Beyond species records: access, food roles, and changing use of wild and forest-associated edible plants in Indonesia

Yen Yen Sally Rahayu, Angga Dwiartama, Peniwidiyanti, Dian Rosleine, Wawan Sujarwo

Correspondence

Yen Yen Sally Rahayu[1]*, Angga Dwiartama[2], Peniwidiyanti[1], Dian Rosleine[2], Wawan Sujarwo[1]

[1]Research Center for Ecology, National Research and Innovation Agency (BRIN), Cibinong, Indonesia.
[2]School of Life Sciences and Technology, Institut Teknologi Bandung, Bandung, Indonesia.

*Corresponding Author: yenyenrahayu@gmail.com; yen.yen.sally.rahayu@brin.go.id

Ethnobotany Research and Applications 35:75 (2026) - http://dx.doi.org/10.32859/era.35.75.1-28
Manuscript received: 27/08/2026- Revised manuscript received: 01/10/2026 - Published: 03/10/2026

Review

Abstract

Background: Extensive records exist for Indonesian wild and forest-associated edible plants, but their position in local food practice is less clear. This scoping review examines access pathways, food roles, and changes in the use of these resources in forest-linked landscapes.

Methods: The review was conducted using ethnobotanical and food-related literature, following the PRISMA-Scoping Review reporting guidance. A total of 90 studies with direct analytical relevance to the use of wild and forest-associated edible plants were retained as core evidence.

Results: Access was documented through forest and protected area interfaces, managed tree-based systems, village and mixed-rural settings, coastal/mangrove and wetland environments, and market circulation. The plants entered food practice mainly as vegetables, flavorings, seasonal fruits, local carbohydrate foods, processed foods, and ceremonial foods. Continued or changing use was linked to whether plants remained accessible, familiar, and practical to prepare, while decline was associated with reduced availability, weaker knowledge, time constraints, taste shifts, and greater reliance on purchased foods.

Conclusions: Wild and forest-associated edible plants in Indonesia function as landscape-based food resources whose significance cannot be inferred from species presence alone. Their relevance depends on access, preparation, and integration into local food practices. Evidence on actual food use and dietary contribution needs to be strengthened before linking edible biodiversity with food system planning and public food initiatives.

Keywords: Wild and forest-associated edible plants, Forest-linked landscapes, Ethnobotany, Food practices, Indonesia

Background

Diet quality remains a major challenge in many parts of the world. Beyond calorie adequacy, food systems are increasingly marked by diet simplification and the narrowing of everyday food choices (Burlingame & Dernini 2012, Kuhnlein *et al.* 2013, Thrupp 2000). In this context, locally diverse plant foods can broaden diets and maintain locally adapted, seasonally available, and contextually integrated food uses (Hunter *et al.* 2019, Johns & Eyzaguirre 2006, Powell *et al.* 2015, Remans *et al.* 2011).

Wild foods, tree-based foods, and other locally used edible plant resources are therefore relevant not only as ecological or cultural resources, but also as part of how people engage with plants as food (Declerck *et al.* 2011, Kuhnlein *et al.* 2013).

A growing body of literature has argued that biodiversity should be understood not only as a conservation concern, but also as a food system resource (Allen *et al.* 2014, Ickowitz *et al.* 2022, Johns & Sthapit 2004). In this perspective, food systems are shaped not only by what is produced, but also by how foods are accessed, circulated, prepared, and used (Fanzo *et al.* 2021). Plant biodiversity plays a key role in the process as it influences the range of edible foods available to households, how foods are combined in meals, and the availability across seasons and changing conditions (Declerck *et al.* 2011, Fanzo 2019, Jones 2017). Prior work further suggests that plant resources may be distributed across forest-linked landscapes, including forests, forest edges, agroforestry systems, village spaces, mangroves, wetlands, and other semi-wild environments (Gergel *et al.* 2020, Ickowitz *et al.* 2022, Powell *et al.* 2015). These resources also do not always fall into a simple contrast between wild and cultivated, since many are tolerated, semi-managed, or used across shifting degrees of human intervention within the same landscape (Borelli *et al.* 2020, Cruz-Garcia 2017). In such settings, factors such as knowledge, accessibility, and everyday food practices influence whether plants are moved from the landscape into meals (Allen *et al.* 2014, Fanzo *et al.* 2021, Ickowitz *et al.* 2022).

Indonesia is a particularly interesting context for examining links between edible plant diversity and food systems. The country is exceptionally rich in biological diversity and food-related agrobiodiversity (Borelli *et al.* 2024, CBD 2025). At the same time, a substantial Indonesian ethnobotanical literature, alongside a smaller body of food systems-oriented work, documents wild edible plants and local food practices across diverse landscape settings (Pawera *et al.* 2020, Rahayu *et al.* 2024, Sujarwo *et al.* 2025, Triyanto *et al.* 2024). These studies offer important records of edible species and reported uses, but the depth of evidence varies considerably. This unevenness was evident in the literature mapped in this review: of 367 eligible studies, 115 were inventory-oriented, whereas 90 were retained as core studies because they provided evidence beyond species occurrence or general use categories on how edible plants became part of food practice. This gap has become more relevant as national food system discussions increasingly focus on resilience, sustainability, and locally based food sources (Bappenas 2025, BGN 2026).

This review addresses that gap by focusing on wild and forest-associated edible plants in Indonesia across forest-linked landscapes, semi-wild settings, and circulation routes. The term “wild and forest-associated edible plants” encompasses edible plant resources associated with forests, forest edges, agroforestry systems, mangroves, village margins, and other semi-wild or uncultivated spaces, where wild, semi-managed, and cultivated plants often overlap in everyday use (Bharucha & Pretty 2010, Borelli *et al.* 2020). This framing captures foods associated with forested and semi-wild environments without restricting the review to forest interiors alone (Gergel *et al.* 2020, Powell *et al.* 2015). The review then uses a food-practice and food system lens to examine what can be learned from the available Indonesian literature. Here, food system relevance is used modestly. It refers to evidence of how edible plants are accessed, prepared, and used in local food practices, rather than to a measure of dietary intake or formal supply. Evidence needed to assess dietary contribution was very limited in the Indonesian literature mapped in this review. Some studies reported consumption frequency or nutritional value, but the retained evidence did not quantify the contribution of these plants to overall dietary intake. The review therefore focuses on whether and how edible plants become part of food practice, while considering dietary evidence where available.

This review asks three questions. First, how are wild and forest-associated edible plants documented across different forest-linked landscapes in Indonesia? Second, through what pathways are these foods accessed, and what food roles do they play? Finally, what conditions affect whether these plants continue to be used, decline, or change? The review therefore examines the evidence linking edible-plant records to food practice, from where these plants are accessed and the roles they play to the conditions shaping their continued or changing use.

Materials and Methods

Review design and scope

We examined literature on wild and forest-associated edible plants across forest-linked landscapes in Indonesia. The review was reported in accordance with PRISMA-Scoping Review (ScR) guidance (Tricco *et al.* 2018) and informed by methodological guidance for scoping reviews (Peters *et al.* 2024). After the eligibility assessment, an additional evidence-classification stage was used to distinguish core analytical evidence from inventory-oriented, supporting-context, and background literature. The flow diagram of study selection is shown in Figure 1.

In this review, the term “wild and forest-associated edible plants” refers to edible plant resources obtained from forests and forest-linked landscapes, including forest edges, agroforestry systems, mangroves, village margins, and semi-wild or uncultivated spaces connected to forested systems. The definition also includes settings where wild, semi-managed, and cultivated plant resources overlap, because these distinctions are often blurred in everyday access and use. This scope captures foods associated with forested and semi-wild environments without restricting the review to forest interiors alone.

