

## The Role Of Javanese Indigenous Local Knowledge In Agricultural Traditions And Women's Economic Empowerment

Lia Hidayati<sup>1</sup>, Victor Novianto<sup>2</sup>, Kristina Warniasih<sup>3</sup>

<sup>1</sup>[liyva.liyya26@gmail.com](mailto:liyva.liyya26@gmail.com), <sup>2</sup>[victor@upy.ac.id](mailto:victor@upy.ac.id), <sup>3</sup>[warniasihkristina@gmail.com](mailto:warniasihkristina@gmail.com)

<sup>1,2,3</sup> Universitas PGRI Yogyakarta, Yogyakarta, Indonesia

### Abstract

*Local knowledge is an inseparable part of the cultural identity of indigenous communities, including the Javanese people, who have practiced various agricultural traditions for centuries. In Javanese society, agriculture is not merely seen as an economic activity but as a cultural heritage rich in spiritual, social, and ecological values. Traditional farming systems such as pranata mangsa (traditional seasonal calendar), the selection of local crop varieties, organic cultivation techniques, and agrarian rituals like sedekah bumi (earth almsgiving) and wiwitan (harvest initiation ceremony) reflect the deep interconnection between humans, nature, and spiritual forces. In this context, women play a vital role—not only in agricultural activities but also in household economic management and the preservation of inherited knowledge.*

*This study aims to examine the role of local knowledge within Javanese indigenous communities in supporting agricultural traditions and its contribution to women's economic empowerment. The research employs a qualitative method with a case study design. Data collection techniques include in-depth interviews, participatory observation, and document analysis of farming communities in rural areas of Kulon Progo Regency.*

*The findings show that women have a strategic role in maintaining the sustainability of traditional farming practices. Their involvement goes beyond production activities such as planting and harvesting; it also includes post-harvest processing, seed storage, and household economic management. The local knowledge they possess encompasses planting techniques, the use of medicinal plants, and crop management. The study concludes that local knowledge is not only a cultural heritage but also a strategic asset for sustainable development, particularly in strengthening women's economic roles in agriculture and food security.*

**Keywords:** local knowledge, agricultural tradition, economic empowerment, women, qualitative method.

### INTRODUCTION

Humans and nature share an interdependent relationship. The preservation and balance of nature must be maintained in order to create a more harmonious life. Climate has a major influence on the continuity of human life, especially in agricultural management. Climate change has a significant impact on agricultural systems, including those of farmers on the island of Java. Farmers in Javanese indigenous communities generally continue to preserve local wisdom as one of the ways to maintain ecological balance. One form of local wisdom practiced by farmers is the use of the *Pranata Mangsa* calendar as a guideline for managing agricultural land.

Kulon Progo Regency is one of the five agrarian regions in the Special Region of Yogyakarta that still relies on the agricultural sector as a pillar of the local economy, despite facing pressures from land conversion and increasing industrialization. The agricultural sector

continues to make a significant contribution to the regional gross domestic product (GRDP) (Ayu & Saputro, 2021:5).

The agricultural traditions of the Javanese indigenous communities in Kulon Progo Regency still contain a strong system of local knowledge. The use of the *Pranata Mangsa* calendar, selection of local crop varieties, organic farming techniques, and agrarian rituals have been preserved until today. This knowledge system is not only an economic activity but also an inseparable part of the cultural identity of the Javanese indigenous community, which integrates spiritual, cultural, and ecological values. In this regard, women in these communities play dual roles—as agricultural actors, household economic managers, and inheritors as well as transmitters of traditional knowledge (Setyaningsih, Sumarni, & Wicaksono, 2020:83).

This study carries both theoretical and practical significance within the framework of culture- and gender-based agrarian development. Theoretically, through the perspectives of local knowledge theory and empowerment theory, this research expands the existing literature, which often separates the cultural-ecological dimension from the economic-gender dimension in agriculture. The study by Acevedo-Ortiz et al. (2024) discusses how women lead through home gardens to preserve traditional agricultural knowledge and promote economic empowerment. Furthermore, the article “*Tourism and Ethnodevelopment: Female Contribution in Rural Community-Based Agritourism*” (Meutia et al., 2022) demonstrates how women in indigenous communities use local knowledge and agrarian culture to lead agritourism activities and strengthen economic empowerment. Another study by Karjanto (2022), *Revisiting Javanese Pranata Mangsa: On Ethnic Groups and the Four Sample Cities in Java*, emphasizes that traditional Javanese systems such as *Pranata Mangsa* are manifestations of local knowledge historically used by Javanese farmers to regulate planting and harvesting cycles and adapt to climate change.

