

Sawek Bangket: Ritual Ecology, Pest Governance, and Social Cohesion in Sasak Agriculture

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Abstract: Indigenous and local knowledge is increasingly recognized in sustainability research, yet agricultural rituals are still often treated as symbolic survivals rather than as institutions that organize environmental observation, collective action, and intergenerational learning. This study examines Sawek Bangket, a Sasak agricultural ritual practiced in Kelayu Jorong Village, East Lombok, Indonesia, and asks how its history, ritual sequence, and social-ecological functions are understood by local knowledge holders. A qualitative historical-ethnographic design was employed between January and March 2025. Data were generated through semi-structured interviews with 12 purposively selected traditional leaders, religious figures, ritual practitioners, senior farmers, and community elders, together with participant observation and documentation. The data were interpreted through historical source criticism and thematic analysis. The findings show that community memory locates the tradition before living memory, while a major pest outbreak in the early 1980s appears to have reactivated or intensified its contemporary practice. Sawek Bangket combines field inspection, ritual preparation, Islamic prayers, symbolic materials, and post-ritual cooperation. Its principal contribution is not demonstrable biological pest control; rather, it provides a culturally legitimate framework for noticing threats, coordinating farmers, reinforcing environmental responsibility, and transmitting local knowledge. The article conceptualizes Sawek Bangket as ritual ecology and as cultural infrastructure for pest governance and social cohesion. The findings support respectful knowledge co-production in which local ritual practices complement, but do not replace, scientifically validated integrated pest management.

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1. Introduction

Indigenous and local knowledge (ILK) has moved from the margins of environmental scholarship toward the center of debates on resilience, biodiversity, and sustainable food systems. This shift reflects growing recognition that place-based communities do not merely possess inventories of useful practices; they sustain dynamic knowledge systems that connect observation, value, identity, and collective action (Tengö et al., 2014; Ford et al., 2020; Lam et al., 2020; Turner et al., 2022). Such systems can improve how environmental change is

detected and interpreted, but they are also vulnerable to displacement, knowledge erosion, and the devaluation of non-Western epistemologies (Fernández-Llamazares et al., 2021). Consequently, current scholarship increasingly calls for research that documents local knowledge without flattening it into decontextualized technical information.

Agricultural rituals provide a particularly important site for such inquiry. In many agrarian societies, ritual is not separate from ecological practice; it helps organize seasonal timing, collective labor, moral obligation, and relationships between people, crops, land, and spiritual authority. Classic ritual ecology demonstrated that ceremonial systems may regulate resource use and social coordination even when participants describe them primarily in religious terms (Rappaport, 1968). Later work on ritual practice and engineered agricultural landscapes likewise showed that ritual institutions can stabilize cooperation, authorize leadership, and transmit practical knowledge (Bell, 1992; Lansing, 1991). From an agroecological perspective, these social and cultural functions matter because sustainable transitions depend not only on farm technologies but also on participation, knowledge co-creation, connectivity, and natural-resource governance (Wezel et al., 2020).

The Sasak community of Lombok offers a valuable context for examining this relationship. Rice cultivation in Sasak society has long been embedded in symbols, myths, Islamic expressions, and local cosmology. Studies of Sasak rice traditions show that agricultural meaning has been continually reinterpreted through a hybrid religious landscape rather than preserved as a static pre-Islamic remnant (Budiwanti, 2000; Saharudin, 2019, 2021). Within this cultural setting, Sawek Bangket is practiced as a form of protection for rice fields and other crops, especially when farmers perceive threats from caterpillars, grain-eating birds, or other disturbances. The local terms are commonly explained by participants as sawek (to guard or protect) and bangket (rice field or cultivated land).

