
Participatory Action Research: Preservation of Sacred Rice and Cultural Resilience in the Lower Paramasan Dayak Community

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ABSTRACT

Beras Keramat, a local rice variety with high cultural and spiritual value, faces an imminent threat of extinction due to declining cultivation and shifting agricultural priorities. This study aims to revitalize the preservation of *Beras Keramat* and enhance community food security through a participatory approach. Conducted over a two-month period in Paramasan Bawah Village, this research utilizes the Action Research model, consisting of a cyclical process of Planning, Acting, Observing, and Reflecting. Data was collected through in-depth interviews and field observations involving 9 key informants. This research utilizes the Action Research model, consisting of a cyclical process of Planning, Acting, Observing, and Reflecting. The intervention involved a collective planting strategy in which each household was mandated to cultivate at least one *gantang* of seeds, accompanied by documentation of traditional rituals and monitoring of youth engagement. The findings indicate that the structured action cycle successfully achieved its key outcome indicators, notably increasing cultural awareness and securing a stable seed stock of *Beras Keramat* within the community. The integration of ritual documentation with practical cultivation served as an effective bridge for intergenerational knowledge transfer. This study develops the concept of “Communal Heritage-Based Food Security,” suggesting that the survival of endangered local cultivars relies on the synergy between cultural mandates and community participation. While limited to a specific local context, this research implies that community-led action is a resilient model for indigenous crop conservation.

Keywords: action research, beras keramat, cultural preservation, food security, local wisdom

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INTRODUCTION

The preservation of indigenous agricultural systems and intangible cultural heritage (ICH) has become a critical focal point of global scholarly inquiry (Altieri et al., 2015). Amidst rapid modernization and climate shifts, traditional agricultural practices are no longer viewed merely as methods of food production but as foundational pillars of ecological balance and community resilience. Global literature emphasizes that sustainable conservation must transcend passive archiving; it requires active, participatory frameworks that integrate local wisdom into the dynamic socio-economic fabric of indigenous communities (Gavin et al., 2015; Tengberg et al., 2012).

Within the local context of Kalimantan, Indonesia, the Meratus Dayak community in Paramasan Bawah Village possesses a profound socio-spiritual relationship with their ancestral lands, encapsulated in the cultivation of *Beras Keramat* (sacred rice). Previous localized studies have extensively mapped the linguistic, ritualistic, and ethnobotanical dimensions of this community. For instance, research on the *Babalai* ceremony highlights how cultural symbols serve as essential media for preserving Dayak identity (Ramadania & Arifin, 2019), while ethnobotanical databases underscore the necessity of documenting traditional ecological knowledge (Haeruddin et al., 2017). These studies establish that for the Meratus Dayak, agricultural practices, technical systems, and religious rituals are inextricably linked (Ramadania et al., 2022).

Despite this rich ethnographic documentation, a major gap remains in the existing literature: there is a profound lack of action-oriented research that synthesizes the preservation of *Beras Keramat* simultaneously as a sacred ritual and a functional food security element. Most current studies remain descriptive, cross-sectional, or diagnostic. They stop documenting the decline of traditions without evaluating how active, participatory interventions can practically halt the extinction of endangered local cultivars. Furthermore, the literature has yet to provide empirical intervention designs that successfully engage key local stakeholders such as customary leaders, women, and youth in adapting traditional farming to modern pressures (Chambers, 1994).

To bridge this gap, this study addresses a single, focused research question: How can a participatory Action Research (AR) model effectively revitalize the cultivation of *Beras Keramat* while strengthening the cultural resilience and food security of the *Dayak Paramasan Bawah community*? Aligned with this problem, this study aims to implement and evaluate a structured Action Research intervention comprising planning, acting, observing, and reflecting cycles (Kemmis et al., 2014) to secure the seed stock of *Beras Keramat*, document its associated rituals, and foster intergenerational knowledge transfer within the community.

By merging Intangible Cultural Heritage (ICH) preservation, human ecology theory, and participatory action frameworks, this study offers two distinct theoretical contributions. First, it introduces the conceptual framework of "Communal Heritage-Based Food Security," demonstrating that the survival of endangered indigenous crops relies on the synergy between cultural mandates and structured community action. Second, it establishes a replicable cultural resilience model driven by localized indicators—such as symbolic maintenance, youth engagement, and ritual continuity—offering a resilient, community-led blueprint for indigenous crop and cultural conservation across other developing ecologies.

