

Convergence of Traditional Agricultural Beliefs of Maranao Farmers and Scientific Principles in Selected Barangays of Saguilaran, Lanao del Sur

Rasmia M. Yahya-Muti

Faculty, Mindanao State University

Received: 20.10.2025 | Accepted: 07.11.2025 | Published: 14.11.2025

*Corresponding Author: Rasmia M. Yahya-Muti

DOI: [10.5281/zenodo.17608077](https://doi.org/10.5281/zenodo.17608077)

Abstract

Original Research Article

This study explores the convergence between traditional agricultural beliefs and scientific agricultural principles among Maranao farmers in Saguilaran, Lanao del Sur. Rooted in Indigenous Knowledge Systems (IKS), Maranao farming practices—such as seed saving, natural composting, intercropping, and lunar-based planting—continue to guide agricultural decision-making despite exposure to modern technologies. Using a descriptive qualitative design, data were collected from 15 Maranao farmers through interviews and focus group discussions to document traditional practices, understand their empirical basis, and identify points of alignment with scientific agronomy. Findings reveal that traditional practices persist not as outdated customs but as adaptive, observation-based frameworks that sustain ecological balance and productivity. Farmers demonstrated empirical reasoning consistent with scientific concepts such as nutrient recycling, soil enrichment, and integrated pest management. Results also show selective adoption and hybridization of modern techniques, reflecting cultural discernment and environmental awareness. However, the study highlights challenges in generational transmission, as younger Maranao show declining interest in traditional farming, risking the erosion of ecological knowledge. Despite these challenges, participants expressed openness to participatory integration—preferring agricultural programs delivered in the Maranao language and aligned with local customs. The findings affirm that indigenous and scientific systems are complementary knowledge partners, both vital to sustainable agricultural development. The study recommends culturally grounded and participatory agricultural extension programs that recognize traditional authority structures and promote co-creation between farmers and agricultural experts, ensuring ecological resilience, cultural continuity, and inclusive rural transformation in Maranao communities.

Keywords: Maranao farmers, indigenous knowledge systems, traditional agriculture, convergence, sustainable farming, Lanao Del Sur.

Copyright © 2025 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).

Introduction

Traditional agricultural knowledge remains a cornerstone of rural livelihoods across the Philippines, where centuries-old practices and belief systems shape how communities manage land, water, seeds, and crop cycles. Scholars and development agencies increasingly recognize that such indigenous knowledge systems (IKS) encode ecological understanding, locally adapted agronomic techniques, and socio-cultural norms that support

resilient food production (Macusi et al., 2023; FAO, 2025). In many parts of Mindanao, including Maranao communities, IKS is not merely a set of practical techniques but a culturally embedded body of knowledge that governs planting calendars, varietal selection, soil and water management, and ritual observances related to cultivation (Amihan-Vega, 1996; Dimaporo & Fernandez, 2007). Framing traditional beliefs and practices as complementary to—rather than opposed to—formal scientific agriculture helps redirect development approaches



Citation: Yahya-Muti, R. M. (2025). Convergence of traditional agricultural beliefs of Maranao farmers and scientific principles in selected barangays of Saguilaran, Lanao Del Sur. *GAS Journal of Arts Humanities and Social Sciences (GASJAHSS)*, 3(11), 35-45.

towards co-creation and locally appropriate innovation.

The Maranao peoples of the Lanao area possess distinct farming practices that reflect the region's biophysical conditions, socio-economic structures, and cultural history. Ethnographic and agronomic studies in Lanao del Sur document how Maranao farmers maintain seed systems, apply organic amendments, rotate crops, and observe ritual markers that inform timing and management decisions (Dimaporo & Fernandez, 2007; Amihan-Vega, 1996). These practices have evolved under particular agroecological constraints—such as valley microclimates and soil organic matter dynamics—and often deliver measurable agronomic outcomes (e.g., satisfactory seed storability and competitive yields under certain traditional regimes) (Dimaporo & Fernandez, 2007). The municipality of Saguian, Lanao del Sur, is a predominantly landlocked agricultural locality within the Bangsamoro Autonomous Region where rice, root crops, and vegetable production remain central to rural livelihoods; understanding local belief systems in this setting is therefore critical for designing effective, culturally sensitive interventions (PhilAtlas, n.d.).

