

The ethnobotany study of Babad Dalam ritual ceremony (BDRC) of Javanese in Gunungkidul, Yogyakarta to biocultural conservation

Marina Silalahi ^{1,a,*}, Riska Septia Wahyuningtyas ^{1,b}, Titi Kalima ^{2,c}, Agnes Feronika Situmorang ^{1,d}

¹ Department of Biology Education, Universitas Kristen Indonesia, Jakarta, Indonesia

² National Research and Innovation Agency, Jakarta, Indonesia

Email: marina.silalahi@uki.ac.id ^{1,a,*}, riska28septia@gmail.com ^{1,b}, titi_kalima@yahoo.co.id ^{2,c},

agnesfika6@gmail.com ^{1,d}

* Corresponding author

Article Information	ABSTRACT
<p>Article History: Submitted: 2025-08-28 Revised: 2025-12-17 Accepted: 2025-12-17 Published: 2025-12-19</p> <p>Keywords: Babad Dalam; bioculture; ethnobotany; Gunungkidul; gunungan</p>	<p>The Babad Dalam ritual ceremony (BDRC) is a ritual ceremony by the local Javanese ethnic community in Gunungkidul which has been carried out for hundreds of years using various types of plants. Biocultural studies of ritual ceremonies as part of biodiversity and cultural conservation are still limited. The purpose of this study is to explain the process of carrying out the ritual and explain the diversity of plants used in BDRC. This study was conducted using an ethnobotanical approach through surveys and semi-structured interviews. Respondents consisted of key informants (5 people) and general respondents (25 people) who were determined by purposive sampling. Data analysis was carried out qualitatively using descriptive statistics. Results: The local Javanese ethnic community in Gunungkidul carries out BDRC every year as a ceremony of gratitude to God for the success of an abundant harvest. A total of fifty-eight species belonging to fifty-one genera and twenty-seven families are used in BDRC which are used as ingredients for offerings, gunungan, and tumpeng. Plants are used as components of gunungan "mountains" (22 species), offerings (12 species), gubahan/traditional cuisine (8 species) and spices (10 species). Local communities cultivate various types of plants to ensure availability in the BDRC as part of plant biodiversity conservation. Conclusion: The use of plants in BDRC is local wisdom which directly or indirectly has implications for the preservation of bio-culture and biodiversity.</p>
<p>Publisher Biology Education Department Universitas Insan Budi Utomo, Malang, Indonesia</p>	<p>How to Cite Silalahi, M., Wahyuningtyas, R. S., Kalima, T., & Situmorang, A. F. (2025). The ethnobotany study of Babad Dalam ritual ceremony (BDRC) of Javanese in Gunungkidul, Yogyakarta to biocultural conservation. <i>Edubiotik : Jurnal Pendidikan, Biologi Dan Terapan</i>, 10(02), 550–565. https://doi.org/10.33503/ebio.v10i02.1620</p>
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INTRODUCTION

Ritual ceremonies are one of the local wisdoms carried out by various ethnic groups in Indonesia which aim to honor ancestors, reject bad things (Awaliah, 2019), commemorate religious holidays

(Mulyana, 2017), and medicine (Asra et al., 2020) which use various types of plants as a means so that they become part of ethnobotanical studies. The implementation of ritual ceremonies utilizes various types of plants which are an inseparable part of the culture developed by various ethnicities so that it has become an ethnobotanical study. The ritual ceremonies are systems used for plant conservation through their utilization. The types of ritual ceremonies found in Indonesia vary by ethnicity, such as *oke shows* on the Halmahera ethnic group, *besale* by the Anak Dalam Tribe in Jambi (Asra et al., 2020), *sekaten* by local communities Yogyakarta (Mulyana 2017), and *nyimur* rituals by local communities Kasepuhan (Awaliah, 2019). The community believes that traditional ceremonies are a characteristic foundation in carrying out the relationship between humans and humans, humans and their environment, humans and ancestral spirits or other spirits as well as humans and God (Sada & Jumari, 2018). The use of plants in ceremonial ceremonies can help avoid cultural erosion associated with globalization (Sujarwo et al., 2019).

Empirically, it can be seen that ritual ceremonies use plants and animals as offerings. The types and number of species used vary greatly, influenced by the biodiversity in the surrounding environment, such as the Aceh tribe in East Aceh using as many as 51 species (Sutrisno et al., 2020), the local community of Cianjur District, West Java using as many as 26 species (Erawan et al., 2018), the Javanese in the city of Surakarta using as many as 27 species (Mukarromah et al., 2024). Each type of plant used in rituals has value, spiritual meaning (Sada & Jumari, 2018) and many ritual plants have medicinal properties. The roots of *Rauvolfia vomitoria* are used in rituals to overcome madness caused by evil spirits, the healing is thought to be related to secondary metabolites that have anticonvulsant properties (Quiroz et al., 2016). This suggests that ethnobotanical studies of ritual ceremonies can explore the potential of plants as modern medicinal ingredients, food diversification, and plant conservation prospects.

One of the ethnic who still perform ritual ceremonies is the Javanese who live in Giring Village, Gunungkidul District, DI Yogyakarta Province. The Babad Dalam Ritual Ceremony (BDRC) is one of the traditions of the Yogyakarta society as an expression of the public's gratitude to God after harvesting and also a form of respect for Ki Ageng Giring, who was one of the figures who initiated the establishment of the Mataram kingdom. The BDRC is a series of activities by cleaning the road and ending with the peak, which is a ceremony that is held once a year on Kliwon Friday after the rice harvest (Dermawati et al., 2020). At the time of the babad dalam ceremony, there is a meaning that the community gathers together in a hall to perform a feast. The Kenduri is a prayer together bringing offerings in the form of rice and side dishes to be distributed to all villagers (Marsela, 2018).