METHODS

Research Design

This study employs a Participatory Action Research (PAR) design, which is a systematic approach to investigation that enables communities to find effective solutions to the problems they encounter in their daily lives. This method follows a cyclical process consisting of four major stages: planning, acting, observing, and reflecting. This design is specifically chosen because it facilitates collaborative intervention between researchers and the Dayak Paramasan Bawah community to revitalize the cultivation of "*Beras Keramat*" and strengthen cultural resilience through direct action and collective reflection.

Study Site and Community Context

The research was conducted over a two-month period in Paramasan Bawah Village, located in the Meratus Mountains region of South Kalimantan, Indonesia. This site was selected because it is one of the few remaining areas where the indigenous Meratus Dayak community maintains a profound socio-spiritual relationship with ancestral crops, specifically the critically endangered *Beras Keramat*. The community operates under a strong customary governance system where agricultural cycles are inextricably linked to sacred rituals, making it an ideal environment for testing cultural resilience through action research.

Subject of Research and Informants

The subjects of this research are the indigenous Dayak Paramasan Bawah people. Participants were selected using a purposive sampling approach, focusing on key stakeholders who possess traditional ecological knowledge and customary authority. The study involved 9 key informants categorized as follows:

- a. 4 Balian (Customary Leaders): The primary guardians of the history, spiritual lineage, and sacred rituals of *Beras Keramat*.
- b. 3 Traditional Farmers (Both Male and Female): Responsible for the practical preservation, field maintenance, and actual planting of the seeds.
- c. 2 Youth Representatives (One Male and One Female): Selected to evaluate and ensure the continuity of intergenerational knowledge transfer.

Data Collection, Recording, and Management

Data collection was carried out through an intensive, multi-method approach designed to capture both technical agricultural data and intangible cultural values:

- a. In-Depth Interviews: Conducted over an intensive two-week period with the 9 key informants using a semi-structured interview guide adapted from the cultural preservation framework (Ramadania et al., 2022) to explore the sacred (*ghaib*) origins of the rice and the *kindai* storage system.
- b. Focus Group Discussion (FGD): A large-scale FGD was conducted 1 time, involving 50 community members (including elders, farmers, women, and youth groups) during the reflection stage to collectively evaluate the community's response to the intervention.
- c. Field Observations: Continuous observations were conducted throughout the entire duration of the researcher's presence at the study site. This process utilizes structured protocols to document the *Manugal* (planting) process, crop growth, youth engagement, and *Babalai* rituals.
- d. Recording and Data Management: All interviews and FGD sessions were recorded using smartphones and dedicated digital voice recorders to ensure linguistic precision. The recorded audio was subsequently transcribed verbatim, translated from the local Meratus Dayak language into Indonesian, and securely stored in encrypted digital folders to maintain data integrity and confidentiality.

Researcher's Positionality and Reflexivity

To ensure ethical transparency, the researcher acknowledges their unique positionality within the study site. The researcher has lived and taught as a schoolteacher in Paramasan Bawah Village for 18 years, establishing a deep-rooted, trusting relationship with the community. In daily interactions, communication was fully conducted in the Meratus Dayak language, while the Indonesian language was utilized strictly during formal meetings or institutional procedures.

While this insider status facilitated unprecedented access and open dialogue, it introduces potential biases that were carefully mitigated:

- a. *Preconception Bias*: Long-term immersion could cause researchers to overlook mundane yet critical shifts in local traditions. To counter this, observation protocols were strictly structured and cross-checked with raw audio recordings.

- b. *Deference/Response Bias*: Informants might give answers they deem pleasing to a respected local teacher. To mitigate this, interviews were conducted in informal, neutral settings, emphasizing that there were no "right or wrong" answers.
- c. *Interpretation Bias*: To prevent the researcher's personal familiarity from clouding data analysis, member-checking was rigorously applied by confirming all translated transcripts and cultural interpretations back with the *Balian* and village elders.

Tools and Materials

To ensure the sophistication and accuracy of data collection, specific tools and materials were utilized. The tools include digital voice recorders for linguistic precision, GPS mapping devices to mark the original discovery site at "Sungai A'a, Desa Kusan," and digital sketching software used to create digital versions of the ritual equipment sketches obtained from field observations. The materials used in this research include the specific "Beras Keramat PB" variety seeds, traditional "*tugal*" (planting sticks), and ritual offerings (*sesajen*) required for the "Ritual Adat" ceremony.

