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Plants Used in the Nyadran Tradition: An Ethnobotanical Study in Balongdowo Village, Sidoarjo, Indonesia

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ABSTRACT

Biodiversity plays an important role in supporting cultural practices and tradition within local communities, where various plant species are utilized not only for practical purposes but also for symbolic and spiritual meanings embedded in cultural rituals. This study aims to document and preserve the Balongdowo community's local ethnobotanical knowledge of plant use in the Nyadran tradition. The research was conducted through observation, structured interviews with key informants, documentation, and literature review. Data were analyzed descriptively following the stages of data collection, reduction, presentation, and conclusion drawing. The results show that the Nyadran tradition involves various plant species used as components of offerings, ritual equipment, and symbolic elements. Nine plant species were identified, including pisang (*Musa spp.*), pandan (*Pandanus amaryllifolius*), padi (*Oryza sativa*), krisan (*Chrysanthemum sp.*), melati (*Jasminum sp.*), kenanga (*Cananga odorata*), champaca (*Magnolia champaca*), kamboja (*Plumeria sp.*), and mawar (*Rosa damascena*). Each plant has a specific philosophical meaning related to fertility, purity, protection, gratitude, and spiritual connection with ancestors. The use of fresh plant materials also reflects ecological values and local conservation practices. Plants are obtained from homegardens and markets, with most species categorized as Least Concern on the IUCN Red List. Community involvement, including women and youth, contributes to the preservation of cultural values and the sustainability of ritual plants. This study highlights the importance of ethnobotanical approaches in understanding human-plant relationships and supports the conservation of both cultural heritage and biodiversity within coastal communities.

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INTRODUCTION

The relationship between humans and plants has evolved and demonstrates a multidimensional interconnectedness (Patil

& Vidyashree, 2020). Plants serve as a source of life by providing food, medicine, clothing, and natural dyes (Ridwan & Ribawati, 2025). These functions are not

only practical; plants also carry philosophical, spiritual, and aesthetic meanings in the lives of various cultures (Mualimin et al., 2025). Sociocultural aspects show that society often utilises plants in religious ceremonies, ritual customs, and spiritual activities, reflecting a view of life that emphasises harmony among humans, nature, and the God or Creator (Nafi'ah & Khusyairi, 2023). The relationship between humans and plants reflects a mark of philosophical and religious relationships passed down from generation to generation, not just material ones. The scientific study that traces these interactions is known as ethnobotany.

Ethnobotany is a branch of science that examines the knowledge, beliefs, and practices of communities in recognizing, utilizing, and interpreting plants (Hafida et al., 2020). Indonesia's abundant biodiversity and cultural diversity make ethnobotanical studies highly relevant. Each region has unique traditions that involve plants in ritual activities, such as the use of flowers and leaves in *canang sari* (a traditional Balinese ritual offering) (Valentino et al., 2023), the implementation of *seren taun* in Sunda as an expression of gratitude for the results of the earth (Syarifatul et al., 2025), as well as the traditions of *selamatan* and *Nyadran* in Javanese society (Rambey & Lubis, 2022). One form of Javanese ritual that still survives today is the *Nyadran* tradition.

The variety of *Nyadran* practices across regions demonstrates unique characteristics. For example, the community in Kepetingan Hamlet, Balongdowo Village, Sidoarjo Regency, observes this tradition as a form of respect for the grave of Dewi Sekardadu (Goddess), a fishing ancestor who died while searching for her son, Raden Paku, also known as Sunan Giri (Al Aliyah et al., 2020). This activity holds significant spiritual, social, and ecological value. Fishermen perform *Nyadran* as an expression of gratitude to the God for abundant marine produce and prayers for safety and prosperity (Sangadji et al., 2015).

The procession includes cleaning graves, praying together, and presenting offerings of *tumpeng* (rice cone), *lauk pauk* (side dishes), garden flowers, agricultural produce, and various types of plants. Each type of plant has its philosophical meaning. A study by Ma et al. (2024) reveals that flowers in traditional rituals are closely associated with spiritual meaning, prayer, and self-purification.