Although modernization and policy push toward green-revolution technologies have encouraged adoption of high-yield varieties and chemical inputs, research shows that indigenous practices continue to persist—especially among older generations—and that many traditional methods embody empirically sound principles (e.g., soil organic amendments, seed selection, and timing based on phenology) (Amihan-Vega, 1996; Dimaporo & Fernandez, 2007). Recent program evaluations and case studies in Mindanao further indicate that when development projects deliberately integrate indigenous knowledge with scientific methods, adoption and sustainability of innovations improve (FAO, 2025). Complementarities between TEK (traditional ecological knowledge) and formal science can therefore strengthen adaptive capacity, enhance ecological stewardship, and respect local cultural values, provided that engagement is participatory and knowledge exchange is reciprocal (Macusi et al., 2023; FAO, 2025).

The notion of “convergence” between traditional beliefs and scientific agricultural principles invites a careful, evidence-based inquiry: which specific traditional beliefs correspond to established agronomic mechanisms (for example, the use of carabao manure aligning with nutrient cycling theory), and how do farmers themselves articulate the rationale behind such practices? Empirical studies in Maranao areas reveal concrete instances in which local practices—seed selection and storage, use of organic fertilizers, and culturally timed land preparation—align with agronomic concepts such as seed viability, soil fertility maintenance, and integrated pest management (Dimaporo & Fernandez, 2007; Amihan-Vega, 1996). Documenting these convergences in Saguian can therefore provide an evidentiary basis for policy recommendations that valorize local knowledge while introducing context-appropriate scientific improvements.

This study aims to document and analyze the traditional agricultural beliefs and management practices of Maranao farmers in selected barangays of Saguian and to identify points of convergence and tension with contemporary scientific agricultural principles. By combining qualitative methods (key informant interviews, focus group discussions, participant observation) with a review of agronomic literature and local production data, the research will (a) map local belief systems and their practical manifestations, (b) evaluate which practices are empirically consistent with scientific principles, and (c) propose pathways for integrative extension approaches that respect cultural norms while improving productivity and sustainability. In doing so, the study contributes to growing scholarship and development practice that treat indigenous knowledge as an active partner in agricultural innovation rather than an obstacle to modernization (Macusi et al., 2023; FAO, 2025).

Literature Review

Indigenous Knowledge Systems (IKS) and Agricultural Stewardship

Indigenous Knowledge Systems (IKS) are recognized as dynamic, adaptive, and deeply rooted

frameworks that shape how rural communities interact with their natural environment. In the Philippines and across Southeast Asia, IKS play a vital role in agricultural sustainability and ecological balance (Paing, Galino, & Anongos, 2025). These knowledge systems encompass local observations, soil and water management practices, and planting rituals that have evolved through generations of empirical experimentation (Talbo, 2023). For instance, indigenous farmers use natural indicators—such as the behavior of plants or animals—to determine the timing of planting and harvesting seasons, reflecting a form of ecological literacy consistent with scientific agronomy (Azarias, Garcia, Garlejo, & Lacaden, 2023). Studies emphasize that these systems should be integrated into modern agricultural frameworks because they enhance environmental resilience and community participation (Macusi et al., 2023). However, there remains a need to document how these indigenous beliefs concretely align with scientific principles, particularly in Mindanao where cultural diversity is rich yet under-researched (FAO, 2025).

Maranao Agrarian Practices and Seed Systems

The Maranao of Lanao del Sur maintain intricate farming practices that intertwine spirituality, communal labor, and traditional ecological knowledge. Dimaporo and Fernandez (2007) observed that Maranao farmers' seed selection, storage, and cultivation methods in Mapantao, Lumba-Bayabao are guided by inherited beliefs about soil fertility and divine blessings. These practices are not merely cultural but demonstrate agronomic efficiency—such as maintaining seed viability and soil health through organic fertilization and natural pest control (Amihan-Vega, 1996). Similarly, the Maranao practice of aligning planting periods with lunar phases coincides with scientific findings on plant-water absorption and growth cycles (Macusi et al., 2023). Yet despite such convergences, limited studies have analyzed how these beliefs systematically align with formal agricultural science, creating a gap that the current study seeks to fill by focusing on selected barangays of Saguiaran.