Existing research on Indonesian agrarian rituals has convincingly shown their roles in ecological stewardship, cultural adaptation, and community resilience (Danugroho et al., 2025; Utomo et al., 2026). However, three analytical problems remain. First, ritual efficacy is sometimes described without distinguishing perceived spiritual protection from observable social mechanisms such as field inspection, communication, or coordinated work. Second, oral histories are frequently presented as a single chronological narrative even when community memories contain different temporal layers. Third, studies often celebrate 'local wisdom' without explaining how ritual participation actually produces environmental attentiveness, collective responsibility, and intergenerational learning. These limitations can lead either to romanticization or to premature dismissal of ritual knowledge.

This study addresses these problems by examining Sawek Bangket as both a cultural-religious practice and a form of local pest governance. The term pest governance is used here deliberately. It refers to the culturally organized processes through which farmers notice, interpret, communicate, and collectively respond to threats in agricultural fields. It does not imply that the ritual has been demonstrated to kill pests or to replace agronomic pest-control methods. This distinction allows the study to respect participants' spiritual interpretations while maintaining analytical caution about biological efficacy.

The study asks three questions: (1) How is the historical development of Sawek Bangket remembered within the Sasak farming community? (2) How is the ritual organized across preparation, execution, and post-ritual activities? and (3) Through what mechanisms does the ritual contribute to environmental attentiveness, social cohesion, and the continuity of local agricultural knowledge? The article contributes by conceptualizing Sawek Bangket as ritual ecology and as cultural infrastructure for pest governance. Empirically, it provides a place-based account of a little-documented Sasak tradition. Theoretically, it clarifies how ritual can influence sustainability indirectly through attention, coordination, normative legitimation, and knowledge transmission. Practically, it proposes a non-extractive approach in which local ritual institutions may complement, but should not be substituted for, evidence-based agricultural extension and integrated pest management.

2. Literature Review

2.1 Indigenous and Local Ecological Knowledge

ILK is best understood as a living system of knowledge, practice, values, institutions, and relationships that develops through sustained engagement with specific places. This definition moves beyond treating local knowledge as a static collection of facts. It emphasizes that ecological understanding is embedded in social memory, language, livelihood, spirituality, and customary authority (Berkes, 2018; Gómez-Baggethun et al., 2013). The Multiple Evidence Base approach further argues that local and scientific knowledge systems should be assessed according to their own standards before being brought into dialogue, rather than forcing one system to validate the other (Tengö et al., 2014).

This relational understanding is especially important in agriculture. Agroecological transitions require locally adapted observation, farmer participation, knowledge co-creation, social values, and collective governance (Wezel et al., 2020). ILK can strengthen adaptive capacity because it connects environmental signals with culturally legitimate responses and social networks (Ford et al., 2020; Lam et al., 2020). Yet knowledge is not automatically sustainable or universally transferable. It may contain internal disagreements, change across generations, or be vulnerable to political and economic pressures. Responsible research must therefore document both its practical contributions and its limits, while protecting community authority over culturally sensitive information (Fernández-Llamazares et al., 2021; Turner et al., 2022).

2.2 Ritual Ecology, Collective Action, and Social Cohesion

Ritual ecology examines how ceremonial practices organize relationships among human communities, environments, and cosmological orders. Rappaport's (1968) foundational work showed that rituals can regulate ecological and social relations without functioning as explicit technical management plans. Bell (1992) similarly emphasized that ritualization creates distinctions, authorities, and embodied dispositions through repeated practice. In agricultural settings, these processes may shape when people enter fields, who has authority to interpret threats, how labor is mobilized, and which obligations are treated as morally binding.

The collective dimension connects ritual ecology with social-ecological resilience. Social capital can reduce coordination costs, facilitate information exchange, and support the collective management of shared resources (Pretty, 2003). Institutional analysis likewise shows that sustainable resource governance depends on locally legitimate rules, monitoring, participation, and conflict-resolution arrangements (Ostrom, 2009). Resilience emerges not from tradition alone but from the capacity of communities to learn, reorganize, and maintain valued relationships under change (Adger, 2000; Folke et al., 2016). Recent studies in Indonesian and Philippine ricescapes confirm that affective ties and social networks are central to how farmers exchange knowledge, obtain help, and respond to agricultural risks (Delina et al., 2025).