Research Procedure

The research procedure follows a cyclical flow pattern, in line with the standard Action Research model. It begins with the Planning stage, where researchers and the community identify the threat of extinction of Beras Keramat and design a collective planting strategy. The Acting stage follows this, involving the implementation of the mandatory seed cultivation (at least one *gantang* per household) and the documentation of ritual processes. The Observing stage entails monitoring crop growth and recording the younger generation's engagement. Finally, the Reflecting stage evaluates whether the actions taken have successfully increased cultural awareness and food security. The entire procedure is summarized in Figure 1.

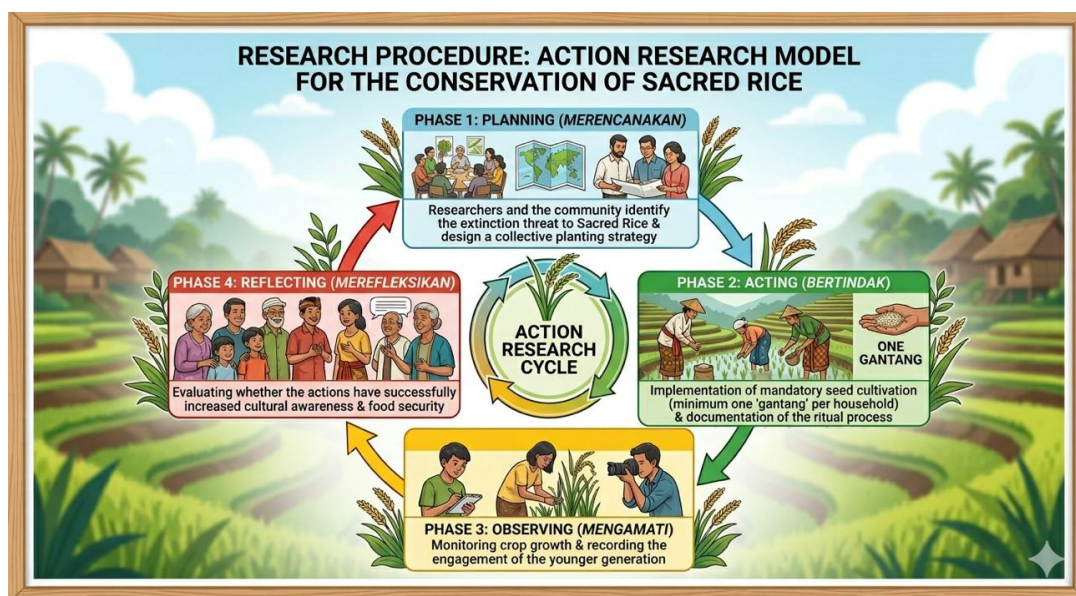


Figure 1: Action research cycle for Beras Keramat revitalization

Source: Sketch results using Gemini AI

Data Analysis Technique

Data analysis is performed using qualitative thematic analysis combined with reflective analysis. The data underwent three concurrent processes: data condensation, data display, and conclusion drawing/verification. Data condensation involved selecting and simplifying interview transcripts and observation notes regarding the history and ritual functions of rice. Data displays of the relationships among ritual symbols, linguistic terms, and agricultural practices were presented in

matrices. Finally, the conclusion-drawing phase involved validating the findings with customary leaders to ensure that the proposed cultural resilience model is accurate, sustainable, and reflects the true values of the Dayak Paramasan Bawah community.

RESULT AND DISCUSSION

Origin and Sacred Dimensions of *Beras Keramat* PB

The fieldwork and thematic analysis reveal that the existence of the *Beras Keramat* variety in the Paramasan Bawah region is deeply rooted in a dimension of sacredness that integrates transcendental experiences, the spiritual authority of *Balian* (customary leaders) figures, and traditional domestication practices. Data triangulation through the large-scale Focus Group Discussion (FGD) confirms that these seeds are universally perceived by the community as *Banih Ghaib* (Mystical Seeds), acquired through dream manifestations and physical phenomena that transcend conventional agrarian logic.