Facts show that public interest in ritual ceremonies has declined due to environmental degradation and the neglect of socio-cultural norms. The symbols and meanings contained in rituals are a means of communication for local communities regarding the utilization and management of biodiversity (Mulyana, 2017), as a cultural heritage and resource for community development. Various plants used in rituals are deeply rooted in traditional ecological knowledge and beliefs and are a means of conveying traditional medicinal knowledge (Quiroz et al., 2016). Efficient conservation can only be achieved with long-term community participation and understanding (Geng et al., 2017), and documentation will help raise awareness among current and future generations (Rawat et al., 2019). Based on this, documenting plants in the BDRC is an initial step in exploring conservation practices in plant utilization. The aim of this research is to document the plants used in BDRC rituals in Giring Village, Gunungkidul District, Yogyakarta Special Region. This study reveals the role of ritual ceremonies in the preservation of bioculture as part of biodiversity conservation.

RESEARCH METHODS

This research is a qualitative research conducted by means of interviews. The research was conducted in Giring Village, Paliyan Sub-District, Gunungkidul Regency (Figure 1). The Giring Village is one of the national-level cultural villages so that various local wisdoms including BDRG are still maintained. The method used is the ethnobotany approach through surveys and interviews. Most of the local people in Giring Village are farmers, the rest are civil servants, entrepreneurs, and traders.

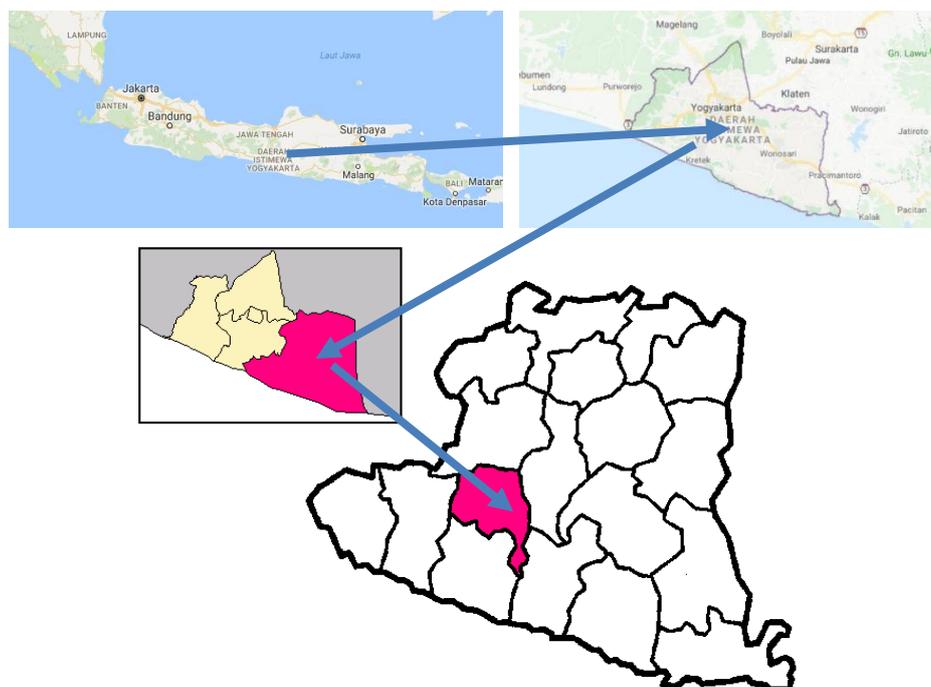


Figure 1. Map of research locations in Giring Village, Paliyan Sub-District, Gunungkidul District, DI Yogyakarta Province, Indonesia (Source google.com).

The Giring Village is administratively located in the Paliyan Sub-district, Gunungkidul District, DI Yogyakarta Province, Indonesia. The condition of Giring Village is lowland with limestone soil. The condition of this chalky soil can still be used by residents for agricultural land. The rice fields with calcareous soil can still be used by residents to be able to grow vegetables and rice to fulfill their daily food needs. The Giring village is one of the cultural villages in Yogyakarta. The Sultan awarded the village of Giring as a village of culture and religious tourism.

This research is a qualitative research conducted through surveys, interviews and participatory observations. A total of 25 general respondents and 5 key informants were interviewed. General respondents were determined by purposive sampling method with the criteria of having been involved in the BDRG process consisting of young people aged 15-20 years (5 people), aged 60-80 years (5 people), productive age between 25 - 55 years (15 people). To validate the respondents' knowledge of plants, they were asked 2-3 times and were also directly involved in BDRG activities. The key informants were 5 people consisting of the head of the village, *carik*, traditional stakeholders / caretaker of Mataram heritage, cultural leaders, and elders in the village of Giring. All respondents are ethnic Javanese. In this study, permit was obtained from official authorities at all sites. Participation was voluntary, with oral informed consent secured before interviews and observations, while the identities of informants were anonymized.