2.3 Sasak Agrarian Cosmology and Analytical Framework

Sasak agrarian traditions demonstrate the historical interweaving of local cosmology and Islam. Rice is treated not only as a commodity but also as a culturally significant life form embedded in prayer, moral rules, and ritualized care (Saharudin, 2019, 2021). Such hybridity should not be reduced to a simple mixture of 'old' and 'new' beliefs. It is an ongoing process through which communities reinterpret agricultural experience in religiously meaningful terms. Sawek Bangket is therefore analyzed as a contemporary institution that draws authority from both Islamic prayer and inherited local practice.

Based on the literature, the study examines four mechanisms through which ritual may influence social-ecological outcomes: environmental attentiveness, collective coordination, normative-spiritual legitimation, and intergenerational transmission. These mechanisms do not presume direct pest mortality. Instead, they specify observable pathways through which ritual may shape agricultural behavior and community resilience. Table 1 summarizes the analytical framework.

Table 1. Analytical Framework For Interpreting Sawek Bangket

Mechanism	Observable expressions	Potential contribution
Environmental attentiveness	Inspection of crops, recognition of pest signs, seasonal timing	Earlier noticing of threats and shared ecological awareness
Collective coordination	Invitation of ritual leaders, preparation of materials, communal participation	Communication, labor mobilization, and shared responsibility
Normative-spiritual legitimation	Prayer, symbolic materials, moral language of protection and gratitude	Ethical commitment to land, crops, and cooperation
Intergenerational transmission	Oral histories, observation by younger participants, repeated practice	Continuity of local knowledge, identity, and community memory

3. Research Method

3.1 Research Design and Site

The study used a qualitative historical-ethnographic design to examine the meanings, practices, and remembered development of Sawek Bangket. Ethnography was appropriate because the research concerned embodied ritual practice, local categories, social interaction, and culturally situated interpretations. The historical component was used to compare oral accounts, identify convergent and divergent temporal narratives, and avoid presenting community memory as a single uncontested chronology (Hammersley & Atkinson, 2019).

Fieldwork was conducted from January to March 2025 in Kelayu Jorong Village, East Lombok Regency, West Nusa Tenggara, Indonesia. The village was selected because Sawek Bangket remained known and practiced among local farmers. The research focused on rice and shallot cultivation, the crops most frequently associated by participants with pest threats and ritual protection.

3.2 Participants and Data Generation

Twelve informants were selected purposively on the basis of their knowledge of, participation in, or responsibility for the ritual. They included traditional leaders, Islamic religious figures (kyai), ritual practitioners, senior farmers, and community elders. The aim was not statistical representation but information-rich coverage of the principal roles through which the ritual is remembered and enacted. The sample was considered adequate because participants contributed detailed, role-specific accounts and the combined interviews and observations generated sufficient information power for the research questions (Malterud et al., 2016).

Data were generated through semi-structured interviews, participant observation, field documentation, and a targeted review of scholarship on Sasak agrarian culture. Interviews lasted approximately 45-90 minutes and were conducted in Sasak or Indonesian according to participant preference. Topics included the meaning and history of Sawek Bangket, signs that trigger the ritual, ritual materials and sequence, the roles of farmers and religious figures, perceived effects on crops and community relations, and concerns about continuity. Participant observation documented preparation, movement through fields, recitations, symbolic objects, and patterns of communal involvement. Photographs and field notes were used as contextual records rather than as independent evidence of pest-control efficacy.

3.3 Historical and Thematic Analysis

Analysis combined historical source criticism with thematic analysis. Oral accounts were first organized according to source position, claimed time period, and degree of direct experience. Accounts of origin were then compared to distinguish inherited memory from personally witnessed events. Interview and observational data

were transcribed, repeatedly read, and coded for references to historical continuity, pest signs, preparation, authority, prayer, symbolic materials, cooperation, environmental responsibility, and knowledge transmission. Codes were developed inductively and subsequently interpreted through the four mechanisms in Table 1.