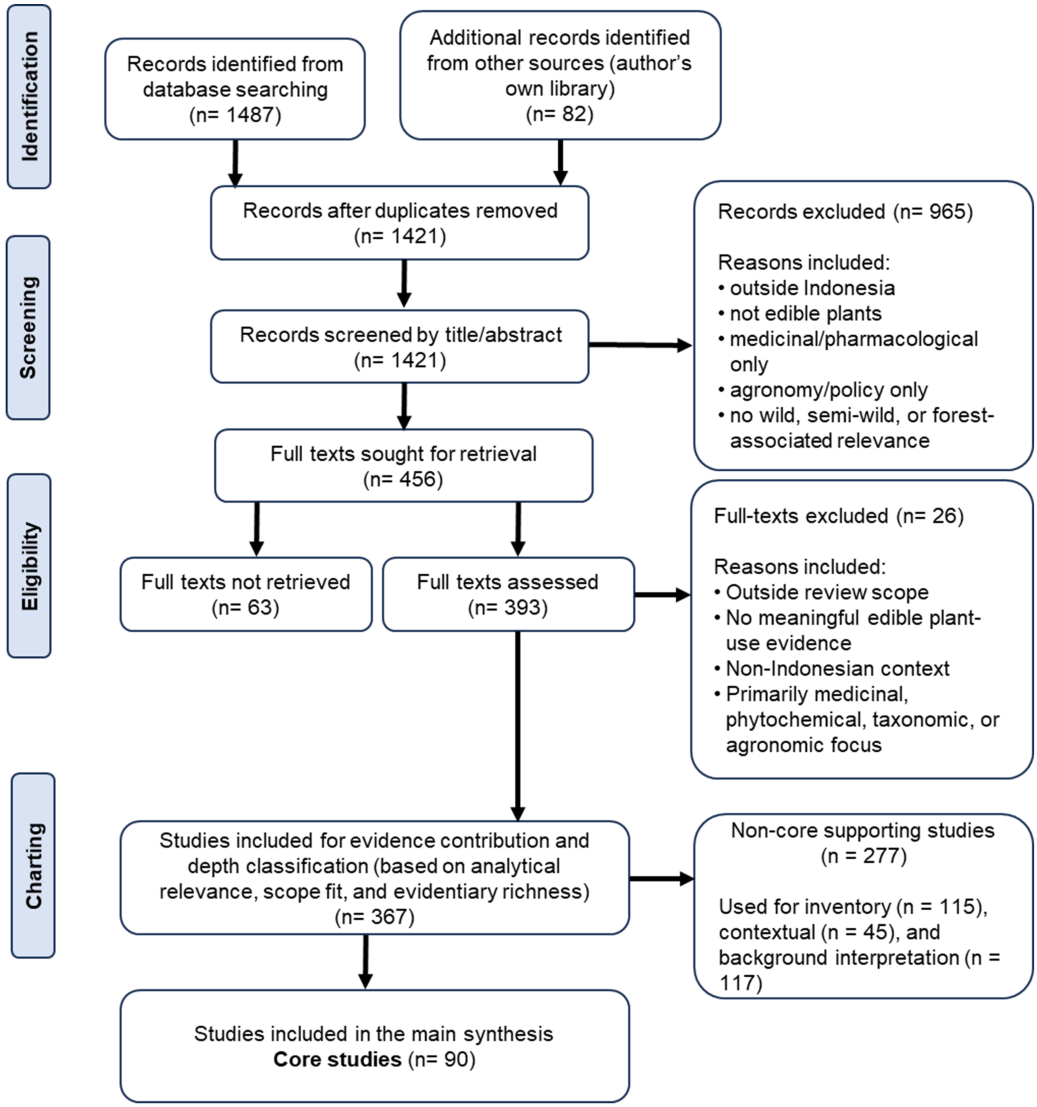


Figure 1. PRISMA-ScR flow diagram of study selection with an additional evidence-classification stage. A total of 90 studies were retained as core evidence for the main analysis.

Literature search and eligibility criteria

To capture contemporary evidence on wild and forest-associated edible plant use, the literature search covered publications from 2011 to March 2026. This period covers recent literature produced during a time of continuing forest and land-use change in Indonesia, alongside growing discourse and research attention to food system transformation, local food diversification, and biodiversity-food system linkages (Bappenas 2021, Borelli *et al.* 2020, 2024, Gaveau *et al.* 2022, Powell *et al.* 2015). Searches were conducted in March 2026 in Scopus and Google Scholar through Publish or Perish. Scopus was searched using two complementary Boolean queries combining ethnobotanical and traditional-knowledge concepts, Indonesian geographic terms, and edible-plant or food-use terms. Google Scholar was searched through ten separate Indonesian-language query combinations covering ethnobotany, traditional knowledge, local food, forest food, and wild-plant use. Complete Scopus search syntax, individual Google Scholar queries, search dates, and search-run retrieval counts are provided in Supplementary Table S2. Because the individual Google Scholar queries retrieved many of the same records, the 1979 raw retrievals from the ten runs were consolidated to 1231 records before combination with the 256 records

retrieved from the two Scopus searches, yielding 1487 records from database searching. Additional relevant records were identified from the first author's existing Zotero library and through iterative citation searching.

Studies were eligible if they met the following criteria: addressed edible plants or plant-derived foods from Indonesia, with relevant information needed to cover food use, access, food roles, nutritional relevance where available, landscape setting, local food practices, resource management, exchange networks, or conservation value. Both English- and Indonesian-language publications were considered. Studies were excluded if their main focus was medicinal plants or ethnomedicine with little or no evidence of food use; phytochemical, pharmacological, or laboratory analysis with no empirical information on food use; taxonomy or floristic inventories with no food-use relevance; agronomy or crop production with no evident relevance to wild-, semi-wild-, or forest-associated edible plants; general nutrition, policy, or product-development studies lacking direct plant use information, or non-Indonesian contexts.

Screening, classification, and data extraction

A total of 1569 records were assembled for screening. Duplicate records were identified through automated matching and subsequent manual checking; 148 duplicates were removed in total, leaving 1421 records for title and abstract screening. Of these, 456 full texts were sought through various databases. Sixty-three full texts could not be retrieved, leaving 393 full texts assessed for eligibility. Of these, 26 records were excluded after full-text reading because they fell outside the scope of the review or lacked meaningful evidence related to edible plant use. The remaining 367 records were eligible for inclusion and underwent evidence contribution and depth classification. Of the 367 eligible studies, 82 were published in English and 285 in Indonesian. Title-and-abstract screening was led by the first author, with two coauthors reviewing subsets of records, assisting with uncertain cases, and helping with full-text retrieval. Core/non-core classification was conducted from the full texts by the first author and rechecked through repeated full-text audits. Uncertain classification decisions were discussed with another coauthor and resolved by consensus. Because screening and classification were not conducted as independent duplicate assessments, no formal inter-rater agreement statistic was calculated.

There were significant differences in the analytical focus and evidentiary depth of the 367 eligible records. Some provided detailed information on the sources or methods used to acquire edible plants, on how they were used in food practices, or on factors related to their current use, management, exchange, conservation, or change. Others offered more specific, though still useful, information, including lists of edible species, plant parts, habitat, local names, use categories, landscape context, and more general background information. All eligible records were therefore categorized based on their contribution to the review questions, and not analyzed equivalently.

Only papers with full-text that reported directly on edible wild plants, semi-wild, forest-associated, or forest-linked plants, and with information beyond the species occurrence were retained as core studies. During full-text assessment, attention was given to evidence on plant source and landscape setting, access pathways, food use, preparation or processing, food role or dietary evidence where available, household use, market or livelihood relevance, food security, conservation, management, knowledge transmission, and continuity or change. Note that ethnobotanical studies conducted in the markets were treated as evidence of circulation and access, not as source landscapes. They were retained as core studies because they documented wild and forest-associated edible plants and provided evidence beyond market presence alone. Coastal and wetland studies were retained only when the edible plants were linked to mangrove, swamp forest, or other semi-wild vegetation contexts.

In order to be included in the core, a paper needed to add evidence relevant to at least one of the analytical questions raised in the review: where edible plants were acquired, how they became part of food practice, what factors were linked to their ongoing use, loss, control, conservation, exchange, and/or change. Papers that contained only lists of edible species, local names, plant parts, habitats, or general use categories but did not provide any further evidence of food use were retained as supporting evidence but not as core papers. This classification yielded 90 core studies for the main analysis and 277 non-core studies for supporting inventory, contextual interpretations, and background framing.

Data from the 90 core studies were extracted into a structured charting table. Extracted fields included author, year, title, province or island, specific location, landscape setting, study focus, food plant type or focus, source or wild/forest status, food-use information, access or management evidence, food role and dietary evidence where available, market or livelihood relevance, conservation or change evidence, and use in the manuscript. The detailed charting table is provided in Supplementary Table S1.

Records not retained as core studies were classified into three non-core categories and used more selectively. Inventory-oriented studies (n = 115) documented edible plant diversity, local names, plant parts, habitats, or uses, and were used to support broader geographic or thematic context. Supporting-context studies (n = 45) provided relevant information on food system, landscape, cultural, market, or conservation context, but lacked sufficient direct evidence on wild or forest-associated edible plant use for inclusion in the core evidence base. Background/context studies (n = 117) supported broader conceptual, policy, or methodological framing.

Analytical approach

The analysis used a landscape-access-food-practice framework developed from forest-food and food-biodiversity literature and refined during full-text reading. Existing work on forests, tree-based systems, and wild-cultivated biodiversity guided the initial focus on landscape setting, access, and food use (Ickowitz *et al.* 2022, Jamnadass *et al.* 2015, Powell *et al.* 2015). During charting/screening, these dimensions were refined to capture how the core studies described plant sources, access, preparation, local management, exchange, conservation, food security, and continuity or change.