To illustrate this mystical acquisition, a customary leader shared his direct transcendental experience:

"...I met in a dream with a white-bearded old man who gave me exactly one seed. Upon waking up, the seed was physically there in my room, named the sacred seed." — (Customary leader, male, elder, Informant 9)

Historically, community consensus and data validation point to *Ju'un*—a prominent *Balian* of the historical *Mambur* lineage—as the pivotal figure who discovered the seeds in a mystical location near the Aa River. The domestication process began from a single grain that miraculously materialized. As recalled by another community elder:

"...the multiplication process originally began from just a single grain that suddenly appeared right in the discoverer's hand. From that one seed, it was successfully cultivated communally over generations until it became what we have today." — (Customary leader, male, elder, Informant 4)

The Action Research intervention showed that this collective memory is not passive; the shared spiritual narrative of *Beras Keramat* acts as a powerful social mechanism. By anchoring the agricultural cycle to these historical-spiritual figures, the community successfully implemented the collective planting strategy, ensuring that the rare germplasm is preserved through highly precise, culturally mandated agricultural practices.

The empirical findings from Paramasan Bawah construct a robust theoretical relationship between local indigenous conservation practices and the Sacred Food Theory, offering profound implications for contextual learning and curriculum development. Within this framework, seeds are positioned not merely as agricultural commodities or biological materials but as an ancestral mandate and a core pillar of the community's spiritual identity. The mystical narrative accompanying *Beras Keramat* serves as a collective motivational engine and a strict ethical framework for genetic resource preservation. In an educational context, this phenomenon provides a rich, living textbook for place-based education, where the loss of a seed variety is perceived not just as an economic crop failure but as a severe loss of ancestral blessings and cultural identity (Putra, 2011).

This phenomenon reinforces global human ecology literature asserting that cosmological beliefs and spiritual values play a crucial role in protecting biocultural resources and conserving biological diversity (Fullilove & Alimari, 2022; Lavorel et al., 2020). Through a pedagogical lens, the case of *Beras Keramat* proves that when a plant variety is sacralized, community-led enforcement mechanisms such as the customary mandate to plant at least one *gantang* can be utilized as powerful educational tools to teach students about resilience against external commercial pressures and the importance of biocultural conservation.

Furthermore, these results imply that integrating local wisdom-based *in situ* preservation with modern *ex situ* approaches (such as formal seed banks) requires high cultural sensitivity, which must be systematically cultivated through transformative learning experiences. Educational institutions, policymakers, and agricultural scientists collaborate to ensure that formal science education and genetic modifications do not erode the inherent sacredness and localized meanings

of the seeds (Engels & Ebert, 2021; Nankya et al., 2022; Wambugu et al., 2023). Translating these indigenous practices into classroom learning activities helps bridge the gap between traditional ecological knowledge (TEK) and Western scientific methods. Ultimately, fostering synergy among the recognition of traditional knowledge rights, indigenous seed sovereignty, and inclusive conservation education is essential for strengthening students' cultural resilience and biological sustainability in the modern era (Juhaidi et al., 2024).

Ritual-Based Agricultural Practices

This research reveals that the cultivation of *Beras Keramat* in Paramasan Bawah is a manifestation of structured spiritual syncretism, in which agrarian activities are inextricably linked to a series of mandatory rituals spanning the initiation phase to post-harvest. Thematic analysis identifies that each agricultural stage holds both theological and ecological significance, ranging from the *Bababari/Basanggar* ritual as a labor-safety procedure and metaphysical licensing for the land's inhabitants, to the planting process (*Manugal*), which embodies the concept of fertility through paired 'Mother Seeds.' This is affirmed by Informant 3, who stated, 'The *Bamula* ritual during *Manugal*... involves encircling the mother seeds (two grains believed to consist of a Male Seed and a Female Seed).' The consistent use of sacred numerical patterns and 'Royalty' symbolism in planting indicates that *Beras Keramat* is managed through a value system that treats seeds as living entities requiring spiritual reverence to avert disaster and crop failure.