This research fills the gap left by previous studies by providing a systematic understanding of how, within the context of Javanese indigenous agricultural traditions, local wisdom can be empirically linked to women’s economic empowerment. The study was conducted in Kulon Progo Regency, Yogyakarta, where agricultural traditions and cultural heritage remain well-preserved.

Practically, the results of this study are expected to provide concrete recommendations for local government policymakers by highlighting how women—as inheritors and practitioners of local knowledge—can be empowered through culturally based traditional agricultural practices. In doing so, they can contribute to achieving the Sustainable Development Goals (SDGs) at the village level, particularly SDG’s 5 (Gender Equality), SDG’s 8 (Decent Work and Economic Growth), and SDG’s 15 (Life on Land).

## METHOD

This study employed a qualitative research method, which uses data in the form of words or sentences, producing descriptive explanations or narratives rather than numerical calculations. Based on the characteristics of the subjects and the focus of the research, a phenomenological design was used. The purpose of this design is to understand individuals’ lived experiences and their personal perspectives, focusing on how individuals assign meaning to their experiences (Aji, 2023:5). The phenomenological approach seeks to understand human life events within the framework of thought and behavior as perceived by the individuals themselves. It provides answers to ontological questions, aiming to gain a deeper understanding

of reality. Knowledge is obtained directly from conscious experience, rather than being inferred from it (Nasir & Sah, 2023:445).

The qualitative method was applied to obtain in-depth and meaningful data—data that contain value beyond what appears on the surface. Meaning is the true essence of data; therefore, qualitative research emphasizes meaning rather than generalization. Generalization in qualitative research is known as transferability, meaning that research findings can be applied in other contexts if those contexts share similar characteristics (Zuhri Abdussanad, 2021:86).

The scope of this study includes farmer communities and women farmers within Javanese indigenous societies in the agrarian villages of Kulon Progo Regency who actively practice local knowledge-based agricultural traditions. These include the use of the *Pranata Mangsa* planting calendar, local crop varieties, organic cultivation techniques, and agrarian rituals such as *sedekah bumi* (earth offerings) and *wiwitan* (harvest ceremonies).

The operational definitions used in this study are as follows:

1. *Local knowledge* refers to a collection of practices, values, calendars, varieties, techniques, and agrarian rituals inherited within indigenous communities.
2. *Women's economic empowerment* is defined as women's capacity to access agricultural resources, make decisions, manage agricultural yields and household economic activities, and exercise control over economic outcomes—based on the dimensions of access, participation, and control within empowerment theory.
3. *Agricultural tradition* refers to farming activities, crop selection, land management, and agrarian rituals conducted according to the traditional Javanese agricultural calendar.

The research location was selected in Pengasih Village, Kulon Progo Regency, which has 5 hectares of productive agricultural land, with the majority of the population engaged in farming. According to the 2024 village profile, the total population is 11,900 people. The research population includes all female indigenous farmers involved in traditional agricultural practices, as well as community and customary leaders. Informants were selected using a purposive sampling technique based on their knowledge of agricultural practices and traditions. Additionally, a snowball sampling technique was used to obtain more accurate and comprehensive information (Subhaktiyasa, 2024:2727).

The research instruments consisted of semi-structured interview guides, field notebooks for participatory observation, question lists, documentation, and local archival records, including village documents, agrarian ritual notes, and community calendars. Supporting tools included a camera, voice recorder, and writing materials for observation notes.

The data collection techniques comprised:

1. In-depth interviews with traditional farmers, customary leaders, and community figures.
2. Participatory observation of traditional agricultural practices in the field.
3. Document study involving archives, local planting calendars, agrarian rituals, and farmers' group records.

Data were collected using source triangulation to enhance validity (Zuhri Abdussanad, 2021:84), by comparing observation results with interview findings and existing documentation.

The data analysis technique employed in this study followed the framework of Miles and Huberman, which includes three stages: data reduction, data display, and conclusion drawing/verification.

1. Data reduction aims to summarize and select essential information, focusing on key themes to provide a clear picture and facilitate further data collection.
2. Data display refers to the organized presentation of information that enables the drawing of conclusions and decision-making, presented in valid qualitative forms such as matrices, graphs, or charts.
3. Conclusion drawing and verification involve identifying new findings—descriptions or explanations that clarify previously vague phenomena—and establishing causal or interactive relationships.

