reaching its target beneficiaries and delivering relevant support. However, the results also point to areas for improvement, particularly the need to expand pest and disease management support to all participants. Sustained engagement with extension officers should remain a key strategy for maintaining program effectiveness. Overall, strengthening farmer extension networks and discussion groups may further enhance learning, participation, and access to agricultural information [22].

Table 3 exhibits that all respondents (100%) assessed their production improvement as "Moderately Increased" following participation in the extension program. However, the increase in rice production was not statistically significant.

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Table 3: Summary of Impact on Rice Production

Rating after joining the rice production extension program	Moderately increased (100%)
Average yield before joining the rice extension program	< 70 sacks (100%)
Current average rice yield after joining the rice extension program	< 70 sacks (100%)

Prior to participation in the program, all respondents reported an average yield of fewer than 70 sacks per harvest. Following program participation, respondents continued to report average yields of fewer than 70 sacks per harvest. In comparison,[22] suggested that the absence of a significant influence of technology adoption, either directly or as a mediating variable, indicates a gap between technology adoption and its effective utilization at the farm level. Their findings further revealed that farmers' capabilities and market orientation have a greater influence on productivity improvement than technology alone. The results of the present study indicate a discrepancy between perceived improvements in farming practices and actual yield outcomes. Although respondents reported moderate improvements in their agricultural practices, these changes did not translate into measurable increases in productivity. This suggests that improvements in farming practices alone may not be sufficient to significantly increase yields without addressing other limiting factors. Farmers also expressed varying perceptions of production outcomes, reflecting differences in their experiences and responses to agricultural interventions. These findings highlight the importance of understanding farmers' perspectives when designing targeted adaptation programs and policies for those already experiencing and responding to agricultural changes [23].

Table 4 illustrates that all respondents (100%) implemented various technologies and techniques introduced by the Local Extension Program, including improved high-yielding rice varieties and fertilizers, as well as soil management practices through the application of nutrients to enhance soil health.

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Table 4: Summary of Adoption of farming practices and technologies

Adopted technologies and practices from the Local extension program	Improved rice varieties (100%) Fertilizer and soil amendments (100%) Improved irrigation management (100%) Pest and Disease control techniques (100%) Post-harvest technologies (100%)
Rating the efficacy of new technologies and practices on rice production	Somewhat effective (100%)

Improved irrigation management enhanced efficient water utilization, supporting findings that extension-related factors significantly influence technology adoption [19]. Pest and disease management strategies contributed to reduced agricultural losses, while postharvest technologies improved rice production processes, particularly through the use of mechanical facilities. Despite full adoption of these practices, all respondents rated their effectiveness as "Somewhat Effective" (100%). The widespread use of these technologies indicates the program's capacity to engage farmers and promote modern agricultural practices. However, the "Somewhat Effective" rating suggests a gap between implementation and expected outcomes. This implies that while initial adoption is influenced by exposure and early experience, continued use depends on the perceived benefits of the technology, which may lead to retention or "disadoption". Sustained adoption therefore requires continuous technical improvement, farmer retraining, and ongoing support to ensure long-term effectiveness [24].

Table 5 reveals that all respondents (100%) expressed satisfaction with the services provided by the Local Extension Program. However, levels of satisfaction varied across specific components of the program. For training quality, 50% of respondents reported satisfaction, suggesting the need for improvements in training content or delivery. In contrast, the frequency of visits by extension officers received a 100% satisfaction rating, indicating consistent and reliable program support.

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Table 5: Summary of Satisfaction of extension program

Rating from services provided by the Local extension program	Satisfied (100%)
Received programs mostly satisfied	Quality of training (50%) Frequency visits by the extension officer (100%)
Suggest improvements for the Local extension program	More training opportunities (100%) Timely distribution of farm inputs (50%)

Identified suggestions for improving the program included enhanced training for all participants (100%), highlighting the need for additional capacity-building to strengthen farmers' skills and knowledge. Timely distribution of agricultural inputs was also emphasized by 50% of respondents, indicating the need for improved efficiency in the delivery of farm resources. Although the Local Extension Program provides consistent services and regular engagement through extension officer visits, several areas still require improvement. Variations in satisfaction with training quality suggest the need for more targeted and practical training sessions tailored to farmers' specific needs. Accessibility emerged as the most satisfactory service attribute, while diversity was rated the lowest. The results further indicate that farm size, range of farming activities, annual income, and engagement with extension services significantly influence farmer satisfaction. These findings may guide policymakers in strengthening support for smallholder farmers through more responsive and high-quality extension programs [25] [26].

CONCLUSION

Despite high satisfaction with services and weekly engagement with extension personnel, the effectiveness of the interventions was rated as "Somewhat Effective," while rice yields remained below 70 bags per harvest, indicating a gap between technology adoption and actual productivity outcomes. This suggests that program benefits have not yet fully translated into measurable improvements in yield and income.

The findings highlight the need to reduce dependence on input-based support or a "dole-out culture," which may limit productivity gains and create dependency if not supported by sustainability mechanisms. For long-term self-reliance, the program should strengthen farmer empowerment through capacity-building initiatives such as financial literacy, cooperative development, and resource management training. In addition, training programs should be expanded and tailored to advanced farming techniques, while ensuring timely and sustainable input distribution.

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Strengthening monitoring and evaluation systems, along with improving market linkages and value-added processing, may further enhance farmer incomes and productivity. Expanding Farmer Field Schools (FFS) integrated with cooperative development can also improve knowledge sharing, reduce pesticide overuse, and promote the adoption of sustainable practices. Studies show that such approaches can lead to a 13% increase in agricultural yields and a 20% increase in income [27].

Cooperatives play a key role in helping farmers manage inputs, irrigation, and market access, thereby reducing dependence on external assistance and strengthening self-reliance and sustainability [28][29]. Moreover, farmer capacity building should go beyond skills and knowledge enhancement to include meaningful participation in decision-making processes within development programs [30].

Future studies may consider assessing the long-term impacts of extension programs on farmer income, productivity, and sustainability outcomes to better capture their developmental effectiveness over time.

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