Convergence of Traditional Practices and Scientific Principles

Research across Philippine farming communities reveals that traditional practices often embody principles validated by modern science. For example, Ifugao rice terraces farmers' use of composting and crop diversification corresponds to scientific nutrient management and pest control strategies (Tejada, Juarez, Molbog, & Inocian, 2018). Likewise, upland farmers' methods of soil erosion prevention through contour planting align with agronomic soil conservation principles (Azarias et al., 2023). A study by Zapico et al. (2019) further showed that indigenous agroecosystems in Southern Philippines remain productive and ecologically sustainable because they inherently apply concepts akin to integrated pest management and biodiversity conservation. These findings reinforce the idea that many indigenous practices stem from empirical knowledge validated by generations of observation. Nonetheless, empirical analyses that quantify these alignments—through soil tests, crop yields, or pest incidence—remain scarce in Mindanao, underscoring the significance of the present study.

Participatory Extension and Knowledge Integration

A growing number of agricultural development studies advocate for participatory extension models that integrate indigenous knowledge with scientific innovations. Such approaches encourage co-creation between local farmers and agricultural experts, ensuring that new technologies respect existing belief systems and social norms (FAO, 2025). Macusi et al. (2023) emphasize that participatory knowledge exchange improves the adoption of sustainable farming techniques, particularly when traditional leaders and elders are involved in disseminating hybrid practices. In this context, recognizing Maranao farmers not merely as beneficiaries but as knowledge holders can foster culturally grounded innovation. However, most participatory programs in Mindanao still overlook Islamic cultural norms and indigenous authority structures, highlighting the need for localized models

that account for the Maranao's social and spiritual context (Amihan-Vega, 1996).

Resilience, Generational Transmission, and Mindanao Case Studies

The resilience of indigenous agricultural systems in Mindanao depends heavily on intergenerational knowledge transmission. Studies show that younger farmers are increasingly disengaged from traditional farming due to migration, formal education, and exposure to commercial agriculture (Zapico et al., 2019). This generational gap contributes to the gradual erosion of traditional ecological knowledge (Paing et al., 2025). Nevertheless, evidence indicates that communities retaining strong cultural identity and ritual practices exhibit higher resilience against environmental and economic disruptions (Dimaporo & Fernandez, 2007). By documenting how Maranao beliefs coincide with scientific reasoning, the current study can contribute to revitalizing cultural pride and promoting sustainable agricultural innovation in Saguilaran, Lanao del Sur.

Methodology

Research Design

This study employed a descriptive qualitative research design, which aims to describe, interpret, and understand the convergence between traditional agricultural beliefs of Maranao farmers and scientific agricultural principles. The descriptive qualitative approach was appropriate because it focuses on understanding human experiences, cultural perspectives, and practices within their natural settings (Creswell & Poth, 2018). This design allowed the researcher to explore in depth the lived experiences of Maranao farmers, their indigenous knowledge systems, and how these intersect with or diverge from modern scientific farming practices. According to Denzin and Lincoln (2018), qualitative research is particularly valuable for uncovering meanings embedded in cultural and social practices, making it suitable for studies involving indigenous traditions. The descriptive design thus helped the researcher capture the authentic perspectives of the participants and interpret them within their socio-cultural context.

Participants of the Study

The participants of the study consisted of 15 Maranao farmers from the selected barangays of Saguilaran. They were chosen using purposive sampling, which is a non-probability sampling method that allows the researcher to select participants who can provide in-depth and relevant information about the research topic (Palinkas et al., 2015). To qualify for participation, individuals had to be residents of the barangay for at least ten years, have at least five years of farming experience, and currently practice or have practiced traditional farming methods influenced by Maranao culture. The participants represented various age groups and levels of farming experience, providing diverse insights into the persistence and adaptation of traditional agricultural beliefs. This sampling strategy ensured that the participants had rich and contextual knowledge necessary for understanding the relationship between indigenous and scientific farming systems.