Since the studies varied in method, reporting, and depth of evidence, the review used an interpretive rather than a statistical approach (Arksey & O'Malley 2005, Levac *et al.* 2010, Peters *et al.* 2024, Tricco *et al.* 2018). The core studies were compared to identify recurring patterns in where edible plants were obtained, how people accessed or maintained them, how they entered food practices, and what conditions were linked to continued use or change. Because the studies differed in geographic setting, communities studied, methods, and level of documentation, these comparisons were used to identify recurring patterns in the available evidence rather than to estimate their prevalence across Indonesia. No formal risk-of-bias or methodological-quality appraisal was conducted because the purpose of this scoping review was to map the range and characteristics of the available evidence rather than to estimate effects or grade certainty of evidence. The included studies also varied substantially in design and reporting, so limitations of the evidence base were considered when comparing and interpreting the included studies and were discussed explicitly rather than evaluated using a common appraisal tool.

In this review, food system relevance is not treated as a full measure of dietary intake, household food security, or formal supply. Instead, it is used more modestly to capture evidence of how edible plants are accessed, prepared, circulated, and retained in or displaced from local food practices. The Indonesian literature, therefore, should not be viewed as a well-developed body of evidence on food systems. Much of it remains ethnobotanical and descriptive, while a smaller subset connects edible plants to access, preparation, food roles, food environments, or continued use. The core evidence classification used in this review was designed to distinguish studies providing this type of evidence from those that report only species occurrence or general use categories.

Thematic grouping was used to organize the 90 core studies for Table 1. Each study was assigned to one dominant primary evidence theme representing its main source or access context: forest-linked and protected-area settings; managed tree-based systems; village and mixed-rural food settings; mangrove, coastal, swamp, and wetland settings; market; or cross-setting. The first four groups refer mainly to source settings, while market refers to access and circulation routes. Cross-setting studies were grouped separately when they documented edible plants across more than one source setting or access route. Several studies contributed evidence to more than one part of the Results, but each was listed once in Table 1 under its dominant contribution. Scientific names of species mentioned in reviewed studies were updated based on World Flora Online (https://www.worldfloraonline.org/).

Results

Patterns in the core evidence base

Table 1 summarizes the thematic grouping of the 90 core studies. Each study was assigned to one primary evidence theme for the table, while Supplementary Table S1 provides the study-level geographic, thematic, and food-type classifications. The largest group was the forest-linked and protected-area settings, followed by managed tree-based systems and village or mixed-rural food settings. Smaller groups covered coastal and wetland settings, cross-setting, and market circulation.

The core studies were concentrated in Kalimantan, Java, and Sumatra and nearby islands (Figure 2). Kalimantan accounted for 29 studies, followed by Java with 26 and Sumatra and nearby islands with 25. Bali and Nusa Tenggara accounted for five studies, and fewer studies covered Sulawesi, the Maluku Islands, Papua, or multiple geographic areas. Across the core studies, the most frequently documented food roles were vegetables, fruits, condiments, local carbohydrate foods, and processed foods.

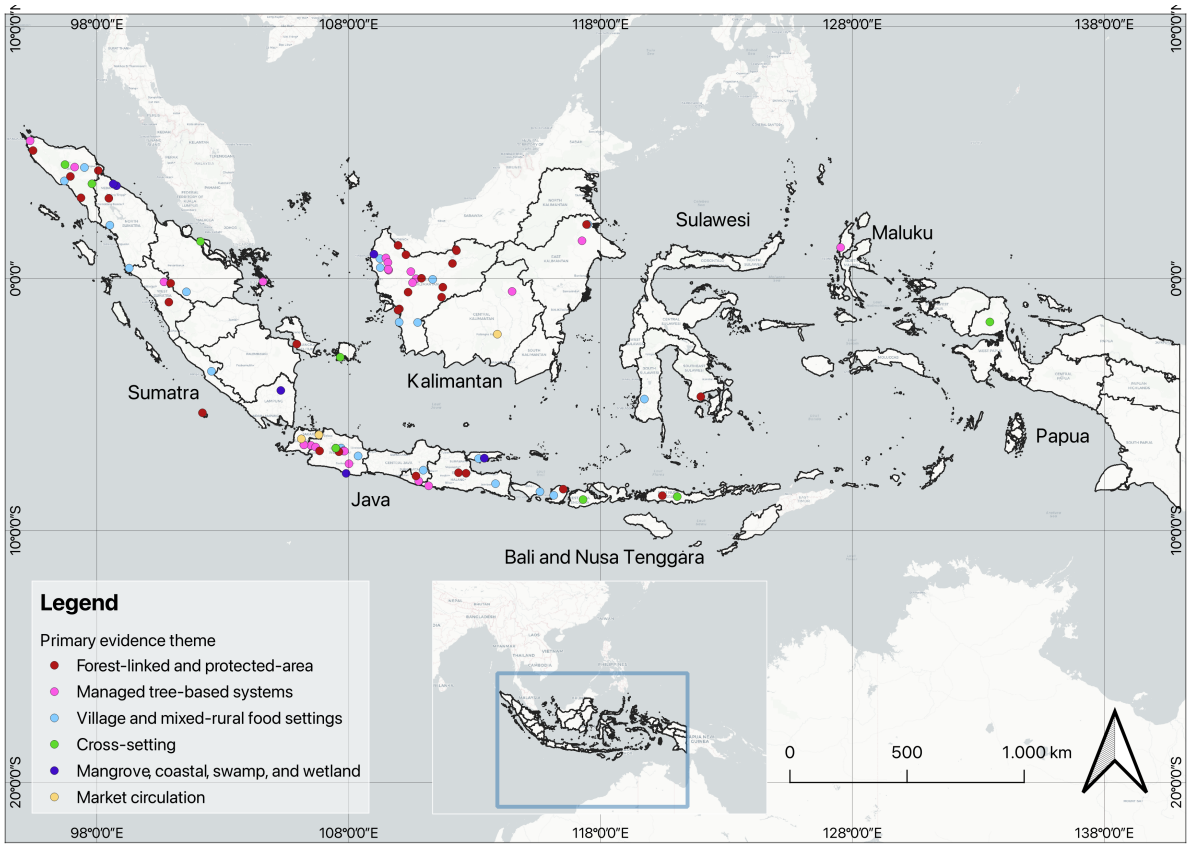


Figure 2. Geographic distribution and primary evidence themes of the 90 core studies included in the main analysis. Points indicate reported study locations, with colors representing the primary evidence theme assigned to each retained core study. Studies covering more than one reported location may be represented by more than one point.

Access pathways, source settings, and circulation routes

Wild and forest-associated edible plants in Indonesia entered food practices through several source settings and circulation routes. In the retained core studies, access was documented in four main source settings: (1) forest and protected-area interfaces, (2) managed tree-based systems, (3) village and mixed-rural spaces, and (4) coastal and wetland environments. A small number of studies documented edible plants across multiple settings and in the market context. Figure 3 summarizes the distribution of the core studies across these primary evidence themes and the study-level food types reported in Supplementary Table S1. These food-type categories differ from the cross-study food-role patterns summarized qualitatively in Table 2.

Forest-linked and protected-area interfaces represented the largest landscape group where wild and forest-associated edible plants were reported. This group comprised forest margins, secondary forests, village forests, customary forests, protected areas, national park interfaces, and wildlife reserve landscapes. Fruits were prominent in this pathway. In Aceh protected forests and national parks, forest fruits such as *Baccaurea polyneura* Hook.f., *Baccaurea racemosa* (Reinw.) Müll.Arg., and *Garcinia xanthochymus* Hook.f. ex T.Anderson were documented as foods, medicines, and, in some cases, income sources (Suwardi *et al.* 2020a, Suwardi & Navia 2023). Alongside fruits, other forest-linked studies recorded leafy vegetables, ferns, tubers, palms, spices, and flowers (Diba *et al.* 2021, Julia *et al.* 2020, Sartika *et al.* 2021). At a national park interface, fruits such as *Ficus variegata* Blume were documented with vegetables, including *Diplazium esculentum* (Retz.) Sw. and *Emilia sonchifolia* (L.) DC. (Jupri *et al.* 2022).

Managed forest-linked landscapes and tree-based systems were the second largest pathway. These included mixed gardens, homegarden-forest interfaces, and traditional agroforestry systems such as Dayak's **tembawang (West Kalimantan)**, **repong damar (Lampung)**, **lampoh (Aceh, Sumatra)**, Baduy **huma/reuma (West Java)**, and sugar-palm systems. In coffee agroforestry in West Java, wild fruits such as *Ficus racemosa* L. and *Rubus rosifolius* Sm. were eaten raw for daily needs (Kulsum & Susandarini 2023). Studies of **lampoh**, **tembawang**, **huma**, and **hutan rakya**t (community forest) also recorded edible fruits, palms, vegetables, spices, bamboo shoots, staple crops, and other useful plants within cultivated or semi-

managed systems (Hardjanto *et al.* 2022, Hayati *et al.* 2023, Iqbal & Septina 2018, Iskandar & Iskandar 2015). As in the forest settings, fruits were also prominent in this group, including *Baccaurea macrocarpa* (Miq.) Müll.Arg., *Durio kutejensis* (Hassk.) Becc., and *Syzygium malaccense* (L.) Merr. & L.M.Perry (Kurniawati *et al.* 2015, Navia *et al.* 2020, Suwardi *et al.* 2025). Other edible parts were also documented, including young leaves of *Gnetum gnemon* L. and *Solanum torvum* Sw., as well as bamboo shoots from *Dendrocalamus asper* (Schult. & Schult.f.) Backer and *Schizostachyum brachycladum* (Kurz ex Munro) Kurz (Ningrum *et al.* 2023, Triyana *et al.* 2022).