The analysis followed the quality principles of reflexive thematic analysis: conceptual coherence, transparency about interpretive choices, and close alignment between claims and supporting data (Braun & Clarke, 2021). Trustworthiness was strengthened through data-source triangulation, member checking of selected interpretations, peer debriefing among the research team, and the use of anonymized quotation codes. Negative or complicating evidence was retained, including the disagreement between accounts that place the tradition before living memory and an account associating its contemporary emergence with a pest outbreak in the early 1980s. These procedures also align with established qualitative quality criteria concerning credibility, resonance, ethical practice, and transparency (Tracy, 2010).

3.4 Ethics, Language, and Representation

Participants received explanations of the study's objectives and procedures and agreed voluntarily to participate. Personal names were replaced with interview codes. For publication, selected Sasak excerpts are presented with English translations that preserve the substantive meaning rather than reproducing word-for-word syntax. Religious recitations are described by function rather than reproduced in full because accurate Arabic orthography, transliteration, and theological interpretation require specialist verification. The study treats participants' spiritual explanations as culturally meaningful evidence while separating those explanations from scientific claims about pest mortality.

4. Results and Discussion

4.1 Results

4.1.1 Layered Historical Memory: Continuity and Reactivation

Participants consistently described Sawek Bangket as an inherited practice, but they did not provide a single date of origin. Several accounts placed it beyond living memory and emphasized transmission from grandparents and earlier generations. One participant stated that the practice was already established before the current generation was born:

"Sawek nik n jak wah telakuang n ato wah tegawek n bae unin ta emang olek laekn, olek masa papuk balok te bae anh masih dk te man arak n, laguk kan lamun taun ne nuk n dek te ketaon." (DWPP.1)

English translation: "Sawek had already been practiced in the time of our grandparents, before we were born. We cannot identify the exact year."

Another participant similarly emphasized that contemporary practitioners received the ritual from older people rather than from a known founder. This pattern indicates that historical authority is grounded in continuity of practice and community recognition, not in written documentation or a named inventor.

"Lamun sejarah n jak dek te ketaon berembe awal mulan arak ... sengan ya jak entan dengan toak te be ya nu entan te ita endah kan ita jak nerimak olek ta." (DWAJ.1)

English translation: "We do not know precisely how it began. Older people practiced it, and our generation received and continued it."

A different narrative associated the ritual with an early-1980s caterpillar outbreak in shallot fields. Rather than disproving the longer oral history, this testimony appears to describe a moment of reactivation, intensification, or renewed visibility. The participant recalled that farmers sought the assistance of a kyai when conventional observation revealed severe crop damage:

"Sejarah lekan Sawek Bangket ino laek lek taun 1980-an awal ne ... lek lolon bawang ino luek dait ne ulet ... lekan ino lah ne peta kiyai agin ne sik doayange adek ne lalao ulet sino." (DWIH.1)
 English translation: "In the early 1980s, shallot plants were heavily attacked by caterpillars. Farmers then asked a kyai to pray so that the pests would leave and the crop could recover."

Taken together, these accounts support a layered chronology. The ritual was remembered as older than the 1980s, while the pest crisis may have renewed its use in shallot cultivation. This distinction is analytically important because it prevents the recent event from being misrepresented as the absolute origin of the tradition.

4.1.2 Ritual Sequence: Diagnosis, Preparation, Execution, and Cooperation

The ritual did not begin with prayer alone. Participants described an initial diagnostic stage in which farmers inspected crops and identified visible signs of disturbance. Ritual action was therefore triggered by environmental observation, particularly caterpillar presence, bird damage, or symptoms appearing before grain formation. One informant explained:

"Pas te nyawek ino sebelum na, gitak ruan tetaletan te arak ke hama na. Lamun ne arak, baru so te kelek dengan sik tao nyawek ino marak kiyai ato dukun." (DWIH.2)
 English translation: "Before performing Sawek, we first examine the crops to see whether pests are present. When signs are found, we invite someone knowledgeable, such as a kyai or ritual specialist."