Several studies on the *Nyadran* tradition have been conducted, but most of them focus only on social, cultural, and religious aspects. A study by Kusuma (2021) highlighted *Nyadran's* role in strengthening social solidarity and inter-community relations. Muttaqin & Fitriansyah's (2022) research examined this tradition from a theological perspective and found a potential

shift in meaning in its practice. Winisudo & Fauzi's (2021) study emphasized the sociological dimension to understand the motivations of fishing communities involved in the ritual, while Fatimah & Susilo's (2020) research outlined the symbolic meaning of the *Nyadran* procession as a reinforcement of local cultural identity. A more in-depth study would focus on ethnobotany of *Nyadran*, especially the inventory of plants used, their symbolic functions, and their relationship to ecological values and cultural conservation. There is still not much to be found.

An ethnobotanical approach is needed to examine the relationships among humans, culture, and plants in the *Nyadran* tradition of coastal communities. Scientific documentation of types of plants used in offerings and their symbolic meaning is important to ensure the sustainability of culture and biodiversity. Therefore, this study aims to document and analyze the community's local knowledge of traditional plant utilization in the *Nyadran* tradition. Specifically, the study identifies the plant species involved, their habitus, plant parts used, functions, stages of use in the ritual, philosophical meanings, and related conservation practices.

This effort has strategic value in increasing public awareness of the importance of local wisdom in resource

management and sustainability. Local wisdom also plays an important role in maintaining the balance between cultural practices and environmental conservation. Furthermore, the ethnobotanical approach has the potential to bridge modern science with traditional community practices, resulting in contextual conservation strategies rooted in local culture.

RESEARCH METHODS

Study Design

This research uses a field exploration method, which involves directly observing and identifying research objects at the research location. This method aims to collect data on the types of plants used in implementing the *Nyadran* Tradition in Kepetingan Hamlet, Balongdowo Village, Candi District, Sidoarjo Regency, East Java in November 2025. The study area is shown in Figure 1.

Sidoarjo Regency has an area of 719.34 km² divided into 18 sub-districts (BPS Sidoarjo, 2024). Sidoarjo Regency is known as the "Delta" city because it lies between two large rivers, namely the Brantas River and the Surabaya River in the north, and the Porong River in the south. According to data from the BPS Sidoarjo (2024), the population of Balongdowo Village totaled 157,791, comprising 78,922 men and 78,869 women.

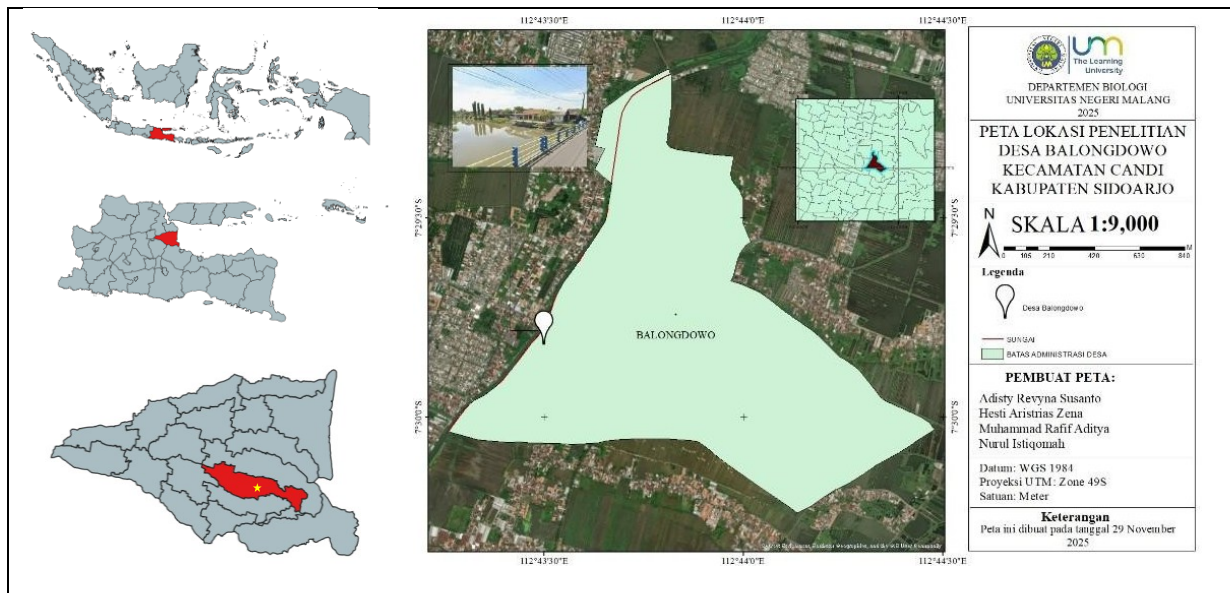


Figure 1. Field exploratory location

This location was chosen intentionally because Balongdowo Village is still traversed by the river flow, which is the main source of livelihood for the local community, especially as mussel seekers and cultivators. The community's proximity to the aquatic environment has helped *Nyadran* remain largely preserved in its form, grateful for the source of power, nature, that has supported their lives.