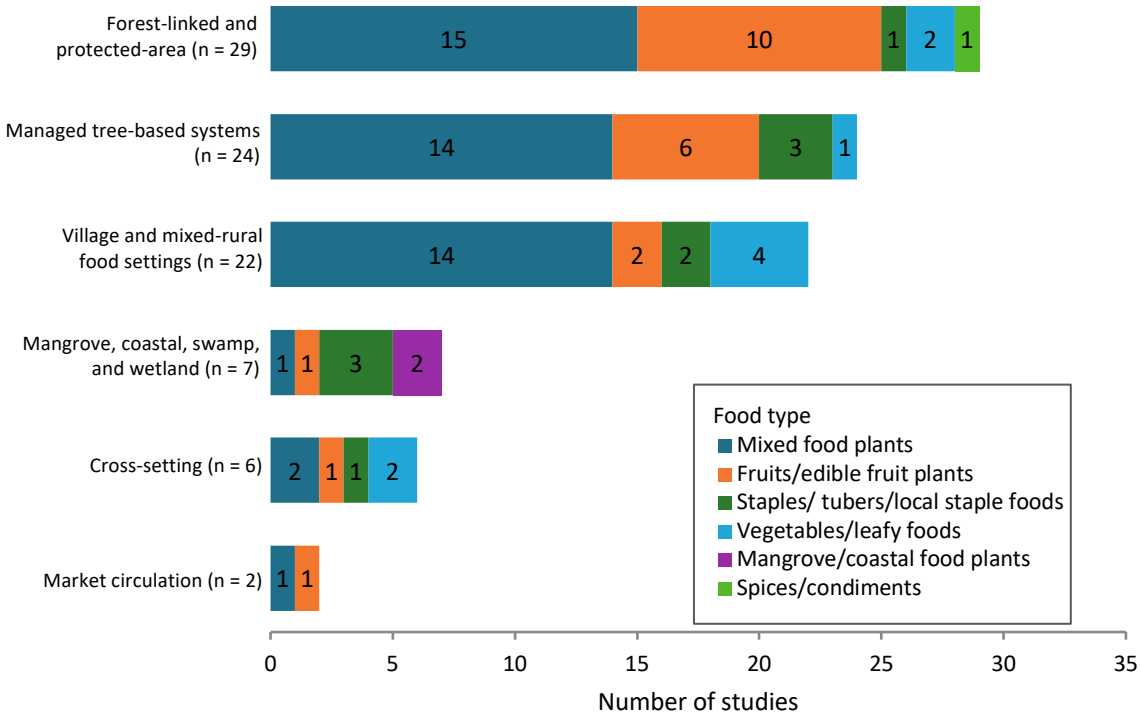


Figure 3. Distribution of the 90 core studies by primary evidence theme and study-level food type. Counts summarize the composition of the retained evidence base and do not represent consumption frequency, dietary contribution, or food abundance.

Villages and mixed-rural spaces were the third setting identified, shifting the evidence toward foods kept close to household life and everyday meals. Wild and forest-associated edible plants were documented around houses, cultivated land, village margins, and nearby forest-linked areas (Alfinandah *et al.* 2025, Irawan *et al.* 2020, Rahayu *et al.* 2024). This setting mostly recorded local vegetables and leafy greens, such as *Breynia androgyna* (L.) Chakrab. & N.P.Balakr. [syn. *Sauropus androgynus* (L.) Merr.], *Limnocharis flava* (L.) Buchenau, *Smilax setosa* Miq. [syn. *Smilax barbata* Wall. ex A.DC.], and *Stenochlaena palustris* (Burm.) Bedd. from spaces used for cultivation or under household care (Bella *et al.* 2025, Irawan *et al.* 2020, Ningsih & Wardhani 2025, Prayogi *et al.* 2022). Some plants were cultivated or maintained when they remained useful as vegetables or ingredients in local food practices (Cita & Hasibuan 2019, Ningsih & Wardhani 2025, Prayogi *et al.* 2022).

Coastal and wetland settings represented a smaller but distinct access route. Access here was tied to mangrove, estuarine, tidal, swamp, wet-rice, and other wetland ecologies. Fruits of *Avicennia marina* (Forssk.) Vierh., *Nypa fruticans* Wurmb, *Sonneratia alba* Sm., and *Sonneratia caseolaris* (L.) Engl., leaves of *Acanthus ilicifolius* L., and young parts of *Oncosperma tigillarium* (Jack) Ridl. were among the food resources typically documented in these settings (Desti *et al.* 2024, Naufal *et al.* 2025, Prastianto *et al.* 2022, Simanjuntak 2023).

In addition to direct gathering, a few core studies documented wild and forest-associated plants in market circulation (Lestari *et al.* 2025, Marpaung *et al.* 2025). Markets and vendors allowed some of these foods to reach consumers beyond harvest sites, especially as seasonal fruits, local plant commodities, and valued cooking ingredients (Marpaung *et al.* 2025). These edible plants are also documented in multiple landscape categories. For example, in Belitung and Aceh, they were documented in the forests, cultivated areas, homegardens, agroforestry systems, **kerangas** or heath forest, **kelekak** mixed fruit gardens, village spaces, and markets (Chikmawati *et al.* 2023, Nelly *et al.* 2024).

Food roles and degrees of integration into food practice

Wild and forest-associated edible plants held several positions in local meals and food routines. Food roles were organized into four broad groupings across the core studies: (1) routine vegetables and everyday ingredients, (2) seasonal fruits and supplementary foods, (3) local carbohydrate foods, and (4) processed and ceremonial foods. Several plants appeared in more than one role across the core studies, depending on edible part, preparation, season, or cultural setting. The distribution of food roles across source settings and market circulation in the core studies was summarized in Table 2.

The routine vegetables and everyday ingredients group is the most direct form of integration in local food practices. In this role, they appeared in daily meals as vegetables, fresh accompaniments, condiments, and cooking ingredients. In Sundanese food practice, several wild or semi-wild leaves were eaten fresh or lightly prepared as **lalab/lalapan**, including *Crassocephalum crepidioides* S.Moore*, Oenanthe javanica* DC., and *Pilea melastomoides* (Poir.) Wedd. (Hernawati *et al.* 2022, Rahayu *et al.* 2024). In Kalimantan, everyday vegetables were more often used in cooked forms, including ferns, leaves, shoots, young stems, palms, and bamboo shoots, prepared by boiling, sautéing, roasting, or frying (Arini *et al.* 2021, Megawati *et al.* 2020, Ningrum *et al.* 2023). Spices and flavoring plants formed another part of routine food practice. Species such as *Alpinia galanga* (L.) Willd., *Curcuma longa* L., *Cymbopogon nardus* (L.) Rendle, *Etlingera elatior* (Jack) R.M.Sm., and *Syzygium polyanthum* (Wight) Walp. were recorded as flavorings or seasonings in local dishes, with *C. longa* also used as a colorant (Hendra & Oktaviani 2020, Juliana *et al.* 2013).

Seasonal fruits and supplementary foods were documented across forest-linked, agroforestry, and managed tree-based settings. Their use was tied to fruiting periods, household gathering, and short windows of market availability. Agroforestry systems, such as **tembawang**, included fruits such as *Artocarpus integer* (Thunb.) Merr., *Baccaurea macrocarpa* (Miq.) Müll.Arg., *Dialium indum* L., *Durio kutejensis* (Hassk.) Becc., and *Syzygium malaccense* (L.) Merr. & L.M.Perry, many of which had both household and market value (Iqbal & Septina 2018, Kurniawati *et al.* 2015, Navia *et al.* 2020, Rahayu *et al.* 2025b). During fruiting seasons, some wild edible fruits also reached consumers through vendors and local markets (Lestari *et al.* 2025, Marpaung *et al.* 2025).

Local carbohydrate foods were another identified role in the core evidence. Taro, recorded as *Colocasia esculenta* (L.) Schott, appeared in several studies across village food systems, such as traditional villages in Lombok Island, and in East Kalimantan (Oktavianingsih *et al.* 2025, Sujarwo *et al.* 2016, 2025). Palm and sago-related resources were also frequently recorded as carbohydrate sources in forest-linked and village food systems. Palm (*Arenga pinnata* (Wurmb) Merr.) provided starch, sweet products, or other edible materials connected to local processing and household use (Arini *et al.* 2021, Jamili 2022, Sujarwo *et al.* 2016). Preparation knowledge is important for other starches, such as the tuber of *Dioscorea hispida* Dennst., which requires multiple steps before consumption (Purnomo *et al.* 2012, Sujarwo *et al.* 2016).