The timing was similarly linked to crop development. The ritual was commonly performed before rice entered the grain-filling stage or after farmers observed early indications of pest attack. This sequencing shows that Sawek Bangket includes practical attention to crop condition, although the interpretation and response are expressed through spiritual language.

"Kalau waktu pelaksanaannya ritual dari Sawek Bangket ini kita lakukan pada saat sebelum keluarnya buah padi atau apabila kita sudah melihat adanya tanda-tanda tanaman padi itu terkena hama." (DWTN.2)
 English translation: "The ritual is performed before the rice produces grain or when we begin to see signs that the plants are being attacked by pests."

Preparation involved locally available materials, especially water, rice, and leaves identified by participants as jarak pagar (*Jatropha curcas*). A ritual leader or kyai guided the prayer, while farmers helped prepare the materials and field setting. The execution involved recitation, movement through the field, and the placement or use of protective materials. Post-ritual activity returned participants to ordinary agricultural cooperation. Table 2 summarizes the observed sequence and the mechanism associated with each stage.

Table 2. Empirical Stages And Social-Ecological Mechanisms Of Sawek Bangket

Stage	Principal activities	Primary mechanism	Analytical interpretation
Field diagnosis	Inspecting rice or shallot crops and identifying signs of caterpillars, birds, or other disturbances	Environmental attentiveness	The ritual begins with observation rather than with an automatic calendar event
Preparation	Inviting a kyai or ritual specialist; assembling water, rice, and <i>jatropha</i> leaves	Coordination and legitimation	Authority and materials create a shared framework for action

Stage	Principal activities	Primary mechanism	Analytical interpretation
Ritual execution	Prayer, recitation, movement through fields, and symbolic protection	Spiritual-normative legitimation	Threats are interpreted within a religious and moral order
Post-ritual cooperation	Continued monitoring, gathering, and mutual assistance among farmers	Social cohesion and transmission	Collective participation reinforces communication, responsibility, and memory



Figure 1. Locally Prepared Materials Used in Sawek Bangket. Source: Field documentation, 2025.

Participants interpreted the materials through a relational symbolism. Water was associated with life and cleansing, rice with livelihood and gratitude, and jatropha leaves with protection. The significance of these objects did not arise from their physical properties alone; it was produced by their place in prayer, shared memory, and agricultural experience.

4.1.3 Religious-Symbolic Mediation

Islamic prayers and blessings were central to ritual execution. Participants described recitations intended to request divine protection, safety, and agricultural well-being. The ritual therefore cannot be represented accurately as an isolated 'animist' survival. Its present form is a hybrid practice in which local agricultural memory is authorized through Islamic language and the leadership of a kyai. This hybridity is consistent with wider Sasak rice cosmology, in which local symbols and Islamic concepts have been repeatedly reinterpreted rather than simply replaced (Saharudin, 2019, 2021).

The spiritual interpretation of pests was not uniform or technically reducible. Participants sometimes described crop disturbance as biological and at other times as connected to imbalance, unseen forces, or inadequate protection. The ritual brought these interpretations into a single response. It created an occasion for prayer while simultaneously directing attention to fields, crop stages, and farmer coordination.



Figure 2. Ritual practice in a rice field during Sawek Bangket. Source: Field documentation, 2025.

4.1.4 Social Cohesion and Intergenerational Learning

Sawek Bangket depended on participation by farmers, ritual specialists, and religious figures. Preparation and execution required communication about the location and severity of crop problems, the timing of the ritual, and the availability of materials. Participants described this cooperation through the idiom of mutual assistance and shared responsibility. The ritual therefore functioned as a social event through which agricultural concern became publicly recognized rather than remaining an individual farmer's problem.

Oral transmission was equally important. Because participants knew no written manual or named founder, knowledge was learned by listening to elders, observing the ritual, and participating in repeated practice. The absence of written documentation did not indicate the absence of method; instead, it revealed a different mode of knowledge storage. Community memory was embedded in persons, roles, sequences, objects, and narratives. At the same time, participants' uncertainty about origins indicated vulnerability: when knowledgeable practitioners are no longer involved, important distinctions and meanings may be lost.