## RESULTS AND DISCUSSION

### RESULTS

Farmers are the main actors within the agrarian system. In the Javanese indigenous communities of Pengasih, Kulon Progo, they are not merely producers but also custodians of cultural heritage, local knowledge, and socio-ecological relationships. Based on interviews conducted by the researcher, women farmers in Pengasih play multiple and interconnected roles. In addition to their direct involvement in agricultural activities such as planting, maintenance, and harvesting, women also serve as transmitters of traditional local knowledge, managers of household economies, and overseers of post-harvest agricultural management.

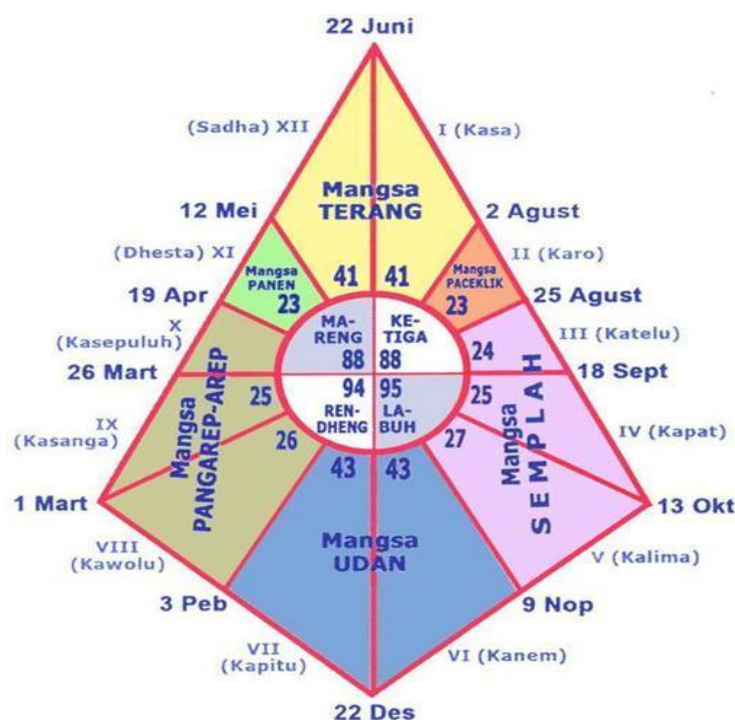
Sutini(65yo) explained:

*“As villagers whose husbands work as cultivators, it is naturally our duty to be involved in the process. Moreover, my parents used to teach me a lot about understanding Pranata Mangsa as a reference for determining the planting season.”*

These roles are carried out from generation to generation, becoming a living tradition that sustains and preserves local agricultural knowledge within traditional farming practices. This intergenerational transmission ensures that such knowledge is not lost over time. As expressed by Wasayah (56yo) during an interview:

*“We usually hold *wiwitan* before the rice harvest season as a form of gratitude to God (*Gusti*) for the blessings that have been bestowed upon us.”*

This statement illustrates that agricultural practices among Javanese indigenous farmers are not solely oriented toward production but also encompass deep cultural and spiritual dimensions. Through rituals such as *wiwitan*, farmers—particularly women—play a vital role in maintaining the continuity of both agricultural and cultural traditions, strengthening the bond between humans, nature, and spirituality.



Picture.1 Prisma Pranata Mangsa Kasultanagungan  
 Source: Pengasih Village Archives

*Pranata Mangsa* is the traditional Javanese calendar system that regulates agricultural timing and activities through the observation of natural signs such as bird calls, blooming flowers, wind directions, and other environmental changes. The term *Pranata Mangsa* comes from the Javanese language, consisting of two words: *pranata*, meaning “regulation” or “rule,” and *mangsa*, meaning “season.” Thus, *Pranata Mangsa* can be understood as the “regulation of seasons.”

This system is used by Javanese farmers as an agricultural guide rooted in ancestral wisdom and intuition. In its Indonesian equivalent, the *Pranata Mangsa* is structured based on the movement of the sun as it shifts from the equator to the north and south over a six-month cycle.

There are several essential values embedded within the *Pranata Mangsa* calendar that are crucial for agricultural management. First, *Pranata Mangsa* provides farmers with guidance for planting according to natural signs that correspond to each *mangsa* (seasonal phase). Second, the year is divided into twelve *mangsa*, each with different durations. Third, the regulations within the calendar teach farmers to maintain harmony with nature by avoiding continuous land use, allowing the soil to rest and recover before the next planting cycle (Setyaningsih, Sumarni, & Wicaksono, 2020:88).