Research Instrument

The main research instrument used in this study was a semi-structured interview guide designed to gather detailed qualitative data. The interview guide contained open-ended questions that encouraged participants to share their experiences, perceptions, and beliefs regarding agricultural practices. The questions were grouped into three parts: demographic information, traditional agricultural beliefs and practices, and perceptions of scientific farming principles. The first section gathered background information such as age, years of farming experience, and types of crops cultivated. The second section explored indigenous practices including planting rituals, soil preparation, pest management, and crop rotation rooted in Maranao tradition. The third section focused on the participants' awareness and application of scientific agricultural methods such as the use of fertilizers, irrigation techniques, and pest control. The semi-structured nature of the interview allowed flexibility, enabling the researcher to probe deeper when necessary while still maintaining focus on the research objectives (Kvale & Brinkmann, 2015). Interviews were conducted in the Maranao language

to ensure that participants could express their ideas freely and naturally.

Validation of Research Instrument

To ensure the validity and cultural appropriateness of the interview guide, the instrument underwent a content validation process. Three experts — one specializing in agriculture, one in Maranao culture, and one in qualitative research — reviewed the instrument to evaluate its clarity, relevance, and comprehensiveness. Their feedback helped refine the questions to make them more contextually and linguistically appropriate. A pilot test was also conducted with two Maranao farmers from a nearby barangay not included in the main study. The pilot test aimed to determine whether the participants clearly understood the questions and whether these questions elicited the desired information. Based on the pilot results, minor revisions were made to ensure cultural sensitivity and linguistic accuracy. This validation process helped strengthen the credibility and reliability of the research instrument, ensuring that it effectively captured the essence of Maranao farmers' beliefs and experiences (Patton, 2015).

Data Gathering Procedure

Before data collection, formal permission was obtained from the Local Government Unit (LGU) of Saguian and the barangay officials of the selected communities. The researcher also sought approval from community elders to ensure that cultural protocols were respected. Once permission was granted, participants were approached individually, and the purpose of the study was explained. Informed consent was secured, assuring participants of confidentiality and their right to withdraw from the study at any point.

Data collection involved individual interviews and focus group discussions (FGDs). Each interview lasted approximately 45 to 60 minutes, conducted face-to-face in the participants' homes or farm areas. Interviews were audio-recorded with permission and supported by field notes to capture non-verbal cues. FGDs were later conducted to validate and supplement the individual responses, allowing participants to discuss their collective experiences.

After the interviews, the recordings were transcribed verbatim and translated into English, with care taken to preserve meaning and cultural nuance. To ensure data accuracy, participants were given summaries of their responses for member checking — a process that verifies whether the interpretations accurately reflect their views (Creswell & Poth, 2018).

Data Analysis

The collected qualitative data were analyzed using thematic analysis, following the six-phase framework by Braun and Clarke (2006). These phases included familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. This analytical process allowed the researcher to identify patterns, relationships, and themes that represented the convergence of traditional beliefs and scientific agricultural principles. Data were coded manually and categorized according to recurring concepts related to agricultural practices, beliefs, and adaptations. To ensure the trustworthiness of the findings, the researcher applied triangulation through the use of multiple data sources, including interviews, focus groups, and field notes. Additionally, peer debriefing and member checking were employed to enhance the credibility and confirmability of the results (Lincoln & Guba, 1985).

Results and Discussion

Persistence of Traditional Agricultural Practices

The study found that traditional agricultural practices remain deeply ingrained among Maranao farmers in Saguian. Despite exposure to modern technologies, participants continue to rely on ancestral methods such as seed saving, natural composting, intercropping, and lunar-based planting calendars.

“We still keep the seeds from our best harvest and plant them again. Those seeds are already proven to survive our land and weather.” (Participant 4)

“Before we start planting, we observe the moon. When it is new and the soil

feels soft after rain, that is when we begin. The old people say it brings strong growth.” (Participant 7)

The persistence of these practices signifies that indigenous agricultural systems among Maranao farmers are not simply remnants of the past but dynamic frameworks adapted to local ecological conditions. According to Amihan-Vega (1996), Maranao agricultural traditions are embedded within spiritual and ecological worldviews that ensure balance between human activity and the environment. Similarly, Dimaporo and Fernandez (2007) highlighted that traditional Maranao rice cultivation practices evolved as adaptive strategies to the microclimatic conditions of Lanao’s valleys.