Field exploration is carried out through direct observation during the tradition, recording the types of plants used, and documentation in the form of photographs and field notes. The data obtained is then supplemented through structured interviews with informants to strengthen and verify information related to the use of plants in the tradition.

Procedure

The research process was carried out in three phases: pre-research, fieldwork, and

post-research. The pre-research phase included a literature review and an initial survey to determine the location, identify key informants, and prepare observation and interview tools. The fieldwork process was carried out through observations of *Nyadran* activities, in-depth interviews with traditional leaders, village elders, and residents involved, and data collection on the types of offering plants and their use methods. The post-research phase included analysis, reduction, and report preparation based on the field investigation results. Devices that are used include observation sheets, guidelines, structured interviews, a written tool, a voice recorder, a digital camera, and a field notebook.

Data Collection

The data collection phase was conducted in accordance with official permission from the village hall and in accordance with research procedures prior to

data collection. The data collection process involved structured interviews, observation, documentation, and a literature review. Triangulation across these data sources was used to ensure the richness and credibility of the collected information.

Interview

Interviews were conducted in a structured manner to gather information directly from informants about the plant used in the implementation of the *Nyadran*. The instrument used is a sheet interview. In an interview, to determine the technique sampled. The technique used is purposive sampling, selecting initial informants based on criteria: traditional fielders recognized by the community, with deep knowledge of and tradition, who are directly involved in the implementation of the *Nyadran* tradition. The key informants in this study were two people: the village head and a community leader.

Furthermore, using the snowball sampling technique, key informants were asked to recommend additional informants or regular informants who met the research criteria for the *Nyadran* tradition. The regular informants consisting of two mothers involved in implementing the *Nyadran* and one young generation member who also participated in the *Nyadran*. Thus, the total number of informants selected included the village head, community leaders, the public, and participants in the

Nyadran. Question submitted in the interview includes the local name of the plant, the part of the plant used, how to use it, stages, philosophical meaning, as well as conservation.

Observation

Observation done with direct implementation of the *Nyadran*. The purpose of this observation is to obtain a direct picture or situation regarding the various forms of preservation carried out by the Balongdowo community regarding aspects involved in the *Nyadran*. Observations in this study include efforts to preserve plants used as ritual offerings after the *Nyadran*, community-based preservation and maintenance of traditional boats, management of the river as the location of the *Nyadran*, preservation of traditional ritual equipment, and the involvement of the younger generation in various *Nyadran* cultural preservation activities. The instruments used are observation sheets and field notes.

Documentation

Documentation was conducted to obtain visual evidence and supporting archives. Documentation was collected through photographs, recordings, and other supporting documents relevant to the *Nyadran*. Furthermore, documentation serves as supplementary information from interviews and observations, making the data obtained more complete and accurate.

Literature review

A literature review was conducted to provide a foundation for the study. It is with the sources used for the literature review, namely, scientific articles and books related to the Nyadaran Tradition.

Data analysis

The data in this study were analyzed descriptively. According to Miles, Huberman, and Saldana (2014), this involves four stages: data collection, data reduction, which is the process of selecting, focusing, and simplifying data according to research needs, including identification. scientific plants referring to the International Plant Names Index (IPNI): <https://www.ipni.org/> database and Plants of the Word Online (POWO): <https://powo.science.kew.org/>, meanwhile the conservation status is confirmed through The IUCN Red List of Threatened Species: <https://www.iucnredlist.org/en>. Data were presented in narrative, table, and image forms to facilitate understanding and support the drawing of conclusions based on the research findings.

RESULTS AND DISCUSSION

The *Nyadran* is one of the local wisdoms of the coastal communities of Sidoarjo, which is passed down from generation to generation. *Nyadran* can generally be understood as a ritual of gratitude and respect. It is a ritual of

worshipping ancestors and a prayer for safety, particularly for the blessings of marine products.

Several studies suggest that *Nyadran* has existed since the Hindu-Buddhist era and has undergone acculturation with the arrival of Islam in Java, thereby incorporating Islamic elements into its practice (Al-Aliyah et al., 2020). The *Nyadran* has become a cultural identity of coastal communities that is still maintained today. It has even undergone numerous changes in the practice and consequences of modernization.