4.2 Discussion

4.2.1 Sawek Bangket as Cultural Infrastructure for Ritual Ecology

The findings support an interpretation of Sawek Bangket as cultural infrastructure. Infrastructure here does not mean a physical facility; it means a durable social arrangement that organizes attention, authority, communication, and action. The ritual establishes who is called, what materials are assembled, when fields are inspected, how threats are narrated, and how collective responsibility is expressed. This extends ritual ecology beyond the claim that rituals merely symbolize human-nature relationships. In this case, ritualization helps structure a sequence of environmental observation and communal response (Rappaport, 1968; Bell, 1992).

The finding also resonates with comparative work on Asian agricultural rituals. Lansing (1991) showed that religious institutions can become embedded in agricultural coordination, while recent Indonesian research demonstrates that rituals remain dynamic vehicles of ecological stewardship and cultural adaptation (Danugroho et al., 2025). The contribution of the present study is more specific: Sawek Bangket links protection, field

diagnosis, Islamic authority, and farmer cooperation in a single practice. Its significance lies not in preserving an unchanged past but in maintaining a culturally intelligible way to respond to uncertainty.

4.2.2 Pest Governance Without Overclaiming Biological Efficacy

A central analytical contribution is the distinction between pest control and pest governance. The interviews document a strong belief that prayer and ritual protection can repel harmful organisms. However, the study did not measure pest populations, crop damage, pesticide use, or yield before and after the ritual. It therefore cannot conclude that Sawek Bangket directly controls caterpillars, birds, or other pests. Making such a claim would exceed the evidence.

The data do support a different conclusion. The ritual contributes to pest governance by encouraging farmers to inspect fields, identify warning signs, discuss threats, agree on timing, and mobilize respected figures. These mechanisms can improve situational awareness and collective readiness even when the spiritual mechanism remains outside scientific verification. This interpretation is compatible with the Multiple Evidence Base approach: the ritual's cultural validity can be recognized without treating all knowledge claims as interchangeable with agronomic experiments (Tengö et al., 2014). It also aligns with agroecological principles of participation, connectivity, and knowledge co-creation (Wezel et al., 2020).

For policy and extension, the implication is complementarity rather than replacement. Agricultural officers should not instrumentalize the ritual as a low-cost substitute for monitoring, biological control, resistant varieties, or other validated components of integrated pest management. Conversely, dismissing the ritual as superstition may undermine trust and ignore the social networks through which farmers communicate. A respectful approach would connect community-led observation and ritual gatherings with timely access to agronomic diagnosis and farmer education.

4.2.3 Social Cohesion, Collective Action, and Resilience

The social effects of Sawek Bangket are consistent with research on collective resource management. Ritual participation creates repeated opportunities for farmers to share information, reaffirm relationships, and convert private concern into a collective issue. Such processes resemble the bonding and coordination functions of social capital identified in rural resource management (Pretty, 2003). They also reflect institutional principles emphasized by Ostrom (2009), especially local monitoring, participation, and rule legitimacy.

These effects should not be romanticized. Social cohesion is not automatically inclusive, and the present data do not establish whether all farmers, age groups, or social positions participate equally. Nevertheless, the ritual provides an observable arena for coordination and mutual responsibility. This matters because resilience depends not only on ecological knowledge but also on the relationships and institutions that allow knowledge to circulate and action to be organized (Ford et al., 2020; Folke et al., 2016). Recent research on Indonesian and Philippine ricescapes similarly shows that affective relationships and farmer networks are key resources for coping with agricultural challenges (Delina et al., 2025).

4.2.4 Intergenerational Transmission and Knowledge Co-production

The study also highlights a tension between continuity and fragility. Oral transmission allows knowledge to remain adaptive and embedded in practice, but it can become vulnerable when ritual specialists age, agricultural livelihoods change, or younger people have fewer opportunities to participate. Global research has documented similar threats to ILK, including formal education systems that marginalize local languages, economic transitions, and the loss of access to customary landscapes (Fernández-Llamazares et al., 2021).