The survey was carried out using semi-structured interviews and free interviews covering the ceremonial process, local plant names, parts used, habitus, methods of use, sources of acquisition, and those used in the ceremony. The plants found were documented by means of photographs and then identified using Flora of Java I-III. Validation of the plant species used was carried out by exploring the plants used in the BDRC in the surrounding environment and then comparing them with existing references to determine the scientific name.

The data validation is performed by comparing the knowledge of each respondent. The data obtained were analysed qualitatively by explaining the BDRC process and the plants used. Plants are identified and then grouped into family, habitus, the part that is used and the source of the acquisition. In order to facilitate data grouping, it is processed using descriptive statistics and then a diagram or histogram is made. To enrich it, analysis was also carried out using secondary data.

FINDING AND DISCUSSION

The Babad (*babat* = to cut) Dalan (*dalan* = road) which means "tidy up and clean the road". The ceremony was carried out to commemorate the Wahyu Degan Gagak Emprit (a revelation to establish the Mataram Kingdom) obtained by Ki Ageng Giring and Ki Ageng Pemanahan. Ki Ageng Giring and Ki Ageng Pemanahan are believed by the local community in Giring Village to be the founders and founders of Giring Village. When viewed from its history the BDRC was motivated by the discovery of finding a robe, signature (stick), and a pile of bones (believed by the people to be Ki Ageng Giring's bones) on Friday Kliwon, after the rice harvest, when the community worked together to cut down the *tutuban* mat (thickets) or cutting down roads. Since then, the BDRC is held every year after the main harvest (rice harvesting as the main food in Giring Village). The BDRC utilizes various types of plants with different functions, including offerings, decorations, and symbols. This is an integral part of ethnobotanical studies (the relationship between humans and the plants around them).

In the implementation, the BDRC is carried out for 5 days, from Sunday to Kliwon Friday. The opening ceremony is held on Sundays which begins with a dance of reog performance (a dance that tells about the history of the formation of Giring Village) and is followed by other art performances in Giring Village. On Wednesday or Thursday, a puppet show (*wayang*) about Javanese ethnic legends such as the Mahabharata is performed. The climax of the ceremony takes place on Kliwon Friday which begins with the giving of offerings and market snacks as offerings in front of Mataram heirlooms (Figure 2) in the morning by the heirloom guard (in general, traditional leaders who are considered to be related to the village founder) then *Pusaka* (heirloom) Mataram was paraded to the village hall by village officials followed by the community who brought Gunungan (usually nine) who came from all hamlets in Giring Village. The plants used to compose the gunungan come from the crops of the villagers. At the peak of the event, a feast was held with a meal that had been prepared by the previous residents. Some of the typical foods in the BDRC are *gudangan* (*urap*), *tumpeng*, and *jenang* (Figure 2). The plants used at each stage vary because they have distinct meanings. For example, flowers with refreshing aromas, such as roses (*Rosa hybrida*), *Magnolia × alba*, *cananga* (*Cananga odorata*), and jasmine (*Jasmanium sumbac*), are used for offerings, which provide a calming or relaxing effect. To ensure the supply of ritual materials, local communities cultivate various plants in their yards as a conservation measure. The four types of plants above are types of plants that are present in many Javanese ethnic ritual ceremonies so that they are types of plants that are cultivated in yards (Lestari, 2019) and are part of biocultural conservation.



Figure 2. A. The *jajanan pasar* (plant from traders) and offerings are placed in front of the Mataram heirloom. B. Serving *tumpeng* with *gubahan* have used in the BDRD in Giring Village, Gunungkidul District (Researcher's collection).

Plants used as *jajan pasar* and *gunungan* are plants traded in markets, including bananas (*Musa* sp.), snake fruit (*Salacca zalacca*), peanuts (*Arachis hypogea*), and soybeans (*Glycine max*). These types are interpreted as traders' gratitude for the availability of supplies as an economic source. If studied further, these plants are food ingredients (sources of fruit or vegetables) that have been cultivated as both seasonal and annual plants. Bananas and snake fruit are indigenous Indonesian plants that bear fruit throughout the year and have been attached to various local wisdoms of the Indonesian people, including the Special Region of Yogyakarta. [Bimantio \(2019\)](#) stated that snake fruit is a major horticultural crop in Yogyakarta whose processing needs to be improved both vertically and horizontally.

In carrying out ceremonies including BDRD using various symbols and meanings to facilitate the delivery of messages to the community such as *gunungan* and *tumpeng* (mountain symbols) and various biodiversity as a source of human life. If studied further, this practice is one of the efforts to conserve the landscape and biodiversity. In developing countries including Indonesia, it is still shown that biodiversity conservation practices are largely determined by traditional ecological knowledge, and beliefs or the cosmos ([Iskandar & Iskandar, 2017](#)). Knowledge about the collection, use, and transfer of plants is closely related to cultural heritage while ecogeographic conditions influence the way plants are collected and used ([Kunwar et al., 2018](#)). The ritual beliefs of indigenous peoples are an important tool for understanding local communities and helping nature conservation ([Geng et al., 2017](#)).

The implementation of ritual ceremonies or traditional ceremonies is marked by the presentation of traditional foods including DBRD. Typical traditional food served in BDRD is *tumpeng* which is complemented with side dishes/vegetables as a symbol of intermediary to express gratitude and protection given by God and nature. Various ethnic groups in Indonesia have different traditional foods such as *terites* (soup from grass extract from cow intestines) served at the Karo ethnic year work ceremony ([Purba et al., 2018](#)), while *dengke simudur-udur* (Goldfish Cooked with Batak Spices) at the tradition of *Mambosuri* Toba Batak traditional ceremony for a pregnant woman with seven-month gestational age ([Silaban & Sibarani, 2021](#)). The presentation of offerings in the form of plants and livestock (processed in the form of traditional food) is an expression of the community's respect for nature, respect for life, gratitude to ancestors, asking for blessings, and disaster prevention for the family.