The *Nyadran* on the Sidoarjo coast places Dewi Sekardadu (Goddess) in a prominent position because her grave is the center of the ritual. The communities of Balongdowo, Sawohan, and Bluru in the southern coastal area regard Dewi Sekardadu as an ancestral figure with strong historical and spiritual significance, particularly for fishermen. This belief has developed through cultural narratives about the journey of Dewi Sekardadu's body and stories associated with the early history of Islam in Java. Consequently, her tomb is revered as a pilgrimage site where coastal communities pray for safety and blessings.

Relatedness Dewi Sekardadu, with the *Nyadran*, examines how the community understands the spiritual connection between pilgrimage and safety, especially for fishermen. The annual *Nyadran* ritual at

the tomb (*makam*) of Dewi Sekardadu is considered a form of prayer for protection, for smooth sustenance, and for gratitude for the sea's bounty. This belief aligns with the community's view that the remains of Dewi Sekardadu, which "washed" to Kepetingan, signaled that she was chosen to "reside" in the area, making her tomb a crucial point for coastal community ritual activities (Hariyanto et al., 2020).

The series of *Nyadran* events usually begins with coastal communities departing by boat for the grave of Dewi Sekardadu in the hamlet of Balongdowo. This is the center of *Nyadran* activities for residents of Balongdowo, Sawohan, Bluru Kidul, and the surrounding areas. In villages, other activities include cleaning graves, communal prayers, offerings, and bringing *uborampe* (flowers, food, and symbols of well-being), as described in an ethnographic study of *Nyadran* communication in Sidoarjo.

Ubarampe are ritual equipment or offerings in Javanese tradition consisting of plants and animals with specific purposes and philosophical meanings (Adinugraha et al., 2024). These *ubarampe* or offerings elements are also found in various *Nyadran* traditions in other parts of Java, such as in Kulon Progo, where *tumpeng* (rice cone), agricultural produce, and flowers are carried as symbols of gratitude and hope for safety (Aryanti, 2023).

Based on interviews with informants, the *Nyadran* in the Balongdowo Kepetingan region demonstrates the strong role of women in preparing ritual needs. Each participating boat is required to carry a *tumpeng* (rice cone) and a *sandingan*, which are handmade by the women. The *sandingan*, consisting of bananas and flowers, is placed on top of the *tumpeng* as a symbol of prayer and offering. Upon arrival at the tomb of Dewi Sekardadu, the *tumpeng* and *sandingan* are distributed to residents and participants as a symbol of togetherness and gratitude.

Young people also play an important role in preserving this tradition by assisting in various stages of preparation, such as transporting offerings, organizing ritual equipment, and coordinating participating boats. In addition, they document the *Nyadran* procession through photos, videos, and social media, helping to share information about the tradition more widely. Their participation strengthens a sense of cultural ownership, encourages more creative and adaptive engagement, and helps ensure that the *Nyadran* tradition remains sustainable and relevant amid social and technological changes.

People also bring small chickens as additional offerings alongside the *tumpeng*. These chickens are typically brought by children who have never participated in the *Nyadran* before, symbolizing both safety

and their introduction to ancestral traditions. Once a child has participated in *Nyadran*, they are not required to bring a chicken in subsequent years. This symbolism reflects the community's effort to instill cultural values in the younger generation, highlighting the tradition's educational function, as documented in studies on uborampe and the educational values of *Nyadran* in Javanese culture.

The *Nyadran* in Balongdowo Village is carried out through several stages, beginning at night and continuing throughout the day. Various types of boats are used in the procession, each serving different functions. One of the boats carries equipment such as sound systems, loudspeakers, and other entertainment devices. These boats provide entertainment for people watching the *Nyadran* procession from the riverbanks. They usually travel along the river route, moving from Klurak Village toward Balongdowo Village, passing through the main river channel that becomes the center of *Nyadran* activities. The presence of these entertainment boats reflects the festive aspect of the *Nyadran* tradition, which helps strengthen social bonds and encourage broader community participation.

On a moment's observation, it found other boats without cargo, which were only used to transport shawls to the graves of ancestors, specifically the grave of Dewi

Sekardadu. This type of boat is also used in ritual prayer processes, and its purpose is to pray together with the community in the cemetery area, departing at night before dawn (Putri, 2020).