The empirical data reveals a highly structured form of cultural governance regulating the agricultural timeline of *Beras Keramat*. As shown in Table 1, the transition between agricultural phases is strictly mediated by spiritual validations. Interviews and field observations confirmed that for mid-growth, early harvest, and post-harvest phases (*Bapalas*, *Babalai Kambang*, and *Baaruh Ganal*), the required ritual offerings cannot be arbitrarily prepared. Instead, they are formally decided during a council meeting (*rapat*) of customary leaders and *Balian*. These customized offerings are then systematically displayed within a *langgatan* (sacred suspended altar), matching the specific spiritual and metaphysical gravity of the respective ceremony. This institutionalized process demonstrates that indigenous food security in Paramasan Bawah is explicitly bound to strict customary law and structured community consensus.

Table 1. Validation of ritual stages and spiritual significance

Agricultural Phase	Ritual Name	Primary Objective / Validation Results
Land Clearing	<i>Batabas (Babari)</i>	Requesting permission from land inhabitants to ensure safety during the initial clearing of shrubs
	<i>Batabang (Basanggar)</i>	Seeking protection and permission from forest spirits before felling large trees to avoid accidents
Cleaning/Burning	<i>Manyalukut</i>	Ensuring a smooth land-clearing process without misfortune (<i>bala</i>)
Planting	<i>Bamula</i>	The core ritual involves the "King" (2 central seeds) to unify the fertility energy of the male and female seeds.
	<i>Manugal</i>	The collective technical process of planting seeds across the field after the <i>Bamula</i> ritual is completed.
Mid-Growth	<i>Bapalas</i>	Providing pest protection and spiritual reinforcement for the crops
Early Harvest	<i>Babalai Kambang</i>	Formally offering the first harvest results to the ancestors
Post-Harvest	<i>Baaruh Ganal</i>	Collective gratitude and achieving socio-economic legitimacy within the tribe

Source: Primary data integrated from in-depth interviews (Informants 3, 4, 5 and 6 as traditional figures; conducted between Week 1 and Week 2), 1st Focus Group Discussion (FGD) with 50 community members, and field observations of the *Babalai* cycles.

Beyond the technical execution of these rituals, the data indicates that these practices are deeply embedded in the community's collective consciousness and serve as a fundamental pillar for cultural and food resilience. To provide a more comprehensive understanding of how these spiritual dimensions translate into social governance and variety preservation, the following table categorizes the key thematic findings regarding the community's beliefs and sustainability strategies (see Table 2).

Table 2. Thematic Analysis of Community Beliefs and Practices

Theme	Summary of Research Findings	Supporting Evidence
Origins	The variety is considered <i>Banih Ghaib</i> (Mystical seed) obtained through transcendental experiences.	Found by a <i>Balian</i> (spiritual leader) at A'a River or through a dream encounter with an elder.
Preservation	Conservation is mandated through a "compulsory nursery" system for every household.	Households must save and plant at least one <i>gantang</i> (approx. 6L) of seeds annually to prevent extinction.
Social Value	The cultivation cycle serves as a mechanism for social cohesion and cooperation (<i>Gotong Royong</i>).	All villagers gather at the <i>Balai Adat</i> (communal hall) during rituals, fostering unity across hamlets.
Consequences	Neglecting rituals is believed to trigger natural disasters, pests, or communal illness.	A major disease outbreak in 1985 was attributed to the failure to conduct rituals due to extreme weather.
Food Security	The community remains sovereign by prioritizing local varieties over market-bought rice.	Varieties like <i>Beras Keramat</i> , <i>Buyung</i> , and <i>Carnik</i> are the primary staples; market rice is rarely consumed.

Source: Primary data integrated from in-depth interviews (The informants 3, 5, 6, 7, and 8; conducted during Week 2), the 1st focus group discussion (FGD) with 50 community members, and systematic field observations at the local fields and *Balai Adat*. Historical evidence for the 1985 outbreak was cross-checked through oral history archives provided by village elders.

Table Notes & Local Definitions

- Gantang*: A traditional dry volume measurement unit used by the community, equivalent to approximately 6 liters or roughly 3.125 kilograms of unhusked rice seeds.
- Balai Adat*: The central communal and sacred longhouse where all major customary meetings (*rapat adat*), socio-spiritual discussions, and high-level ceremonies take place.
- Buyung & Carnik*: Distinct, indigenous upland rice cultivars (*padi gunung*) preserved alongside *Beras Keramat* that serve as critical pillars of the local agro-biodiversity.