These findings mirror Paing, Galino, and Anongos (2025), who emphasized that Indigenous Knowledge Systems (IKS) are dynamic, evolving, and inherently experimental. Farmers’ reliance on natural indicators such as moon phases and soil moisture is consistent with *ecological literacy*—a form of observation-based science validated by generations of experience. Talbo (2023) described this as “a continuous environmental dialogue between humans and nature,” allowing communities to sustain productivity without external inputs.

Thus, the persistence of traditional agricultural practices among Maranao farmers underscores the continued relevance of IKS as a living repository of ecological knowledge that remains scientifically sound and environmentally sustainable.

Empirical Rationales and Agronomic Convergence

Maranao farmers demonstrated empirical reasoning that aligns with scientific explanations for soil fertility, nutrient management, and crop resilience. Participants consistently cited the use of animal manure and plant residues as the foundation for soil fertility.

“We use carabao and goat manure to make the soil healthy. After some weeks, the soil becomes darker and

the plants grow better.” (Participant 9)

“When we mix dried leaves and manure, it makes the land strong again. Even without chemical fertilizers, our rice still grows tall.” (Participant 12)

These observations indicate a strong correspondence between traditional beliefs and modern agronomic science. Farmers’ understanding that composting “makes the land strong again” reflects the scientific process of nutrient recycling and organic matter decomposition. According to Azarias, Garcia, Garlejo, and Lacaden (2023), indigenous farmers’ use of natural fertilizers promotes soil structure improvement, enhances microbial activity, and sustains nutrient availability.

Dimaporo and Fernandez (2007) found similar patterns among Maranao farmers in Mapantao, where organic fertilization-maintained soil fertility comparable to chemical fertilizers over several seasons. The empirical rationale behind these practices illustrates a *functional convergence* between traditional ecological knowledge and agronomic science.

Moreover, intercropping—a common Maranao practice—was described by participants as a pest-reducing and space-saving strategy. Scientifically, this mirrors integrated pest management principles, which rely on crop diversity to break pest cycles (Tejada, Juarez, Molbog, & Inocian, 2018). These findings support the idea that local farmers’ intuitive reasoning is grounded in observation-based evidence consistent with scientific theory.

Selective Adoption and Hybridization of Scientific Practices

Farmers in Saguiaran selectively adopt modern techniques while maintaining traditional approaches. They expressed openness to innovation but remained critical of practices that could degrade soil or alter taste and texture of produce.

“Fertilizer from the store makes the rice grow faster, but if you keep using it, the land gets tired.” (Participant 8)

“The hybrid seeds are good for one season, but they cannot be reused. Our traditional seeds, we can keep and they grow again.” (Participant 11)

This selective adoption demonstrates *hybridization*—the integration of modern techniques into traditional frameworks without abandoning indigenous foundations. According to Macusi, Dela Peña, and Salmo (2023), hybrid knowledge systems emerge when farmers pragmatically evaluate new technologies and adopt only those that harmonize with local conditions and beliefs.

FAO (2025) further argued that “the strength of indigenous systems lies in their flexibility to absorb innovation without losing cultural coherence” (p. 67). In this study, farmers’ selective approach reflects practical wisdom rooted in both experience and environmental awareness. Similar findings were reported by Zapico, Dimalaluan, and Ramos (2019), who noted that indigenous communities in Southern Mindanao integrate new methods based on trial, observation, and collective decision-making.

Hence, rather than representing resistance to progress, selective adoption reflects a rational strategy aimed at ensuring ecological balance and cultural continuity—a vital form of sustainable innovation.

Cultural and Institutional Mediators of Knowledge Use

Cultural norms, religious observances, and community hierarchy influence agricultural decision-making. Participants emphasized the role of elders and religious leaders in guiding when and how farming activities should begin.