Both types of boats serve dual purposes, from a *Nyadran* to a social celebration. On the one hand, there are elements of spirituality and customs that are carried out with great respect. On the other hand, elements of entertainment also appear as profane expressions of community joy and togetherness. The combination of sacred and profane aspects reflects the cultural dynamics within coastal communities, where tradition and modernity coexist and continuously interact.

According to residents, this indicates a shift in the ritual's implementation. Previously, *Nyadran* was often performed at night and attracted more participants, especially older women. However, these evening activities are now less common due to limited resources. age participant, and change the rhythm of life in public. Phenomenon changes values and form implementation. This aligns with the study's findings, which state that modernization has also influenced the *Nyadran*, particularly through the emergence of entertainment elements and the simplification of ritual activities (Firdauzi et al., 2025).

The community continues to strive to preserve the main elements of tradition,

namely providing offerings, visiting graves, and reading prayers, so that the meaning is spiritual as well as the connection to the community and the coastal environment is maintained. *Nyadran* serves as a sacred ritual while also strengthening social solidarity and reminding the community of the importance of maintaining ecological balance.

The *Nyadran* is carried out at night, beginning with the preparation of ritual ingredients such as *tumpeng*, *sandingan*, or offerings, and the setting up of tents on the boat. At the stage of making offerings or *sandingan*, several plant materials are used as completeness offerings, for example banana as fruit offerings And leaf banana as a base and banana stems as a place for offerings, the use of banana plants has a philosophical meaning, namely a symbol of fertility and abundance of sustenance, parts of the plant are used in fresh condition without going through a drying process (Fahmi & Brata, 2023).

Food is mainly *tumpeng*, made from rice cooked through a process of washing, boiling, and steaming. It also has its own meaning and philosophy as a symbol of life, prosperity, and gratitude. After *Isha* time, all the food and equipment were brought into the boat. Then, around 9:00 p.m., the participants moved to the ceremony site and gathered around the bridge as the starting point before the offerings were presented.

The offering is carried out at the confluence of two rivers, which is considered the ritual's center (Dhani et al., 2024). At this stage, plant materials such as flowers (*Krisan*, *Melati*, *Kenanga*, *Cempaka*, *Kamboja*, *Mawar*), bananas, and *tumpeng* are placed alongside other ritual equipment, then anchored as a symbol of an offering to nature and the ancestors. The use of certain flowers, is not merely a matter of choice; each flower has its own characteristics—Mark philosophy in the *Nyadran* tradition. Flower Chrysanthemum symbolizes sincerity, new hope, respect for ancestors (Mayastuti et al., 2023); Jasmine flowers symbolize purity, sincerity, respect for God's ancestors and flowers symbolize the spirit, and presence spiritual (Ma'rufah et al., 2025); flower Cananga symbolizes fragrance spirit, respect, And connection between man with nature/spirit; flower Cempaka symbolizes purity, peace, lighting spiritual, fragrant service ancestors (Mauritio, 2023); flower Cambodia symbolizes united life and death, the transition of the spirit, honoring the dead; and roses symbolize a symbol of love, affection, beauty and respect (Septiari et al., 2024). The identification, cultural significance, source acquisition, and conservation status of plants used in the *Nyadran* are presented in Table 1.

Table 1. Ethnobotanical characteristics of plants used in the *Nyadran* tradition