Some edible plants entered food practice through processing rather than immediate consumption. Coastal and mangrove foods often appeared as processed foods. *Sonneratia alba* Sm. and *Sonneratia caseolaris* (L.) Engl. were made into syrup, jam, **dodol** (a traditional sweet confection), juice, or souring ingredients, while *Avicennia marina* (Forssk.) Vierh. was processed into flour or consumed as steamed fruit (Naufal *et al.* 2025, Prastianto *et al.* 2022). Processing and preservation also appeared in village food practices. Among the Dayak Kanayant, *Brassica juncea* (L.) Czern. could be preserved with salt, while seeds of *Elateriospermum tapos* Blume were boiled for a long time and stored before being eaten (Megawati *et al.* 2020). Among the Dayak Seberuang, *Durio zibethinus* L. was preserved as **tempoyak** by mixing the fruit flesh with salt and fermenting it in a closed container (Ningsih & Wardhani 2025). Other plants required preparation before they could be safely eaten, including *Dioscorea hispida* Dennst. and *Pangium edule* Reinw., which were linked to detoxification, soaking, or careful cooking (Purnomo *et al.* 2012).

Ceremonial foods showed another route into use. In Bali Aga communities, *Aleurites moluccanus* (L.) Willd., *Arenga pinnata* (Wurmb) Merr., *Borassus flabellifer* L., *Colocasia esculenta* (L.) Schott, *Dioscorea hispida*, and *Pangium edule* were recorded in relation to **banten** ritual practice (Sujarwo *et al.* 2016). Minangkabau ceremonial food practice also included local plant foods maintained through household preparation and social occasions, outside the rhythm of daily meals (Kanara *et al.* 2025).

Table 1. Main thematic groupings of the 90 core studies on wild and forest-associated edible plants in Indonesia.

Primary evidence theme	Core studies assigned to this theme	Main access or setting	Frequently documented food roles	Evidence pattern
Forest-linked and protected-area settings (n = 29)	(Arini *et al.* 2021, Bella *et al.* 2025, Cita & Hasibuan 2019, Dewantara *et al.* 2024, Diba *et al.* 2021, Fatimah & Mulyanto 2025, Hendra & Oktaviani 2020, Irawan *et al.* 2020, Iswandono *et al.* 2015, Juli *et al.* 2022, Julia *et al.* 2020, Juliana *et al.* 2013, Jupri *et al.* 2022, Pujinisa *et al.* 2023, Purba & Silalahi 2021, Purnomo *et al.* 2012, Rahmi *et al.* 2021, Royyani *et al.* 2018, Sartika *et al.* 2021, Setiawan & Qiptiyah 2014, Sholichah & Alfidhdhoh 2020, Srianta *et al.* 2012, Supiandi *et al.* 2019, Suwardi *et al.* 2020a,b, 2026, Suwardi & Navia 2023, Syafira *et al.* 2023, Syamsuardi *et al.* 2022)	Forest margins, secondary forests, protected-area surroundings, village forests, nearby forest-linked areas.	Fruits, mixed food plants, leafy vegetables, spices, local carbohydrate foods.	Forest access is still part of food use. They are mostly recorded around margins, secondary forest, village forests, or protected-area interfaces.
Managed tree-based systems (n = 24)	(Alfinandah *et al.* 2025, Anggraeni *et al.* 2023, Dasman *et al.* 2015, Gemilang *et al.* 2019, Hardjanto *et al.* 2022, Hartoyo *et al.* 2018, Hayati *et al.* 2023, Iqbal & Septina 2018, Iskandar *et al.* 2023, Iskandar & Iskandar 2015, 2021, Jamili 2022, Kanara *et al.* 2025, Kulsum & Susandarini 2023, Kurniawati *et al.* 2015, Navia *et al.* 2020, Ningrum *et al.* 2023, Rahayu *et al.* 2024, Rarasti *et al.* 2025, Romana *et al.* 2018, Safitri *et al.* 2025, Sumarlin *et al.* 2015, Suwardi *et al.* 2025, Triyana *et al.* 2022)	Tree gardens, sago systems, and agroforestry systems, including the traditional/local type, such as Kalimantan's **tembawang**, Lampung's **repong damar**, Aceh's **lampoh**, West Java's **huma/reuma**	Seasonal fruits, local carbohydrates, palms, shoots, vegetables, food trees.	Food plants are planted, retained, harvested, and sometimes sold within cultivated, managed tree-based settings.
Village and mixed-rural food settings (n = 22)	(Adnan *et al.* 2023, Al Yamini *et al.* 2023, Amboupe *et al.* 2019, Anjeliana *et al.* 2024, Aulia *et al.* 2025, Hafizah *et al.* 2025, Hernawati *et al.* 2022, Kuswati & Adi 2021, Linda *et al.* 2022, Megawati *et al.* 2020, Mutaqin *et al.* 2020, Ningsih & Wardhani 2025, Oktavianingsih *et al.* 2025, Pawera *et al.* 2020,	Household areas, cultivated land, village margins, uncultivated patches, nearby forest-linked settings.	Vegetables/fresh accompaniments, spices/condiments, mixed food plants, local carbohydrate foods.	Many foods remain visible where gathering, cultivation, and household cooking are close to daily routines.

Primary evidence theme	Core studies assigned to this theme	Main access or setting	Frequently documented food roles	Evidence pattern
	Prayogi *et al.* 2022, Raihandhany & Purnomo 2025, Ramaidani & Navia 2022, Silalahi *et al.* 2018, Sujarwo *et al.* 2016, 2025, Triyanto *et al.* 2024, Zikri *et al.* 2017)			
Mangrove, coastal, swamp, and wetland settings (n = 7)	(Naufal *et al.* 2025, Prastianto *et al.* 2022, Setiawan 2016, Simanjuntak 2023, Siregar *et al.* 2025, Susiarti *et al.* 2012, Wardah & Ariani 2020)	Mangrove areas, coastal wetlands, swamp-rice ecosystems, estuarine or wetland settings.	Processed fruits, drinks, souring ingredients, local starches, edible shoots, wetland tubers.	Food use depends on ecological access and preparation knowledge, especially when plant parts require processing before consumption.
Cross-setting (n = 6)	(Chikmawati *et al.* 2023, Desti *et al.* 2024, Limbu *et al.* 2024, Nelly *et al.* 2024, Rahayu *et al.* 2025b, Zebua & Walujo 2016)	Multiple source settings or access routes.	Mixed food plants, vegetables, fruits, local staples, and foods linked to food security or change.	Cross-setting records connect plant use with settlement context, food security, cultural practice, and differences across socio-ecological settings.
Market circulation (n = 2)	(Lestari *et al.* 2025, Marpaung *et al.* 2025)	Traditional markets, vendors, and urban food environments.	Seasonal fruits, mixed wild or local plants, condiments, traded food plants.	Markets keep some wild and local foods available beyond harvest sites, especially as seasonal or culturally valued foods.

Note: Each study is listed once under its dominant primary evidence theme; full study-level geographic, thematic, and food-type classifications are provided in Supplementary Table S1.

Table 2. Summary of the distribution of documented food roles across landscape settings and market circulation in the core studies.

Food role	Forest / protected area interfaces	Managed tree-based systems	Village / mixed rural settings	Coastal / wetland environments	Market circulation
Vegetables / everyday ingredients	✓	✓	✓✓	✓	✓
Seasonal fruits	✓✓	✓✓	✓	✓	✓✓
Local carbohydrates	✓	✓	✓	✓	-
Processed foods	-	✓	✓	✓✓	✓
Ceremonial foods	-	-	✓	-	-
Spices/condiments	✓	✓	✓	-	✓

Note: ✓✓ = more frequently documented; ✓ = documented but less prominent; - = not clearly documented as a recurring pattern in retained core studies. The table summarizes patterns of documentation in the retained core studies (n = 90 studies), not actual consumption levels, dietary contribution, or abundance. Market entries refer to foods traded through markets, not sourced from markets.

Conditions linked to continued use and change

Evidence of continued use came from studies that recorded frequency or regularity. Plants remained in use as long as they still fit into household life: people could obtain them, knew how to prepare them, and had reasons to keep eating them. When that fit weakened, a plant could remain known but become less often used. Some plants were still entered into meals regularly, while others were used seasonally or only occasionally (Rahayu *et al.* 2024, Sujarwo *et al.* 2025). In rural West Java, moderate and high consumption of these plants coexisted with a widely perceived decline in use (Rahayu *et al.* 2024). In these studies, continued use was recorded through practice rather than inferred solely from edible status.