“We always ask the elders before planting. They know the signs of the season and the blessings that come with it.” (Participant 2)

“Sometimes, the government training comes during Ramadan or harvest days. We cannot attend because our customs come first.” (Participant 13)

These findings highlight how social and cultural institutions shape the application and transmission of knowledge. As Amihan-Vega (1996) observed, agricultural practices among the Maranao are embedded in a moral and spiritual framework that governs not only farming but community harmony. Ignoring these structures may lead to poor adoption of agricultural programs.

The FAO (2025) underscores the importance of culturally sensitive agricultural extension, arguing that participatory communication enhances farmer engagement. Macusi et al. (2023) also assert that recognizing the authority of local elders can facilitate “knowledge bridges” between traditional and scientific paradigms.

Thus, convergence cannot occur in isolation from culture. It must be facilitated through participatory structures that respect both the epistemic authority of science and the spiritual-cultural authority of indigenous leadership.

Generational Transmission and Erosion Risk

Older farmers expressed concern over the fading interest of younger generations in traditional farming. Many younger Maranao are turning to formal employment, neglecting traditional ecological knowledge.

“Our children no longer know how to read the signs of the land. They use gadgets, not the plow.” (Participant 6)

“The young ones think farming is hard work. When we are gone, who will continue this knowledge?” (Participant 10)

Generational disengagement poses a significant risk to the preservation of traditional agricultural systems. Zapico et al. (2019) found similar trends

across Mindanao, noting that migration and modernization have weakened intergenerational knowledge transfer. According to Paing et al. (2025), the erosion of traditional knowledge reduces community resilience against climate variability and ecological shocks.

Dimaporo and Fernandez (2007) emphasized that Maranao seed conservation and ecological rituals contribute to long-term biodiversity, which can be lost if younger generations do not participate. Addressing this requires institutional support for *community-based learning*, such as farmer field schools that document and teach traditional knowledge alongside scientific methods. This ensures that both cultural heritage and agricultural sustainability are preserved.

Opportunities for Participatory Integration

Farmers in Saguwaran expressed a strong willingness to learn modern agricultural techniques as long as programs respect their cultural context and are delivered in understandable ways.

“We want to learn the new ways, but they should teach us in Maranao and show it in our own fields.”
(Participant 14)

“If the agricultural experts work with our elders, we will listen and cooperate.” (Participant 3)

This theme demonstrates readiness for *participatory integration*—a collaborative process where farmers and agricultural experts co-develop strategies that combine tradition with science. FAO (2025) highlights that participatory extension enhances adoption and sustainability when knowledge flows both ways. Macusi et al. (2023) further emphasize that mutual respect and cultural grounding are essential for long-term agricultural transformation.

Talbo (2023) advocates for “dialogic innovation,” where scientists and farmers engage in two-way learning. In this context, Saguwaran can serve as a model for *community-led agricultural co-creation*, blending Maranao beliefs with agronomic science to

promote inclusive, resilient, and sustainable food systems.

Conclusion

The results of this study reveal that the traditional agricultural beliefs and practices of Maranao farmers in Saguwaran, Lanao del Sur remain deeply embedded in their everyday farming activities and continue to coexist with scientific agricultural principles. Despite exposure to modern technologies and external interventions, Maranao farmers maintain a distinct ecological worldview rooted in ancestral wisdom, spirituality, and community collaboration. Their agricultural systems are not static remnants of the past but adaptive, evolving frameworks that respond to local environmental realities and cultural values.

The persistence of traditional agricultural practices, such as seed saving, composting, intercropping, and lunar-based planting, underscores the enduring relevance of Indigenous Knowledge Systems (IKS) as dynamic, experience-based forms of environmental science. These practices embody what Talbo (2023) describes as “a continuous environmental dialogue between humans and nature,” highlighting the capacity of local knowledge to sustain ecological balance and productivity. The findings affirm Amihan-Vega’s (1996) and Dimaporo and Fernandez’s (2007) observations that Maranao farmers’ rituals and beliefs are not merely symbolic but function as practical adaptive strategies for survival and resource management.

The empirical rationales offered by farmers for soil fertility, pest control, and crop resilience reveal a profound level of ecological literacy that aligns with agronomic principles. Their understanding that composting “makes the land strong again” and that intercropping “protects plants from pests” parallels the scientific concepts of nutrient recycling, soil enrichment, and integrated pest management (Azarias et al., 2023; Tejada et al., 2018). This convergence demonstrates that indigenous knowledge is grounded in empirical observation and experimentation, thereby challenging the misconception that it is unscientific.