In Javanese culture, the *Pranata Mangsa* consists of twelve seasons, from *Mangsa Kesatu* (the first season) to *Mangsa Keduabelas* (the twelfth season). This seasonal calendar is a part of Javanese ancestral heritage officially established by Pakubuwana VII on June 22, 1855. According to *Wakidi*, a customary leader from Pengasih Village (68 years old), the

calculation of *Pranata Mangsa* is relatively complex because it does not align with the Gregorian calendar. The twelve *mangsa* are as follows (Yudahadiningrat, Rintaiswara, & Sudarwo, 2020:121):

1. Mangsa Kasiji (First Season): June 22 – August 1
2. Mangsa Kaloro (Second Season): August 2 – August 24
3. Mangsa Katelu (Third Season): August 25 – September 17
4. Mangsa Kapapat (Fourth Season): September 18 – October 13
5. Mangsa Kalima (Fifth Season): October 14 – November 10
6. Mangsa Kanem (Sixth Season): November 11 – December 25
7. Mangsa Kapitu (Seventh Season): December 26 – February 6
8. Mangsa Kawolu (Eighth Season): February 7 – March 1
9. Mangsa Kasanga (Ninth Season): March 2 – March 26
10. Mangsa Kasapuluh (Tenth Season): March 27 – April 21
11. Mangsa Apit Lemah (Eleventh Season): April 22 – May 17
12. Mangsa Apit Kayu (Twelfth Season): May 18 – June 21

Each *mangsa* carries specific environmental characteristics and serves as a guide for farmers to plan agricultural activities in alignment with natural rhythms, reflecting the deep ecological wisdom of Javanese culture.

Musim	Masehi	Ciri Alam	Makna
Kasa	22 Jun - 1 Agu	Awal kemarau	Musim panen
Karo	2 - 24 Agu	Masih kemarau	Lahan diolah Kembali
Katelu	25 Agu - 17 Sep	Masih kemarau	Persiapan benih
Kapat	18 Sep - 12 Okt	Udara mulai lembab	Musim tanam
Kalima	13 Okt - 8 Nov	Awal musim hujan	Memantau proses tanam
Kanem	9 Nov - 21 Des	Musim hujan	Memantau proses pertumbuhan
Kapitu	22 Des - 2 Feb	Musim hujan	Memantau potensi banjir
Kawolu	3 - 27 Feb	Musim hujan ringan	Masuki musim panen
Kasanga	28 Feb - 21 Mar	Musim hujan mereda	Masuki musim panen
Kadasa	22 Mar - 12 Apr	Peralihan musim	Musim panen
Desta	13 Apr - 2 Mei	Cuaca mulai kering	Musim panen
Saddha	3 Mei - 21 Juni	Masuki kemarau	Persiapan musim tanam berikutnya

Picture 2.

**Pranata Mangsa**

Source: Pengasih Village Archives

Sujiyem (60 years old) explained that the twelve *mangsa* (seasons) in the *Pranata Mangsa* calendar consist of *terang* (dry), *semplah*, *udan* (rainy), *pengarep-arep* (anticipation), *katiga*, *labuh*, *rendheng*, and *mareng*. She also acknowledged that the local knowledge of *ilmu titen*—the ancestral wisdom of observing natural signs—derived from *Pranata Mangsa* continues to assist farmers today in selecting the appropriate crop varieties to plant. Similarly, Sulastri (49 years old) noted that women farmers play an important role in maintaining ecological balance through the application of *Pranata Mangsa* as a predictive guide in agricultural management. Farmers who still adhere to the *Pranata Mangsa* system uphold

harmony with nature by avoiding excessive or continuous cultivation of the land. Instead, they plant according to the appropriate *mangsa* and match the crops with the varieties suited to each season.

Agrarian rituals are spiritual and cultural activities that accompany the agricultural cycle within Javanese indigenous communities. One such ritual is *Sedekah Bumi* (Earth Offering), a ceremony of gratitude performed by the community to honor nature and the earth's bounty, conducted through offerings, prayers, and ancestral veneration (Sulastiningtyas, 2022:358). Another important ritual is *Wiwitan*, performed before or during the rice harvest as an expression of gratitude to nature and spiritual entities, such as Dewi Sri—the goddess of fertility and rice—for the abundant yield. According to Wakidi (65 years old), the *Wiwitan* tradition remains well preserved and is regarded as a sacred custom that must not be abandoned. During the ritual, farmers gather in the fields to pray together, offering *sesaji* (ritual offerings), followed by a communal meal of *nasi wiwit* (sacred rice) prepared by the women farmers. These rituals reinforce social values, strengthen community bonds, and deepen the cultural meaning of agriculture. They also signify that traditional farming among Javanese indigenous communities is not merely an economic activity but a holistic relationship that intertwines humans, nature, and spirituality.



Picture 3.