In the core studies, reported changes were not over-time measures but rather perceived changes. Most changes were reported as declining, which was associated with various factors. A decline in the use of wild food plants was reported over the previous generation, with reduced availability, time constraints, lifestyle changes, and agricultural or market shifts among the reported drivers (Pawera *et al.* 2020). Limited plant knowledge was also found to be related to perceived decline, not only in plant identification but also in the nutritional value of wild and forest-associated plants, which contributed to the decision to favor regular vegetables (Rahayu *et al.* 2024). The historical study on Sundanese wild vegetables demonstrated a longer period of changes: plants that have remained in use were generally easy to prepare, while those that were forgotten included forest-associated trees, seasonal annuals, complex-processing plants, and wild relatives that were replaced by other cultivated species (Aulia *et al.* 2025).

A small number of core studies provided information on who knew or used wild and forest-associated edible plants. In West Sumatra, knowledge and use of wild food plants differed between Minangkabau and Mandailing women (Pawera *et al.* 2020). Plant knowledge among Sundanese women was associated with frequent consumption of edible plants, while age showed a weaker association (Rahayu *et al.* 2024). Other studies noted that age, livelihood, and proximity to forests shaped knowledge and use (Chikmawati *et al.* 2023, Sujarwo *et al.* 2025). These records suggest that knowledge of these plants should not be treated as a general community attribute, because it may be held unevenly across generations, livelihoods, and groups with different exposure to food landscapes.

Discussion

Wild and forest-associated edible plants in Indonesia broaden local food practices through roles that are not captured well by staple-centered measures. Their contribution lies less in replacing staples than in adding vegetables, taste, seasonal

variety, and locally recognized foods to meals. Although these foods may not dominate energy supply, they affect how they are cooked, eaten, and valued locally (Powell *et al.* 2015). Their contribution is easily overlooked when food importance is viewed through the lens of staples, calories, or market volume. Diverse local food resources support diet quality through variety and micronutrient-rich food consumption, even if they are not the main energy source (Hunter *et al.* 2019, Johns & Eyzaguirre 2006, Powell *et al.* 2015). In the current Indonesian cases, such dietary potentials are realized only when food sources are accessible, can be prepared, and are familiar enough to be incorporated into meals. The conceptual framework summarizing these relationships is presented in Figure 4.

Access depends on how edible plants are positioned within everyday landscapes. Forest edges and protected areas were the primary documented sources for gathering wild foods, but the evidence did not point solely to distant forest interiors (Supplementary Table S1). Many foods were found at the borders where villages, farms, rivers, and forests meet. Managed tree-based and village settings provided additional access for plants that could be retained, tended, or brought closer to homes (Iskandar & Iskandar 2015, Ningrum *et al.* 2023, Rahayu *et al.* 2024).

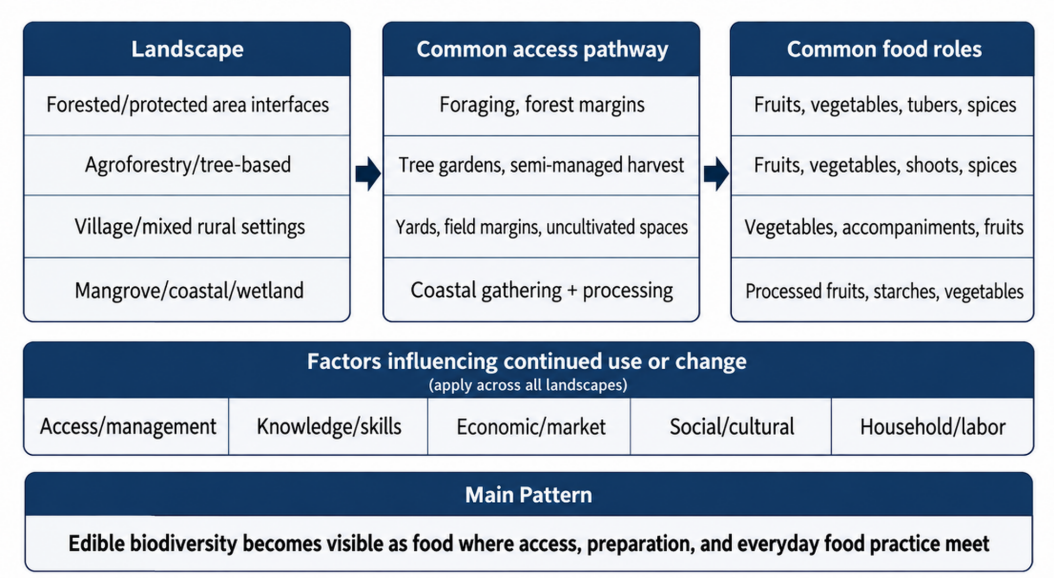


Figure 4. Conceptual framework based on review results for understanding the use of wild and forest-associated edible plants in Indonesian food practice, with arrows indicating some associations, but not exclusive pathways. It illustrates the transition from landscapes to roles in the food system and what factors can affect whether continued use or change occurs.

Across the four settings, distinct role patterns appeared that shifted with proximity to settlements and degree of management (Table 2). Forest and tree-based settings carried a wider range of fruits and mixed food plants, though the managed system leaned more toward fruits or trees, suggesting active management for fruit production. Village settings made vegetables, greens, and condiments more visible in routine cooking, while coastal and wetland environments showed a stronger link between food use and processing. Across this gradient, the degree of management and proximity to settlements may influence both the types of plants used and how they enter food practice (Bharucha & Pretty 2010). Since most core studies were concentrated in Kalimantan, Java, and Sumatra, the prominence of particular source-setting and food-role patterns may partly reflect practices most often documented in those areas. Uneven geographic coverage may also narrow the range of landscapes represented in the evidence base, so access pathways, food roles, and conditions of continued or changing use associated with underrepresented geographic areas and landscape settings may be less visible. This uneven representation should therefore be considered when interpreting the specific patterns identified in the review.

The access patterns identified in this review indicate that many edible plants do not conform to a simple wild-cultivated dichotomy. Forest-food research has frequently characterized forests and tree-based systems as sources of wild, semi-managed, and cultivated foods (Ickowitz *et al.* 2022, Jamnadass *et al.* 2015). Indonesian examples provide practical illustrations of this continuum. Edible plants may be retained in **tembawang**, managed in **huma**, or planted and maintained near agricultural fields and residences (Iskandar & Iskandar 2015, Ningrum *et al.* 2023, Susanti *et al.* 2024). Comparable movement of "wild" food plants across forest-agriculture landscapes has also been observed in the Peruvian Amazon (Cruz-Garcia 2017). These practices link food use with daily management activities and shift the focus from whether a plant is wild to the strategies people employ to maintain its availability. However, the review demonstrates that the presence of edible

plants in managed landscapes does not necessarily result in their consumption. Factors such as access, knowledge, and preparation practices mediate the pathway from landscape to diet.

A plant can be part of a food practice without becoming a staple. Its place depends on how often it is used, how it is prepared, and whether it remains attached to everyday meals, seasonal gatherings, sale, or ceremony. In traditional Sasak villages, plant foods followed a primary-secondary pattern: a smaller set of botanicals supported routine weekly meals, while a wider set of seasonal or infrequent plant parts broadened the diet through dishes, side dishes, snacks, and seasonal foods (Sujarwo *et al.* 2025). The four broad food-role groupings used in this review reflect different degrees of integration into local food practices. Vegetables and everyday ingredients represent the most common use, requiring readily available plants that are easy to prepare. Seasonal fruits and supplementary foods offer a more intermittent contribution, tied to harvest periods and household gathering. Local carbohydrate foods, while potentially important for energy, often require more preparation knowledge and are sometimes being replaced by purchased staples (Hunter *et al.* 2019). Processed and ceremonial foods have a distinct place. Processing extends shelf life and enhances food safety, while ceremonial use maintains cultural significance even if these foods are not consumed daily (Kanara *et al.* 2025, Sujarwo *et al.* 2016). These functions exist along a continuum of integration into daily diets, instead of fixed categories.

Numerous wild and forest-associated plants may play secondary roles compared to carbohydrate staples, but this should not be interpreted as dietary insignificance. According to global dietary studies, wild food plants modestly contributed to energy intake (often by less than 10%), while micronutrient contributions could be much higher, including vitamin A, iron, calcium, and riboflavin (Powell *et al.* 2015). For Indonesian wild and forest-associated edible plants, current evidence regarding food roles is stronger than that for estimating dietary contribution. Some studies in this review assessed the nutritional value of documented plants but did not proceed to evaluate their actual contribution to local dietary intake (Rahayu *et al.* 2024, Srianta *et al.* 2012, Suwardi & Navia 2023).

Knowledge helps determine which edible plants remain in use. People must recognize the plant, identify the edible part, and prepare it acceptably. Local knowledge can persist as names, memories, or recorded history, but regular use depends on whether the plant remains compatible with contemporary meals, tastes, preparation practices, and everyday contact with the landscape (Aulia *et al.* 2025, Leal *et al.* 2018, Pardo-de-Santayana *et al.* 2007). This is especially true for foods requiring more work. Certain plants must be detoxified or processed before they become safe or practical to consume. In these cases, practical knowledge is as important as ecological availability. A plant may grow nearby, but its role weakens as knowledge of preparation, time, or household interest declines. Similar links between traditional plant knowledge, plant use, and conservation have been reported in other cultural settings (Zamin *et al.* 2024, 2026).