No	Name Plant	Name Latin	Name Vernacular	Habitus	Part used	Method usage	Meaning Philosophical	Source Acquisition	Status Conservation
1	<i>Pisang</i>	<i>Moses</i> spp.	<i>Gedebog</i> (trunk), <i>gedhang</i> (fruit banana)	Herbs	Trunk, leaves, fruit	Sliced/cut, fresh	Fertility and abundance of sustenance.	Garden personnel, buy	<i>Least Concern</i>
2	<i>Pandan</i>	<i>Pandanus amaryllifolius</i>	<i>Pandan</i>	Bush	Leaf	Sliced	Holiness, protection, balance between the world's physical and spiritual.	Private garden	<i>Data Deficient</i>
3	<i>Padi</i>	<i>Oryza sativa</i>	<i>Beras</i> (Rice)	Herbs	Rice/Grains	Boiled/cooked	Life, prosperity, and gratitude	Buy	<i>Least Concern</i>
4	<i>Krisan</i>	<i>Chrysanthemum</i> sp.	<i>Krisan</i>	Herbs	Flower	Fresh	Eternity, sincerity, hope, and respect for ancestors	Garden personnel, buy	<i>Not Evaluated</i>
5	<i>Melati</i>	<i>Jasmine</i> sp.	<i>Melati</i>	Bush	Flower	Fresh	Purity, sincerity, and respect to God's and ancestors. Flowers that symbolize the soul, spiritual presence	Garden personnel, buy	<i>Not Evaluated</i>
6	<i>Kenanga</i>	<i>Cananga odorata</i>	<i>Kenanga</i>	Tree	Flower	Fresh	Fragrance spirit, respect, and the connection between humans and nature/spirit	Garden personnel, buy	<i>Least Concern</i>
7	<i>Cempaka</i>	<i>Magnolia champaca</i>	<i>Kantil</i>	Tree	Flower	Fresh	Purity, peace, lighting spiritual, fragrant service ancestors.	Garden personnel, buy	<i>Least Concern</i>
8	<i>Kamboja</i>	<i>Plumeria</i> spp.	<i>Kamboja</i>	Tree	Flower	Fresh	Life and death that united, transition spirit, respect to those who have passed away.	Garden personnel, buy	<i>Least Concern</i>
9	<i>Mawar</i>	<i>Rosa damascena</i>	<i>Mawar</i>	Bush	Flower	Fresh	Love, affection, beauty, and reverence	Garden personnel, buy	<i>Data Deficient</i>



Figure 2. *Nyadran* tradition location

The procession continues to the tomb of Dewi Sekardadu, where the tomb's surface is cleaned by sweeping, tidying, sprinkling, and perfuming. Fresh flowers are sprinkled or placed as a symbolic form of respect (Fauzi & Wibowo, 2023). The process continues with a feast, where food made from plants is served. Which has been processed, like rice, and another dish brought from the house are consumed together by all participants. The location of *Nyadran* is shown in Figure 2.

Procession tradition *Nyadran* ended with the activity of bathing in place *Kupang* moment water install come, part inhabitant utilise time. To look for *Kupang*, although the results are not always predictable because its growth is affected by the rainy and dry seasons. *Kupang* thrive during specific seasons, but their existence remains mysterious, as they often die when their numbers become too numerous. After the *Nyadran* procession and activities at the *Kupang* site, residents return to the beach to rest.

The *Nyadran* tradition in Sidoarjo uses a variety of plants for flower arrangements, wrapping leaves, and aromatic plants, which are practically obtained through home gardening *and* market purchases. Field observations and local ethnographic studies show that many families grow jasmine, roses, pandan, and bananas in their yards. The house serves as the primary source of ritual materials, temporary requests, and the mass moment peak of the ceremony, which suppliers from the market and the region generally fill. Efforts to strengthen Homegardens should be directed towards self-sufficiency in the supply of ritual plants, so that communities no longer rely on market purchases. Communities can grow key species such as jasmine, roses, mini ylang-ylang, fragrant pandan, and bananas through simple propagation techniques such as cuttings. stem, separation of offspring, or layering, which is relatively cheap and easy to adopt.

Community-based cultivation training, as demonstrated in the agrobiodiversity enhancement program

yards in Bengkulu and Bali, has been proven capable of increasing plant availability in household gardens and reducing dependence on external supply (Sujarwo & Caneva, 2015; Wiryono et al., 2023). The implementation of a homegarden agroforestry model can significantly increase plant diversity in residential yards and is suitable for application in densely populated areas such as Sidoarjo (Adityo & Shibata, 2025).

The use of compost fertilizer and a house ladder made from organic kitchen waste strengthens productivity. It enhances the growth of decorative and aromatic plants, such as jasmine and rose, which respond positively to organic inputs (Aditya et al., 2022). The overall strategy makes the home garden a small, culture-based conservation space that provides ritual plants independently, thereby minimizing the pressure to source wild plants and supply the market, and maintaining the continuity of the *Nyadran* tradition.

CONCLUSION

The *Nyadran* tradition in Balongdowo Village reflects a close relationship between cultural practices and plant biodiversity through the utilization of various plant species in ritual activities. The plants are used as offerings, scattered flowers, and ritual equipment, carrying symbolic meanings related to fertility, purity, respect

for ancestors, and the harmonious relationship between humans and nature. Most of the plants used are categorized as Least Concern in terms of conservation status and are obtained from homegardens and local markets, indicating the availability and sustainable use of plant resources in the community. The involvement of women and younger generations in the implementation of the tradition also demonstrates community participation in maintaining cultural heritage while supporting the conservation and sustainable use of plant biodiversity.

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