The local community in Giring Village, Gunungkidul District have been used 58 belonging 51 genera and 27 families in the BDRC (Table 1 and Figure 3). Most of the plants used belonging Poaceae (7 species), Solanaceae (4 species), and Fabaceae (8 species). The number of plant species found in this study is similar to that found in the Baduy ethnic group in the traditional rituals of the Baduy swidden farming system as many as 50 plant species representing 28 families (Iskandar & Iskandar, 2017). If studied further, if the BDRC event is carried out after the harvest, while swidden farming is carried out before the rice planting season, so even though the types of plants used are different. If the plants used in BDRC and swidden are food ingredients such as *Oryza sativa*, *Musa paradisiaca*, and *Curcuma domestica*.

Table 1. Diversity of plants used in the BDRC in Giring Village, Gunungkidul District, Yogyakarta.

Family	Scientific name	Local name	Part of used	Uses	Sources	Habitus
Amaryllidaceae	<i>Allium cepa</i>	Bawang Merah	Fruits	Spices	Market	Herb
	<i>Allium sativum</i>	Bawang Putih	Fruits	Spices	Market	Herb
Amaranthaceae	<i>Amaranthus sp</i>	Bayam	Leaves	Urap	Home garden	Herb
Anacardiaceae	<i>Mangifera indica</i>	Mangga	Fruits	Gunungan	Home garden	Tree
Annonaceae	<i>Cananga odorata</i>	Kenanga	Flowers	Offering	Home garden	Shrubs
Apiaceae	<i>Coriandrum sativum</i>	Tumbar	Fruits	Spices	Field	Herb
	<i>Daucus carota</i>	Wortel	Fruits	Gunungan	Home garden	
Arecaceae	<i>Cocos nucifera</i>	Blarak	Leaves	Offering	Home garden	Tree
	<i>Cocos nucifera</i>	Kelapa	Fruits	Jajan pasar	Home garden	Tree
	<i>Cocos nucifera</i> kultivar gading	Kelapa Gading	Fruits	Panjang ilang	Home garden	Tree
	<i>Cocos nucifera</i>	Degan	Fruits	Gunungan	Home garden	Tree
	<i>Cocos nucifera</i>	Janur	Fruits	Jajan pasar	Home garden	Tree
	<i>Salacca zalacca</i>	Salak	Fruits	Gunungan	Home garden	Tree
Brassicaceae	<i>Brassica chinensis</i> var. <i>parachinensis</i>	Sawi	Leaves	Vegetable	Field	Herb
	<i>Brassica oleracea</i> var. <i>capitata</i>	Kubis	Leaves	Urap	Home garden	Herb
Bromeliaceae	<i>Ananas comosus</i>	Nanas	Fruits	Gunungan	Home garden	Herb
Convolvulaceae	<i>Ipomoea batatas</i>	Ubi ungu, ubi kuning	Tuber	Gunungan	Home garden	Herb
Cucurbitaceae	<i>Cucumis sativus</i>	Timun	Fruits	Gunungan	Home garden	Herb
	<i>Cucurbita moschata</i>	Labu waluh	Fruits	Gunungan	Home garden	Herb
	<i>Luffa acutangula</i>	Ceme	Fruits	Gudangan	Home garden	Herb
Euhorbiaceae	<i>Aleurites</i> <i>moluccanus</i>	Miri	Seeds	Spices	Field	Tree
	<i>Manihot esculenta</i>	Ketela	Tuber	Gunungan	Home garden	Shrubs
Fabaceae	<i>Arachis hypogaea</i>	Kacang tanah	Seeds	Jajan pasar	Home garden	Herb
	<i>Cajanus cajan</i>	Gude	Seeds	Gunungan	Field	Herb
	<i>Glycine max</i>	Kacang kedelai	Seeds	Jajan pasar	Home garden	Herb
	<i>Pachyrhizus erosus</i>	Bengkoang	Tuber	Offering	Home garden	Herb
	<i>Parkia speciosa</i>	Pete	Fruits	Vegetable	Field	Tree
	<i>Sesbania</i> <i>grandiflora</i>	Turi	Flowers	Urap	Home garden	