Evidence indicates that knowledge is unevenly distributed. Although rarely stated directly, knowledge of edible plants may differ by generation, gender, livelihood, ethnic background, and exposure to food landscapes. For example, ethnic differences in plant knowledge were documented in West Sumatra, while other studies found that age, livelihood, and proximity to forests influenced knowledge retention (Chikmawati *et al.* 2023, Pawera *et al.* 2020, Suwardi *et al.* 2025). This uneven distribution affects continued use: if knowledge is concentrated within certain groups, its loss may accelerate when those groups experience demographic or economic changes. Comparative evidence from Bhutan cautions against assumptions about social divides; differences were found by age and district, but not by gender (Yangdon *et al.* 2022). The limited Indonesian evidence suggests that social differentiation in wild food knowledge and use requires more explicit attention in future research.

Markets and exchange are another route through which wild and forest-associated foods remain visible. Some foods reach consumers via vendors, seasonal trade, or urban markets (Iskandar *et al.* 2018, Iskandar & Iskandar 2021, Marpaung *et al.* 2025). In other cases, forest-harvested foods move through non-monetary exchanges such as sharing and barter as well as sale (Rahayu *et al.* 2025a). Market circulation may also give these foods a social role, so their continued use is not limited to direct gathering or household subsistence (Rahayu *et al.* 2025b). These pathways can maintain visibility of seasonal fruits and culturally significant foods beyond harvest locations, though they may also shift some foods toward occasional, specialty, or income-oriented use (Marpaung *et al.* 2025, Rahayu *et al.* 2025a).

Purchased foods and convenience-oriented food environments can narrow the space for wild and forest-associated foods in daily meals, as people tend to choose easier-to-obtain foods over those that require more effort to gather. When gathering, processing, or cooking becomes less practical, these plants move from daily to seasonal, ceremonial, or more occasional use (Aulia *et al.* 2025, Kanara *et al.* 2025, Pawera *et al.* 2020). The reviewed studies suggest that decline is rarely tied to a single factor. Instead, ecological availability, practical knowledge, convenience, and competing food options interact to shape

whether plants remain active foods or become relegated to memories or occasional use. The evidence, however, is cross-sectional and perceived rather than measured, limiting causal inference.

Species lists are essential, but do not fully capture how edible biodiversity functions as food. Inventory-based studies have documented local names, edible parts, habitats, and reported uses across Indonesian landscapes (Afrianto *et al.* 2023, Mazid *et al.* 2022, Oktavianingsih *et al.* 2025). While this information is valuable, especially in a country with significant ecological and cultural diversity, its usefulness is limited when used to support food system or nutrition claims. Many records, including some core studies, still fall short of demonstrating a plant's actual role in local food practices (Supplementary Table S1). A plant identified as edible should not be assumed to contribute to food security, dietary diversity, or program suitability without further evidence. Such claims require evidence on availability, safety, cultural acceptability, preparation, actual use, and sustainable supply if demand increases (Pardo-de-Santayana *et al.* 2007, Powell *et al.* 2015, Purnomo *et al.* 2012, Sujarwo *et al.* 2016). More information is also needed on who has access to the plant and who knows how to use it. The issue is not the absence of species records, but insufficient evidence to make them useful for food system planning.

These findings indicate what needs to be assessed before edible biodiversity is considered in food systems and nutrition work in Indonesia. Wild and forest-associated edible plants should not be treated as a single category of "wild food resources" for general promotion. Their use depends on access, knowledge, preparation, seasonality, and familiarity. For research and public food initiatives, the priority is therefore not only to identify edible species but also to assess whether candidate foods are still used, safe, practical to prepare, locally acceptable, available in season, and sustainable if demand increases.

Limitations

The limitations of this review fall into two broad areas. First, the geographic distribution of the evidence base is uneven, with studies focused in Kalimantan, Java, and Sumatra, and relatively few in Sulawesi, the Maluku Islands, Papua, and Nusa Tenggara. This distribution may reflect the geographic focus of ethnobotanical research rather than the actual geography of edible plant consumption in Indonesia. Thus, this review does not provide a comprehensive picture throughout the archipelago, but rather the most robust patterns observed in the retained literature. Most core studies are also cross-sectional, so they are more likely to document current or recalled patterns than changes over time. The review can therefore identify conditions linked to continued use or decline but cannot establish causal pathways. Understanding how these conditions interact over time will require comparative or longitudinal research.

Second, the evidence is mostly ethnobotanical and descriptive. Many studies report plant uses, edible parts, and source settings, whereas fewer measure consumption frequency or quantity, nutritional contribution, or food security outcomes. This restricts the ability to evaluate the dietary importance of these plants and underscores the need for future research that connects ethnobotanical evidence with more direct measures of actual food use. Comparisons across studies are also complicated by differences in sampling method, informant group, plant identification, food-use categories, and the treatment of wild and cultivated plants. The core/non-core classification helped distinguish studies according to their analytical contribution, but the underlying methodological heterogeneity remains.

Conclusion

Wild and forest-associated edible plants in Indonesia function as landscape-based food resources. Their food relevance cannot be inferred solely from species presence. Rather than adding another inventory of edible species, this review synthesizes geographically dispersed Indonesian ethnobotanical evidence to examine how landscape access, food roles, and changing use conditions relate to whether documented edible plants remain part of food practice. People need to be able to access these plants and know how to prepare them for familiar meals.

These plants often contribute through non-staple roles that remain meaningful in local meals: vegetables, flavorings, seasonal fruits, supplementary starches, and processed foods. Some are part of ordinary cooking, while others are tied to markets, ceremonies, or seasonal gatherings. These roles are easily overlooked when food importance is judged primarily by staples, calories, or market volume. Their value lies in how they widen meals, add taste and seasonal variety, and keep local food knowledge in use. Continued use depends on more than ecological presence. Some plants remain active foods because they still fit everyday work, cooking, exchange, or social occasions. Others weaken as foods when gathering becomes less practical, preparation knowledge declines, tastes shift, or purchased foods become more convenient. Locally known plants should therefore not be treated as equally active foods.

The reviewed studies show more about conditions that allow edible plant diversity to become food than about the measured dietary impact. For research, the priority is to connect species records with evidence of use. Future studies should examine how people access, manage, and prepare these foods; how often they are eaten; how use changes by season; how knowledge and use differ between households, generations, and social groups; and how much these foods contribute to diets where such claims are made. More work is also needed in understudied parts of Indonesia, including Sulawesi, the Maluku Islands, Papua, and Nusa Tenggara, and in ecological settings that remain underrepresented, such as karst landscapes.

Findings support locally grounded assessment before these resources are considered for policy or program use. The reviewed evidence does not establish the suitability of wild and forest-associated edible plants for public food initiatives, including school meals. Where such use is considered, candidate foods would first need to be assessed for availability, safety, preparation feasibility, cultural acceptability, sustainability, and dietary contribution. The review also shows that edible biodiversity is distributed across connected landscapes rather than forest interiors. Different settings support different food roles, so maintaining landscape diversity may also help maintain food-use diversity. For food system planning, records of edible plants need to be considered alongside evidence on access, preparation, continued use, and suitability for the intended context.

Declarations

List of abbreviations: Not applicable.

Ethics approval and consent to participate: Not applicable. This study is based on published literature and did not involve direct research with human participants or animals.

Consent for publication: Not applicable.

Availability of data and materials: The study-level charting table and the full search strategy are provided as Supplementary Tables S1 and S2. The underlying bibliographic dataset is available from the corresponding author on reasonable request.

Competing interests: The authors declare no competing interests.

Funding: This research was conducted as part of the first author's Postdoctoral Fellowship at the National Research and Innovation Agency (BRIN), Indonesia.

Author contributions: Y.Y.S.R. conceived the review, conducted the literature search, led the screening and core/non-core classification, performed data extraction, and drafted the manuscript. A.D. and D.R. assisted with title-and-abstract screening and full-text retrieval and contributed to the manuscript revision. P. provided the figures. W.S. contributed to the assessment of uncertain core/non-core classification decisions and reviewed the final drafts. AI-assisted language tools were used only for language refinement; all content was reviewed, edited, and verified by the authors. All authors have read and approved the final version.

Literature cited

Adnan, Navia ZI, Jamil M, Suwardi AB. 2023. The diversity and traditional knowledge of wild edible vegetables in Aceh, Indonesia. Ethnobotany Research and Applications 26: 1-16. doi: 10.32859/era.26.49.1-16.

Afrianto WF, Hasanah LN, Metananda AA. 2023. Diversity of edible plants traded in the East Jakarta traditional markets, Indonesia. Biodiversitas 24(12): 6953-6968. doi: 10.13057/biodiv/d241257.