Documentation may help, but it must not extract sacred or culturally restricted information from community control. Knowledge co-production should begin with community decisions about what can be recorded, who may access it, and how benefits will be shared. The most appropriate objective is not to convert Sawek Bangket into a standardized technical package. It is to strengthen dialogue among farmers, ritual knowledge holders, schools, village institutions, and agricultural extension services while preserving the community's authority over meaning and practice. This approach is consistent with scholarship that treats Indigenous and local knowledge as a partner

in sustainability inquiry rather than as raw data for external validation (Lam et al., 2020; Obiero et al., 2023; Whyte et al., 2016).

5. Conclusion

This study shows that Sawek Bangket is a living Sasak agricultural institution whose historical memory, ritual practice, and social functions are inseparable. Oral accounts locate the tradition before living memory, while testimony about an early-1980s caterpillar outbreak is better interpreted as evidence of reactivation or intensification than as a definitive point of origin. The ritual is organized through field diagnosis, preparation of local materials, religious recitation, movement through agricultural land, and post-ritual cooperation.

The principal theoretical contribution is the concept of Sawek Bangket as ritual ecology and cultural infrastructure for pest governance. The ritual does not provide scientifically demonstrated biological pest control. Its evidenced contribution lies in organizing environmental attentiveness, legitimizing collective response, reinforcing responsibility, and transmitting agricultural knowledge and identity. This distinction respects local spirituality while maintaining an appropriate boundary between ethnographic interpretation and agronomic efficacy claims.

The case demonstrates why sustainable-agriculture research must take cultural institutions seriously. Technologies are adopted and risks are interpreted through existing relationships, values, and authorities. Sawek Bangket can therefore contribute to rural resilience when it is engaged respectfully and linked to reliable agronomic support. Its future depends on community-led transmission, ethical documentation, and dialogue that neither romanticizes tradition nor dismisses it.

6. Recommendations

First, village institutions and farmer groups should support community-controlled documentation of the ritual's publicly shareable history, terminology, and agricultural meanings. Sensitive prayers or restricted knowledge should be recorded only with the explicit consent of recognized knowledge holders.

Second, agricultural extension programs should treat ritual gatherings as potential spaces for dialogue about crop monitoring and integrated pest management. Any collaboration should preserve the ritual's religious and cultural integrity and should clearly distinguish spiritual protection from scientifically evaluated pest-control interventions.

Third, future research should combine longitudinal ethnography with agronomic observation. Comparative studies could examine how ritual participation changes across generations, whether different farmer groups experience the ritual differently, and how field-monitoring behavior, pest incidence, pesticide decisions, and yields vary over time. Such designs would test the practical pathways proposed here without reducing the ritual to a single productivity variable.

Data Availability

De-identified excerpts supporting the findings are included in this article. Full interview transcripts and culturally sensitive field records are not publicly available because they may contain identifiable or community-restricted information. Access may be considered by the corresponding author subject to participant consent, community approval, and applicable institutional ethics requirements.

Ethics Statement

This study was conducted in accordance with the ethical principles for research involving human participants. All participants received an explanation of the research objectives, procedures, and intended use of the data before participating. Informed consent was obtained from all participants prior to interviews and observations. Participation was entirely voluntary, and participants were free to withdraw at any stage without

consequence. Personal identities were anonymized using interview codes to protect confidentiality. The study involved minimal risk and respected local cultural values and community protocols throughout the research process. Formal institutional ethics committee approval was not required because, at the time the research was conducted, the authors' institution did not operate a human research ethics review board. Nevertheless, the research adhered to internationally accepted ethical standards for qualitative research.

Declaration of the Use of Artificial Intelligence (AI)

Generative AI tools were used for language editing, structural refinement, and reference checking. No AI tool was used to create or alter interview data, field observations, participant quotations, or the underlying empirical evidence. The authors reviewed the revised manuscript and remain fully responsible for its accuracy, interpretation, and integrity.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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