	<i>Vigna radiata</i>	Toge	Young shoot	Urap	Field	Herb
	<i>Vigna unguiculata</i> <i>ssp. sesquipedalis</i>	Kacang panjang	Leaves	Urap	Field	Herb
	<i>Vigna unguiculata</i> <i>subsp. unguiculata</i>	Kacang tholo	Seeds	Jajan pasar	Home garden	Herb
Magnoliaceae	<i>Magnolia × alba</i>	Flowers Kantil	Flowers	Offering	Home garden	Tree
Meliaceae	<i>Lansium</i> <i>domesticum</i>	Duku	Fruits	Gunungan	Home garden	Tree
Myrtaceae	<i>Syzygium</i> <i>polyanthum</i>	Daun salam	Leaves	Urap	Home garden	Tree
Myrtaceae	<i>Syzygium</i> <i>samarangense</i>	Jambu air merah	Fruits	Jajan pasar	Home garden	Tree
Musaceae	<i>Musa paradisiaca</i>	Pisang	Fruits	Gunungan	Home garden	Herb
	<i>Musa acuminata</i>	Pisang raja	Fruits	Gunungan	Home garden	Herb
Oleaceae	<i>Jasminum sambac</i>	Bunga melati	Flowers	Offering	Home garden	Shrubs
	<i>Nyctanthes arbor-</i> <i>tristis</i>	Sri gading	Flowers	Offering	Home garden	Shrubs
Piperaceae	<i>Piper betle</i>	Daun sirih	Leaves	Spices	Home garden	Herb
	<i>Piper nigrum</i>	Merica	Seeds	Spices	Market	Herb
Pandanaceae	<i>Pandanus</i> <i>amaryllifolius</i>	Pandan	Leaves	Gunungan	Home garden	Herb
Poaceae	<i>Cymbopogon</i> <i>citratius</i>	Sere	Stems	Spices	Field	Herb
	<i>Gigantochloa atter</i>	Bambu	Stems	Gunungan	Home garden	Shrubs
	<i>Oriza sativa</i>	Padi	Seeds	Rice, Offering Wayang	Field	Herb
	<i>Oryza sativa var</i> <i>glutinosa</i>	Ketan	Seeds	Offering	Field	Herb
	<i>Saccharum</i> <i>officinatum</i>	Tebu wulung, Tebu ireng	Stems	Screen of wayang	Home garden	Herb
	<i>Setaria italica</i>	Jawut	Fruits	Gunungan	Home garden	Herb
	<i>Sorghum bicolor</i>	Tebon	Seeds	Gunungan	Home garden	Herb
	<i>Zea mays</i>	Jagung	Seeds	Gunungan	Field	Herb
Rosaceae	<i>Malus domestica</i>	Apel	Fruits	Offering	Home garden	Shrubs
Rosaceae	<i>Rosa hibrida</i>	Bunga mawar (merah dan putih)	Flowers	Offering	Home garden	Shrubs
Rubiaceae	<i>Morinda citrifolia</i>	Pace	Leaves	Urap	Home garden	Tree
	<i>Uncaria gambir</i>	Gambir	Getah	Offering	Home garden	Shrubs
Rutaceae	<i>Citrus reticulata</i>	Jeruk keprok	Fruits	Jajan pasar	Home garden	Tree
Sapotaceae	<i>Manilkara zapota</i>	Sawo	Fruits	Gunungan	Home garden	Tree
Solanaceae	<i>Capsicum annuum</i>	Cabai merah, keriting, hijau	Fruits	Spices	Home garden	Herb
	<i>Nicotiana tabacum</i>	Tembakau	Stems	Screen of wayang	Home garden	Shrubs
	<i>Solanum</i> <i>lycopersicum</i>	Tomat	Fruits	Gunungan	Home garden	Herb
	<i>Solanum</i> <i>melongena</i>	Terong hijau, Terong bulat, terong ungu	Fruits	Gunungan	Home garden	Shrubs
Styracaceae	<i>Styrax sp</i>	Kemenyan	Sap	Offering	Home garden	Tree
Zingiberaceae	<i>Alpinia galanga</i>	Laos	Fruits	Spices	Field	Herb
	<i>Kaempferia galanga</i>	Kencur	Fruits	Spices	Field	Herb
	<i>Zingiber officinale</i>	Jahe	Fruits	Gunungan	Market	Herb

Fabaceae has long been used by humans as a food ingredient, especially as a source of vegetable protein. In the BDRC ceremony, various Fabaceae species are used as ingredients in *gunungan* (*Cajanus cajan*), *jajan pasar* (*Arachis hypogaea*, *Glycine max*, *Vigna unguiculata* subsp. *Unguiculata*) and *urap* (*Sesbania grandiflora*, *Vigna radiata*), and vegetables (*Parkia speciosa*) as well as offerings (*Pachyrhizus erosus*). The use of *turi* (*S. glandiflora*) as an ointment is very typical in Giring Village and has not been widely used by other ethnic groups). The *turi* flower that is used has white flowers and red flowers, but the use of white flower *turi* is more preferred than the others. Empirically, it can be seen that *S. glandiflora* is very easy to find in the surrounding environment and thrives. In the processing, pink *turi* flowers are boiled until they are wilted and slightly tender.

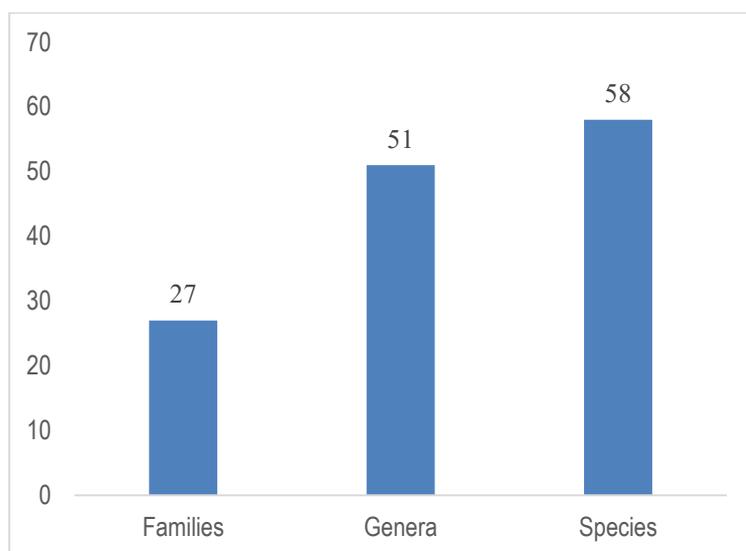


Figure 3. The number of families, genera and plant species used in BDRC in Giring Village, Gunung Kidul Regency, Yogyakarta