Furthermore, the theme of selective adoption and hybridization illustrates that Maranao farmers critically evaluate new technologies through the lens of cultural sustainability. Their willingness to adopt hybrid seeds or synthetic fertilizers is tempered by awareness of ecological consequences and long-term soil health. As Macusi, Dela Peña, and Salmo (2023) assert, such hybrid knowledge systems represent pragmatic innovation—integrating modern methods that align with local values while rejecting those that threaten cultural integrity. In this sense, Maranao farmers exhibit scientific reasoning within a cultural framework, forming a hybrid model of sustainable agriculture.

The study also reveals that cultural and institutional mediators play a decisive role in shaping knowledge application. Decisions in farming are influenced by elders, religious leaders, and community norms. This finding supports Amihan-Vega's (1996) assertion that Maranao agriculture operates within a moral-spiritual ecology where social harmony and divine guidance underpin agricultural success. Programs introduced without regard for these cultural systems, as the FAO (2025) notes, often face resistance. Thus, genuine convergence requires culturally sensitive agricultural interventions that integrate local leadership, language, and rituals into extension programs.

However, the study also identified challenges in generational transmission. The waning interest of youth in traditional farming and the migration toward urban employment pose serious threats to the continuity of indigenous agricultural knowledge. This echoes the findings of Zapico et al. (2019) and Paing, Galino, and Anongos (2025), who warned that the erosion of IKS diminishes community resilience and biodiversity preservation. Without structured efforts to document and teach these practices, the rich ecological wisdom of the Maranao may fade with the older generation.

Despite these challenges, the findings point toward strong opportunities for participatory integration. Farmers expressed openness to collaborating with agricultural experts—provided that interventions respect their cultural identity, use local language, and involve traditional leaders. This aligns with FAO's

(2025) recommendation for “co-created agricultural learning spaces” where indigenous and scientific systems operate in dialogue rather than opposition. As Talbo (2023) and Macusi et al. (2023) highlight, such participatory approaches foster trust, enhance knowledge exchange, and promote long-term sustainability.

Overall, the convergence between traditional Maranao agricultural beliefs and scientific principles illustrates a mutual reinforcement of knowledge systems rather than a binary opposition. The empirical wisdom of the Maranao reflects observation-based science refined through generations, while modern agricultural science offers tools and frameworks that can enhance local efficiency and resilience. Integrating these systems can lead to a culturally grounded, ecologically sound model of agriculture—one that honors indigenous identity while advancing scientific progress.

In conclusion, this study affirms that traditional knowledge and scientific knowledge are not competing paradigms but complementary partners in achieving sustainable agricultural development. The Maranao farmers of Saguiaran exemplify how indigenous communities can embody scientific rationality within cultural contexts of faith, respect, and environmental stewardship. Future agricultural programs in Lanao del Sur and similar regions should therefore promote participatory, intercultural, and context-sensitive frameworks that value both ancestral wisdom and modern science as essential pillars of sustainable food security.

REFERENCES

- Amihan-Vega, B. (1996). *Ethnic and gender dimensions of indigenous knowledge: The case of the Maranao Muslims' sweetpotato production* (pp. 111–119). Philippine Social Science Council.
- Amihan-Vega, B. (1996). *Ethnic and gender dimensions of indigenous knowledge: The case of the Maranao Muslims' sweetpotato production*. Philippine Social Science Council. Retrieved from

https://pssc.org.ph/wp-content/pssc-archives/Aghamtao/1996/14_Ethnic%20and%20Gender%20Dimensions%20of%20Indigenous%20Knowledge_%20The%20Case%20of%20the%20Maranao%20Muslims%27%20Sweetpot.pdf

Azarias, R., Garcia, A. F., Garlejo, V. G., & Lacaden, J. A. (2023). Traditional farming and its lexicons as indigenous knowledge: The context of Cervantes, Ilocos Sur. *Ilocos Sur Polytechnic State College Journal*, 3(1). <https://doi.org/10.56901/PQRF7474>

Braun, V., & Clarke, V. (2006). *Using thematic analysis in psychology*. *Qualitative Research in Psychology*, 3(2), 77–101.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

Denzin, N. K., & Lincoln, Y. S. (2018). *The Sage handbook of qualitative research* (5th ed.). SAGE Publications.