Through this cycle, rituals serve both as an instrument for germplasm conservation and as a mechanism for social control. Informant 5 explained the importance of plant protection through the *Bapalas* ritual at three months of age so that the seeds are blessed, the landowner is safe, and there are no disasters or hazards. "The pinnacle of this entire series is *Baaruh Ganai*, a community feast marking the customary legitimacy of the harvest before it can be distributed or sold (Informant 7). Overall, these practices confirm that the cultural resilience of the Dayak Paramasan community rests on the integration of local wisdom that balances economic needs, environmental preservation, and spiritual identity.

The cultivation of *Beras Keramat* within the Dayak Paramasan community integrates spiritual syncretism between structured customary rituals and functional agrarian practices to ensure occupational safety, germplasm preservation, food sovereignty, and cultural identity; conceptually, this syncretism functions as a socio-ecological control mechanism and a non-formal learning system that unifies the ritual world with food production, rendering the cultivation of *Beras Keramat* not merely an economic activity but a vital pedagogical vehicle for local cultural meaning and cosmology. Through this community-based learning framework, it serves as well as an effort to realize food sovereignty that emphasizes the community's right to determine food

systems based on culture, local knowledge, and access to land, seeds, and technology (Neilson & Wright, 2017; Rivai, 2021; Siborutorop, 2023; Sugeng & Fitria, 2023; Syahyuti et al., 2016).

The function of customary rituals in guaranteeing occupational safety and germplasm preservation is integrated as a work ethos characterized by site selection ceremonies, harvests, and ancestral pilgrimages that forge a human-nature-ancestor relationship as an ethic of food production, which fundamentally operates as an experiential learning process for the younger generation, while the preservation of local rice varieties through seed reserve traditions and cultural practices functions as an intergenerational knowledge transmission mechanism that helps maintain genetic diversity and the cultural identity of the Dayak Paramasan (Mathilda et al., 2021; Qori'ah, 2018; Rato et al., 2023; Rivai, 2021).

Furthermore, the application of food sovereignty principles in the Dayak Paramasan community recognizes rights to land and production resources as well as cultural integrity within a decentralized food policy framework, although the nuances between food security (quantity) and food sovereignty (community cultural-resource rights) must be considered contextually in accordance with national and international literature (Firmansyah et al., 2022; Neilson & Wright, 2017; Rivai, 2021; Styawan, 2022; Syahyuti et al., 2016).

In educational settings, emphasizing the importance of integrating local epistemologies with scientific knowledge to enrich contextual science and social studies curricula ensures inclusive and sustainable policies regarding the Dayak Paramasan *Beras Keramat* (Qori'ah, 2018; Sugeng & Fitria, 2023). Practically, further studies need to evaluate the impact of rituals on production efficiency, occupational safety, and the involvement of women and marginalized groups in customary rites to support the development of culturally responsive instructional designs and sustainable food programs, while considering regional legal frameworks that solidify the rights of indigenous communities over land, seeds, and the implementation of local food sovereignty practices (Firmansyah et al., 2022; Neilson & Wright, 2017; Rivai, 2021; Siborutorop, 2023).

Food Sovereignty and Community Resilience

The research results indicate that *Beras Keramat* serves as a fundamental pillar of local food security, distinctly demarcating the Dayak Paramasan indigenous community's autonomy from reliance on global market mechanisms. Field data reveal a consistent consensus among informants to prioritize local varieties over commercial rice, with *Beras Keramat* ranking highest as both a primary staple and a traditional medicinal agent. This is affirmed by one informant who stated,

"We never buy rice from the market here; Beras Keramat is our lifeblood, consumed for health and strength, while other varieties such as Buyung and Carnik serve only as reserves if the main harvest is insufficient." (Informant 2).

This phenomenon indicates that community consumption patterns are driven not only by caloric needs but also by the functional and spiritual values embedded in ancestral seeds, thereby creating an independent food sovereignty system resilient to external fluctuations in food prices and distribution shifts.

The food self-sufficiency examined in this study reflects high cultural resilience through community authority over local food systems, a form of community sovereignty that aligns with the food sovereignty framework and the Action Research approach. This approach emphasizes active participation and collective learning processes that function as a transformative educational framework to formulate, test, and evaluate policy alternatives and agroecological practices relevant to the local context. In an educational paradigm, this collective learning serves as a framework for place-based pedagogy, including the preservation of biocultural heritage and local varieties and the establishment of commons-based seed governance networks that strengthen access to seeds, biodiversity, and community autonomy in breeding varieties suited to local ecosystems.