The high number of species in these two families is the result of various factors, including the large number of Poaceae species, with 11,500, many of which are economically useful (food), ecologically important, and have been evolutionary successful (Hodkinson, 2018). Some of the main plants in this family produce edible and highly nutritious seeds or grains known as cereals and legumes. Products from these two families contribute a significant portion of the energy, carbohydrates, and protein in the daily diet of people worldwide (Shavanov, 2021).

Differences in plant use knowledge can help in diversifying plant use strategies according to livelihood, culture and environment, and therefore, more studies measuring these aspects can improve ecosystem and cultural health in the region (Kunwar et al., 2018). *S. grandiflora* flowers have rich nutritional content and bioactive compounds making them an ideal ingredient for developing functional foods (Yasaswini et al., 2024). The use of *S. grandiflora* as a *urap* ingredient is a Gunungkidul bioculture rarely found in other regions. This plant has a high adaptability to water content, allowing it to grow well in dry areas.

Most of the local people in Giring Village work as farmers and most of the houses have yards. The yard is used by the local community as a source of various plants needed in daily life, including foodstuffs, ornamental plants and ritual ceremonies. A total of 42 species or more than 70% of the plants used in the BDRC were obtained from the yard (Figure 4). This shows that the yard is a landscape that is rich in biodiversity and is one of the lands used in biodiversity conservation. Cultivating plants in the yard

is an old tradition that has long been carried out as a source of fruits, vegetables, spices, tubers and medicinal plants (Silalahi & Nisyawati, 2018). Home gardens are a prime choice for plant conservation due to their easy access and relative proximity to homes. Plants cultivated in home gardens also serve as food sources, such as eggplant (*Solanum melogena*) and chili peppers (*Capsicum annum*). Home gardens are a traditional agroforestry system for plant conservation, providing ecosystem services, having a direct and positive impact on human livelihoods, and playing a role in conserving plant genetic resources (Suwardi et al., 2023).

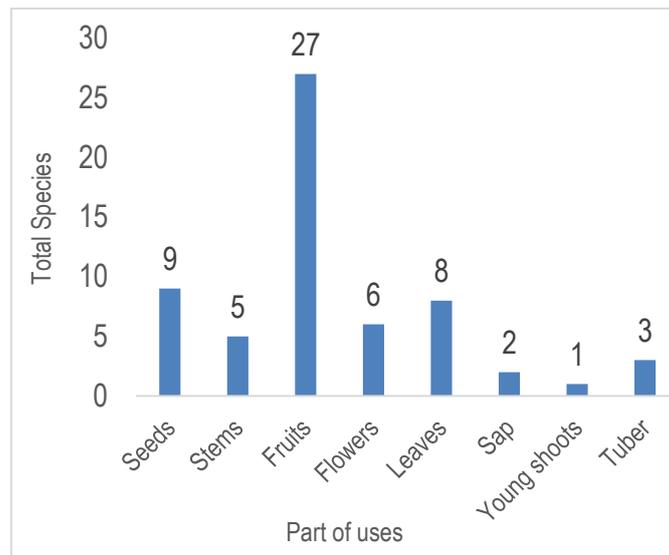


Figure 4. Parts of a plant used in BDRC in Giring Village, Gunungkidul District, Yogyakarta.

Figure 4 shows the diversity of plants used by organs in the BDRC. The fruit (27 species) and seeds (9 species) followed by leaves (8 species) and flowers (6 species) were the most commonly used organs. In the BDRC, the fruit is used mainly for the composition of the gunungan, while the flowers are used as an offering.

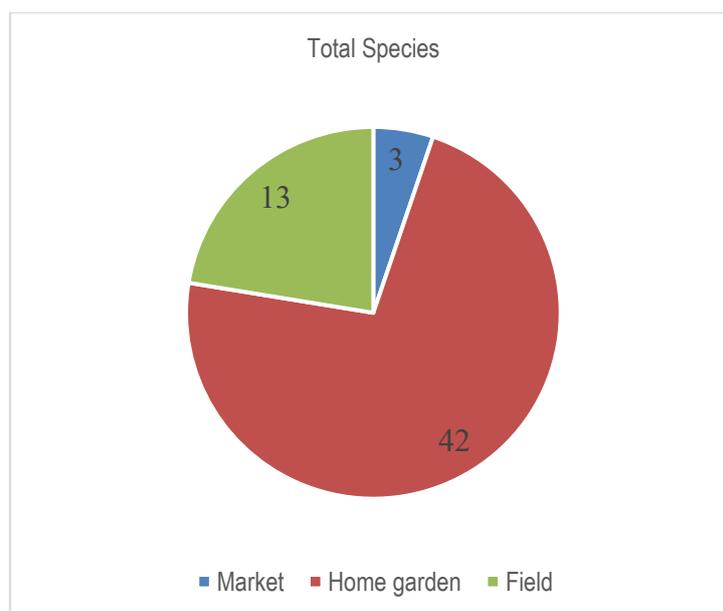


Figure 5. The circle diagram of plant diversity seen from the source for BDRC in Giring Village, Gunungkidul District, DI Yogyakarta Province.