Dimaporo, I. B., & Fernandez, P. G. (2007). Indigenous seed, knowledge and rice production practices of the Maranaos in Mapantao, Lumba-Bayabao, Lanao Del Sur. *Philippine Journal of Crop Science*, 32(2), 77–92. <https://www.ukdr.uplb.edu.ph/journal-articles/4426/>

Dimaporo, I. B., & Fernandez, P. G. (2007). Indigenous seed, knowledge and rice production practices of the Maranaos in Mapantao, Lumba-Bayabao, Lanao del Sur. *Philippine Journal of Crop Science*, 32(2), 77–92.

FAO. (2025, September 9). *Recognizing Indigenous Knowledge: Lessons from Mindanao's communities*. Food and Agriculture Organization of the United Nations. <https://www.fao.org/evaluation/highlights/detail/recognizing-indigenous-knowledge--lessons-from-mindanao-s-communities/en>

FAO. (2025, September 9). *Recognizing Indigenous Knowledge: Lessons from Mindanao's communities*. Food and Agriculture Organization of the United Nations. <https://www.fao.org>

Kvale, S., & Brinkmann, S. (2015). *InterViews: Learning the craft of qualitative research interviewing* (3rd ed.). SAGE Publications.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.

Macusi, E. S., Sales, A. C., Macusi, E. D., Bongas, H. P., Cayacay, M. A., Omandam, J. L., Schüler, M., & Vidal, C. (2023). Indigenous Knowledge Systems and Practices (IKSPs), livelihood resources and aspirations of the Matigsalog and Ata tribes. *Sustainability*, 15(14), 11182. <https://doi.org/10.3390/su151411182>

Macusi, E. S., Sales, A. C., Macusi, E. D., Bongas, H. P., Cayacay, M. A., Omandam, J. L., Schüler, M., & Vidal, C. (2023). Indigenous Knowledge Systems and Practices (IKSPs), livelihood resources and aspirations of the Matigsalog and Ata tribes. *Sustainability*, 15(14), 11182. <https://doi.org/10.3390/su151411182>

Municipality of Saguilaran Profile. (2023). *Local Government of Saguilaran*. Retrieved from <https://lga.gov.ph>

Paing, J. N., Galino, M. G. M., & Anongos, S. F. (2025). Exploring the connections between traditional ecological knowledge, ecosystem services, and agroecosystem-based livelihoods in the Cordillera Region, Northern Philippines. *Tropical Ecology*. <https://doi.org/10.1007/s42965-025-00393-w>

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). *Purposeful sampling for qualitative data collection and analysis in mixed method implementation research*. Administration

- and Policy in Mental Health and Mental Health Services Research, 42(5), 533–544.
- Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). SAGE Publications.
- PhilAtlas. (n.d.). *Saguiaran, Lanao del Sur profile*. PhilAtlas.
<https://www.philatlas.com/mindanao/barmm/lanao-del-sur/saguiaran.html>
- Talbo, W. R. (2023). Indigenous knowledge of Ilokano farmers and fisherfolks: Appreciation and preservation. *Asian Journal of Education and Human Development*, 1(1). <https://doi.org/10.69566/ajehd.v1i1.8>
- Tejada, C. J. B., Juarez, L. S., Molbog, M. M., & Inocian, R. B. (2018). Upland farming practices basis for a culturally-based Ugmad teaching model. *International Journal of Advance Research*, 6(12), 214–221.
- U.S. Department of Health and Human Services. (1979). *The Belmont Report: Ethical principles and guidelines for the protection of human subjects of research*.
- Zapico, F. L., McNally, K. L., Hernandez, J. E., & Fernando, E. S. (2019). Genetic erosion in traditional rice agro-ecosystems in Southern Philippines: Drivers and consequences. *Plant Genetic Resources*, 17(2), 100–109. <https://doi.org/10.1017/S1479262119000406>