Global literature indicates that polycentric governance models and community–university partnerships can enhance adaptability to climate change, protect access to genetic resources, and build sustainable food resilience; from a pedagogical perspective, these partnerships establish powerful service-learning channels that bridge formal academic instruction with indigenous

knowledge system transmission. However, it remains necessary to avoid the risks of policy politicization and the potential exclusion of vulnerable groups if policies are not accompanied by inclusive and equitable governance mechanisms and democratic learning spaces (Agastia, 2023; Bisht et al., 2020; Heckelman et al., 2022; Ikerd, 2019; Kliem, 2022; Kraak & Niewolny, 2024; Lyon et al., 2021; Nyongesa et al., 2025; Sayre et al., 2017; Singh et al., 2024).

Consequently, these findings align with literature analysis suggesting that food sovereignty is not merely about national production but represents the community's right to regulate knowledge, seeds, and institutions through participatory learning and research-community networks that redefine local agricultural education. These networks develop critical consciousness among community members, rendering them capable of responding to global market dynamics and climate pressures, while caution is required regarding excessive desecuritization that may neglect the welfare of smallholder farmers and vulnerable groups (Babcock & Budowle, 2022; Jung & Vendrametto, 2025; Kamakaula, 2024; Kraak & Niewolny, 2024; Nyongesa et al., 2025).

Cultural Documentation Gap: Ritual Tools and Linguistics

The research reveals significant challenges in the transmission of traditional knowledge due to linguistic constraints and a lack of systematic formal documentation. Field data indicate that various cultural artifacts and ritual tools, such as the specific components within the *Kindai* (rice granary) or *Babalai*, are exclusive to local nomenclature and lack accurate equivalents in Indonesian.

One informant highlighted the difficulty of explaining the technicalities of these tools to outsiders and the younger generation, stating, "Many tools within the *Babalai* are only known by our original names; we do not know their names in Indonesian, making it difficult to explain their functions except to fellow residents here" (Informant 4).

This phenomenon suggests a taxonomic gap that risks obstructing the transmission of local wisdom, necessitating deeper linguistic documentation to prevent the degradation of understanding of the sacred functions and meanings of these ritual instruments.

This research confirms that the active participation of youth in agricultural rituals serves as a natural manifestation of "Action" within the Action Research framework, creating an informal educational space rooted in ethnopedagogy. These findings are consistent with the literature that positions local wisdom as an effective non-formal learning source for transferring practical knowledge, work ethics, and cultural identity (Riyanti, 2018; Subai et al., 2023; Widiyanto & Lutfiana, 2021). Through direct involvement in these rituals, a holistic process of internalizing character values and cultural literacy occurs, which serves as an active learning mechanism where ancestral values are translated into daily conservation behaviors. This aligns with the concept of youth empowerment based on localized potential and meaningful student engagement (Astuti, 2019; Nurohman et al., 2024).

Methodologically, the use of Participatory Action Research (PAR) cycles has proven capable of bridging tradition and modernity, allowing communities to adapt to digital challenges without sacrificing their cultural roots through contextual curriculum design that embeds traditional ecological knowledge into formal school subjects (Karim, 2022; Kusumawardani et al., 2023; Ronianysah et al., 2023). Consequently, the integration of local epistemology into education policy and place-based learning practices is crucial for ensuring the sustainability of biocultural heritage. This integration transforms the classroom into a dynamic space for critical pedagogy, thereby strengthening the capacity of youth as agents of change at both local and national levels (Gunawan, 2016; Indraddin et al., 2021).

CONCLUSION

The implementation of this Action Research cycle yielded measurable empirical indicators of success, specifically the absolute containment of *Beras Keramat* seed extinction through a secured communal stock of at least one *gantang* per household; the systematic digital archiving of agricultural rituals managed by local youth; and the functional activation of the customary governance council comprising the *Balian*, *Pinjulung*, *Pengulu*, *Kepala Adat*, and *Damang* to

mitigate initial youth resistance and localized crop failures. These validated outcomes establish the "Communal Heritage-Based Food Security" framework, demonstrating that the preservation of endangered indigenous cultivars relies on a resilient synergy between metaphysical mandates and structured, community-led adaptive participation.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

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