### Wiwitan Ritual Tradition

Source: Terbah District Archive

The theoretical framework of empowerment consists of three main dimensions: access, participation, and control. Conceptually, community empowerment can be defined as a form of social action carried out by members of a community who organize themselves for collective planning and action to solve social problems or meet social needs based on the resources they possess (Habib, 2021:108).

Suyanti (51 years old) explained that in the agricultural lands of Pengasih Village, women farmers play an active role throughout the life cycle of crop varieties — from seed selection, cultivation, and harvesting to post-harvest management. All of these activities are

carried out to ensure that the yield can be optimally managed and sustained until the next planting season.

Women are not merely involved as laborers; they also have access to crop varieties, planting calendars, and economic activities. Moreover, they act as transmitters of local knowledge, managers of household economies, and agents of economic empowerment. According to Akbar (54 years old), a local community leader, women farmers and gardeners tend to be more meticulous in managing agricultural yields, as evidenced by their ability to sustain food security even until the next planting season. This indicates that women's empowerment through agrarian local knowledge has reached a fairly optimal level.

However, it is unfortunate that most of the active farmers working in the fields today are elderly. Agricultural activities are no longer viewed as appealing by the younger generation. As noted by another community leader, Surono (66 years old), "Young people nowadays prefer to work as company employees rather than manage and cultivate the land they own." This generational shift highlights a growing challenge in maintaining agricultural traditions and ensuring the continuity of local agrarian knowledge within the community.

## DISCUSSION

Local knowledge of *Pranata Mangsa* is deeply embedded in the lives of Javanese indigenous farmers. This system dictates that land preparation, including soil cultivation to make it ready for planting, should be carried out two weeks after harvest—at the end of the *terang* (dry) season or the beginning of the *semplah* season. Second, farmers conduct communal discussions (*musyawarah*) regarding water management and fertilization at the start of the *udan* (rainy) season. During this stage, rice seeds are planted, and pest control—particularly against brown planthoppers and similar insects—is carried out for approximately three to four months, lasting until the *pangarep-arep* season. Third, if climatic conditions align with traditional calculations, the harvest occurs in the third season. Replanting begins at the end of this phase and continues into the early *labuh* season. During *labuh*, fertilization and irrigation are again conducted, extending into the *rendheng* season. Throughout this period, pest and weed control continues until the end of the *wareng* season, so that by the time the *terang* season begins, the rice is once again ready for harvest.

The role of women farmers in Pengasih Village, Kulon Progo Regency, demonstrates a strategic contribution to the sustainability of traditional agricultural practices. Their involvement extends beyond production activities such as planting and harvesting to include post-harvest management—drying, packaging, storage, and household economic management. The local knowledge they possess encompasses adaptive farming techniques suited to the local environment, the use of medicinal plants, and the preservation of agrarian rituals.

From the perspective of empowerment theory—which consists of access, participation, and control—this study shows that women farmers have gained access to agricultural resources, actively participate in production and processing decision-making, and exercise control over economic outcomes. Thus, traditional local knowledge functions not only as cultural heritage but also as a tangible mechanism of economic empowerment for Javanese indigenous women farmers.

However, several challenges persist, including limited access to markets for processed agricultural products, the lack of formal recognition of local crop varieties, insufficient regeneration of traditional knowledge, and pressures from modernization. These challenges

must be addressed to enhance and sustain women's empowerment capacities in traditional agriculture.

## CONCLUSION AND RECOMMENDATIONS

### CONCLUSION

The results of this study indicate that women in the Javanese indigenous communities of Kulon Progo Regency play a strategic role in sustaining traditional agricultural practices, transmitting local knowledge, and managing household economies. Their local knowledge encompasses production, post-harvest processing, seed preservation, and household economic management based on agricultural yields, contributing to the continuity of sustainable agricultural systems and women's economic empowerment.

An analysis based on empowerment theory reveals that women farmers already possess access to local varieties, traditional techniques, and indigenous community networks. They also actively participate in production, processing, and marketing processes. Consequently, cultural-traditional and economic-gender dimensions mutually reinforce one another, creating a synergy that supports sustainable agriculture. Nevertheless, structural challenges remain—such as limited market networks for processed products and difficulties in generational succession, as younger generations show less interest in traditional agricultural practices.

### RECOMMENDATIONS

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

1. Strengthen women's access to agrarian resources through support from local government and agricultural institutions.
2. Enhance women's control over economic outcomes by supporting post-harvest processing, local variety marketing, and access to markets and economic networks to improve income.
3. Develop intergenerational transmission of local knowledge and encourage youth involvement to ensure the sustainability of traditional practices.
4. Conduct further research to complement and expand upon the findings of this study.

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