Most of the plants used in the BDRC are obtained from the yard (Figure 5). Apart from being used in BDRC, some of the plants found in the yard have a dual function, especially as food and are widely used as a source of fruit. For example, *Lansium domesticum*, *Citrus reticulata*, *Manilkara zapota* are sources of fruit that are easily found in Giring Village. On the other hand, these plants also function as shade so that they can improve the microclimate. *Syzygium polyanthum* is a type of tree that is widely used as a cooking spice by local people and also as a source of food for various other animals. Most of the plants cultivated in the yard are indigenous to Indonesia, such as *Lansium domesticum* and *Syzygium polyanthum*, the use of which is an inseparable part of Indonesian bioculture.

In the BDRC in the Giring Village, Gunungkidul Regency, the benefits or functions of plants are divided into 10 benefits (Figure 6). show the benefits of plants in the BDRC which is divided into 10 utilization purposes. When viewed from the number of plants as ingredients for the mountains are much more (22 species), offerings (12 species) and cooking spices (10 species).

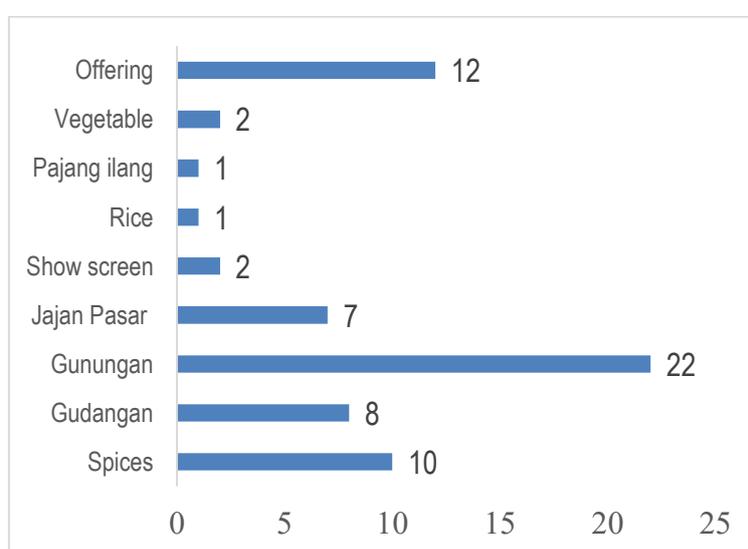


Figure 6. Benefits and number of plants in the BDRC in Giring Village, Gunungkidul District, DI Yogyakarta Province.

Gunungan is one of the ceremonial equipment of a cone-shaped (similar to a mountain). The basic shape of the *gunungan* (cone) is made from bamboo (*Gigantochloa atter*) to place various crops or crops. All types of plants that are harvested by the local people in the Giring Village are neatly arranged according to their shape and size so that they look attractive and beautiful to see. Plants that are large in size are placed at the bottom of the cone on the bottom, while those that are elongated and small are placed at the top of the mountain so that their position is firm. A total of 22 plant species are used to compose the mountains. Several types of plants found in the mountains include: cassava (*Manihot esculenta*), cucumber (*Cucumis sativus*), *Cucurbita moschata*, *Luffa acutangular* and *Ananas comosus*. The plants displayed in the *gunungan* come from donations from residents and each padukuhan (hamlet) compiles or gives one *gunungan*, so that in ceremonies, 9 *gunungan* are usually found.

Offerings are a means of community communication to the highest powers that have given life and become the center of hope for various positive desires of society, and / or a means of community communication to the forces which according to society's understanding have protected them so far. The offerings that have been made are placed in front of 3 Mataram heirlooms as an offering and honor to the ancestors through the Mataram Heirloom. The plants in the offering include 5 types of flowers, namely roses (*Rosa hybrida*), kantil (*Magnolia × alba*), cananga (*Cananga odorata*), sri gading (*Nyctanthes arbor-*

tristis) and jasmine (*Jasmanium sumbac*) which are flowers that produce a distinctive aroma (Figure 7). As a complement to the offering, betel leaves (*Piper betle*), tobacco (*Nicotiana tabacum*), gambir sap (*Uncaria gambir*) and kemeyan (*Styrax* sp.) were added. The offerings from generation to generation are always wrapped in banana leaves. This is done in accordance with the habits of the ancestors. Offerings can be in the form of various objects, but generally in the form of food, it is called culinary offerings. Some offerings are in the form of special objects that are believed to be favored by the highest power or supernatural powers.



Figure 7. A. The offerings with snacks from the market. B. Plants that make up the offerings in the BDRC in Giring Village, Gunungkidul District, DI Yogyakarta Province (Researcher's collection).

Frankincense is the trade name for the gum or balsamic resins produced from *Styrax* spp. The resin is the primary non-timber forest product from *Styrax* sp. (Susilowati et al., 2018; Kholibrina & Aswandi, 2021), known as benzoin (Sohail & Alam, 2022) or styrax benzoin. *Styrax benzoin* generally contains cinnamic acid, benzoic acid, benzaldehyde, vanillin, and benzyl benzoate (Sohail & Alam, 2022). Deforestation and forest conversion have resulted in a decline in frankincense production, which has implications for supply.

In general, ritual plants are grouped into two categories, namely those burned as incense, and those used for decoration (Geng et al., 2017). Plants used as incense vary between regions and countries depending on the resources available in the surrounding environment. Frankincense is an indigenous Indonesian plant that has been traded for hundreds of years. Frankincense is the trade name for the sap or balsamic resins produced from *Styrax* sp. Resin is the primary non-timber forest product from *Styrax* sp. (Susilowati et al., 2018; Kholibrina & Aswandi 2021), known as benzoin or styrax benzoin. *Styrax benzoin* generally contains cinnamic acid, benzoic acid, benzaldehyde, vanillin, and benzyl benzoate (Sohail & Alam, 2022), which produce a distinctive aroma that has a relaxing effect and is therefore used as an ingredient in incense.

The aroma produced by the plants used for the offerings is thought to have come from essential oils. Local people believe that the fragrant aroma is an offering favored by the ancestors. Flower essential oil of *C. odorata* which has β -caryophyllene constituents (Giang & Son, 2016; Mahfud et al., 2017; Rachmawati et al., 2013), linalool, α -humulene, (Giang & Son, 2016; Rachmawati et al., 2013), germacrene D (Giang & Son, 2016; Rachmawati et al., 2013; Mahfud et al., 2017), (E, E) - α -farnesene, (E, E) -farnesol, benzyl benzoate, (Giang & Son, 2016), benzyl benzoate, caryophyllene oxide (Mahfud

et al., 2017). The use of *Cananga odorata* in ceremonies has implications for the community's efforts to cultivate it in the yard and directly impacts its preservation. Spices is a variety of ingredients used to make food tastier and tastier. Various mandatory foods that are served to eat together in the babad ceremony are tumpeng, ointment / gundangan, jenang and snacks from the market (plants donated by traders).

Several types of cooking spices used include: *Kaempferia galanga*, *Curcuma longa* and *Zingiber officinale*. Tumpeng is a savory (Figure 7) and flavorful rice (prepared beforehand with various spices) which is pressed into a cone. Various spices that produce aroma used in tumpeng are lemongrass (*Cymbopogon citratus*), coconut milk (*Cocos nucifera*) and bay leaf (*Syzygium polianthum*). Urap is a kind of vegetable food made from various stew of leaves (spinach, cabbage), flowers (turi), fruit (long beans), young shoots (bean sprouts) then added with grated coconut that has been steamed and given various spices as shown in the Table 1.

The urap or by the local community in Giring Village, also known as gundangan, is a variety of leaf and vegetable stew mixed with grated coconut fruit that has been seasoned with various kinds of spices (Figure 8). Urap is a complement to the babad dalam equipment in tumpeng. Their ancestors used plants that can live in Gunungkidul to make a complement to tumpeng, namely ointment. The urap is made by mixing shredded coconut, shallot, crushed garlic, lime leaves, and kencur to make the ointment more delicious. Then the ointment is mixed with plants from the Giring residents' crops which can be boiled and eaten, for example turi, long bean leaves, long beans, and bean sprouts. Tumpeng is used as a means of giving thanks for the life that has been given to the one and only God because of its conical shape and towering upwards. In addition, tumpeng is also used as a suggestion for saying thanksgiving for rice and crops that have been harvested by the Giring community. Tumpeng is rice shaped into a cone around which ointment is placed for side dishes.



Figure 8. The urap or gundangan.
(A. Boiled vegetables.; B. Urap (vegetables that have been mixed with grated coconut and spices)).

The jajan pasar are an offering in the form of merchandise (plants + crackers) given by traders at Giring market and used as an offering placed in front of 3 Mataram heirloom spears. The Mataram heirloom spear is a legacy of the Mataram kingdom that was inherited and stored in Giring Village, which is believed by the community to protect Giring Village from various kinds of calamities and disasters. Some of the plants that are grouped into market snacks include cucumbers (*Cucumis sativum*), salak, and oranges. If traced further, all market snacks are plants that can be directly consumed in fresh form (Figure 9).



Figure 9. The jajan pasar have been used in the BDRC in Giring Village, Gunungkidul District, DI Yogyakarta Province (Researcher's collection)

The types of plants, especially fruit trees used as market snacks, are relatively varied according to their availability. This shows that the traditional knowledge of local communities is not static but adaptive and offers a culturally based model for global bio-cultural conservation (Handoyo et al., 2025). On the other hand, the supply of plants in the market can be used as an indicator to determine their sustainability (Franco et al., 2020; Silalahi et al 2015).

CONCLUSION

The babad dalam ritual ceremony (BDRC) is a series of ritual ceremonies performed by local people in Giring Village to commemorate a highly respected figure who is believed to be the founder of the village and also as a ceremony to express gratitude for the harvest. Local communities in Giring Village, Gunungkidul utilize 58 species spread across 51 genera and 27 plant families which are used in the BDRC. The benefits of plants in the BDRC are far more of the ingredients for the mountains (22 species), offerings (12 species), spices (10 species) and jajan pasar (7 species). The roses (*Rosa hybrida*), *Magnolia × alba*, cananga (*Cananga odorata*), and jasmine (*Jasmanium sumbac*), are used for offerings, which plants that are present in many Javanese ethnic ritual ceremonies so that they are types of plants that are cultivated in yards and are part of biocultural conservation.

ACKNOWLEDGMENT

We would like to thank the people of Gunungkidul who are willing to provide information and are willing to be respondents in the research. We would like to thank the funding provided by Universitas Kristen Indonesia.

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