Al Yamini TH, Djuita NR, Chikmawati T, Purwanto Y. 2023. Ethnobotany of wild and semi-wild edible plants of the Madurese tribe in Sampang and Pamekasan Districts, Indonesia. Biodiversitas 24(2): 947-957. doi: 10.13057/biodiv/d240234.

Alfinandah A, Irawan B, Iskandar J. 2025. Ethnobotany of wild edible plants by the community of Cijambu Village, Sumedang District, West Java, Indonesia. Biodiversitas 26(5): 2235-2252. doi: 10.13057/biodiv/d260521.

Allen T, Prosperi P, Cogill B, Flichman G. 2014. Agricultural biodiversity, social-ecological systems and sustainable diets. Proceedings of the Nutrition Society 73(4): 498-508. doi: 10.1017/S002966511400069X.

Amboupe D, Hartana A, Purwanto Y. 2019. Ethnobotanical study of food plants in Bentong community from Barru Regency, South Sulawesi, Indonesia. Media Konservasi 24(3): 278-286. doi: 10.29244/medkon.24.3.278-286.

Anggraeni A, Yuniati R, Silalahi M, Lestari R, Jumari J. 2023. Cultivation of underutilized fruit trees by indigenous people in Urug Village, West Java, Indonesia. Biodiversitas 24(1): 454-466. doi: 10.13057/biodiv/d240152.

Anjeliana, Syamswisna, Yeni LF. 2024. Etnobotani tumbuhan liar sebagai alternatif pangan oleh masyarakat Dayak Pesaguan, Desa Serengkah Kanan, Kabupaten Ketapang. Bioscientist: Jurnal Ilmiah Biologi 12(2): 2714-2725. doi: 10.33394/bioscientist.v12i2.11822.

Arini W, Saputra VR, Ramadani H. 2021. Pemanfaatan tumbuhan lokal secara tradisional dalam peningkatan ketahanan pangan oleh suku Dayak Iban di Desa Mensiau, Kalimantan Barat. Biotropika: Journal of Tropical Biology 9(1): 38-45. doi: 10.21776/ub.biotropika.2021.009.01.05.

Arksey H, O'Malley L. 2005. Scoping studies: towards a methodological framework. International Journal of Social Research Methodology 8(1): 19-32. doi: 10.1080/1364557032000119616.

Aulia SAZ, Mulyanto D, Iskandar BS, Man Z, Sujarwo W. 2025. Continuity and change in Sundanese use of wild vegetables: A historical ethnobotany analysis. Ethnobotany Research and Applications 32: 1-16. doi: 10.32859/era.32.29.1-16.

Bappenas. 2021. Indonesia strategic national pathway for food systems transformation. Food Systems Summit Dialogues. https://summitdialogues.org/wp-content/uploads/2021/09/Pathway_version_1.0english_Indonesia_15.09.2021.pdf (Accessed 07/02/2026).

Bappenas. 2025. Bappenas dan FAO perkuat kolaborasi transformasi sistem pangan. Kementerian PPN/Bappenas. https://www.bappenas.go.id/id/berita/bappenas-dan-fao-perkuat-kolaborasi-transformasi-sistem-pangan-o9UZj (Accessed 12/04/2026).

Bella CV, Hikma Y, Nurhaida. 2025. Pemanfaatan tumbuhan pangan oleh masyarakat suku Dayak Simpakng di Desa Botuh Bosi, Kecamatan Simpang Hulu, Kabupaten Ketapang. Jurnal Lingkungan Hutan Tropis 4(3): 412-426.

BGN. 2026. Menu MBG disusun sesuai standar AKG Kemenkes. Badan Gizi Nasional. https://www.bgn.go.id/news/berita/menu-mbg-disusun-sesuai-standar-akg-kemenkes (Accessed 21/04/2026).

Bharucha Z, Pretty J. 2010. The roles and values of wild foods in agricultural systems. Philosophical Transactions of the Royal Society B: Biological Sciences 365(1554): 2913-2926. doi: 10.1098/rstb.2010.0123.

Borelli T, Hunter D, Powell B, Ulian T, Mattana E, Termote C, Pawera L, Beltrame D, Penafiel D, Tan A, Taylor M, Engels J. 2020. Born to eat wild: An integrated conservation approach to secure wild food plants for food security and nutrition. Plants 9(10): 1299. doi: 10.3390/plants9101299.

Borelli T, Keim A, Sujarwo W, Koostanto H, Pawera L, Gullotta G, Jalonen R, Lombardo A, Hunter D. 2024. Invisible treasures: Assessing Indonesia's unique agrobiodiversity for food and nutrition security. Sustainability 16(22): 9824. doi: 10.3390/su16229824.

Burlingame B, Dernini S, eds. 2012. Sustainable diets and biodiversity - Directions and solutions for policy, research and action. FAO, Rome, Italy.

CBD. 2025. Indonesia - Country profile biodiversity facts. Convention on Biological Diversity. https://www.cbd.int/countries/profile?country=id (Accessed 24/04/2025).

Chikmawati T, Sulistijorini S, Djuita NR, Prasaja D, Al Yamini TH, Miftahudin M, Fakhrurrozi Y. 2023. Ethnobotany of food plants utilized by Malay ethnic in Belitung District, Indonesia. Biodiversitas 24(5): 2977-2987. doi: 10.13057/biodiv/d240552.

Cita KD, Hasibuan RS. 2019. Pemanfaatan tumbuhan pangan oleh etnik Sunda, di Kampung Nyangkewok, Kabupaten Sukabumi. Media Konservasi 24(3): 303-313. doi: 10.29244/medkon.24.3.303-313.

Cruz-Garcia GS. 2017. Management and motivations to manage "wild" food plants. A case study in a Mestizo village in the Amazon deforestation frontier. Frontiers in Ecology and Evolution 5: 127. doi: 10.3389/fevo.2017.00127.

Dasman Y, Oramahi HA, Sisillia L. 2015. Tumbuhan sumber pangan yang dimanfaatkan oleh masyarakat sekitar hutan tembawang Desa Nanga Kompi Kecamatan Nanga Sayan Kabupaten Melawi. Jurnal Hutan Lestari 3(2): 332-336. doi: 10.26418/jhl.v3i2.10876.

Declerck FAJ, Fanzo J, Palm C, Remans R. 2011. Ecological approaches to human nutrition. Food and Nutrition Bulletin 32(1_suppl1): S41-S50. doi: 10.1177/15648265110321S106.

Desti D, Mastuti R, Azrianingsih R, Arumingtyas EL. 2024. Local uses and traditional knowledge of nibung (*Oncosperma tigillarium)* in Riau province, Indonesia. Biodiversitas 25(5): 2043-2050. doi: 10.13057/biodiv/d250522.

Dewantara I, Safitri M, Zainal S, Destiana D. 2024. Pemanfaatan tumbuhan pangan oleh masyarakat di Desa Dalam, Kecamatan Selimbau, Kabupaten Kapuas Hulu. Jurnal Hutan Lestari 12(1): 255-267. doi: 10.26418/jhl.v12i1.78433.

Diba F, Sholihin M, Nurhaida. 2021. Utilization of plants as food source from Sebaju village forest, Nanga Kebebu village, Nanga Pinoh District, Melawi Regency. Jurnal Biologi Tropis 21(1): 52-64. doi: 10.29303/jbt.v21i1.2317.

Fanzo J. 2019. Healthy and sustainable diets and food systems: The key to achieving Sustainable Development Goal 2? Food Ethics 4(2): 159-174. doi: 10.1007/s41055-019-00052-6.

Fanzo J, Bellows AL, Spiker ML, Thorne-Lyman AL, Bloem MW. 2021. The importance of food systems and the environment for nutrition. The American Journal of Clinical Nutrition 113(1): 7-16. doi: 10.1093/ajcn/nqaa313.

Fatimah FZN, Mulyanto D. 2025. Wild plant knowledge and local disaster mitigation in West Java's deforested highland, Indonesia. Asian Journal of Forestry 9(2): 418-427. doi: 10.13057/asianjfor/r090222.

Gaveau DLA, Locatelli B, Salim MA, Husnayaen, Manurung T, Descals A, Angelsen A, Meijaard E, Sheil D. 2022. Slowing deforestation in Indonesia follows declining oil palm expansion and lower oil prices. PLOS ONE 17(3): e0266178. doi: 10.1371/journal.pone.0266178.

Gemilang R, Irwanto RR, Dwiartama A. 2019. Studi etnobotani pemanfaatan sagu (*Metroxylon sagu* Rottb.) di Pulau Lingga, Kepulauan Riau. Prosiding Seminar Nasional Biologi 4: Pemanfaatan Biodiversitas dan Bioteknologi untuk Pelestarian Lingkungan, pp. 36-43.

Gergel SE, Powell B, Baudron F, Wood SLR, Rhemtulla JM, Kennedy G, Rasmussen LV, Ickowitz A, Fagan ME, Smithwick EAH, Ranieri J, Wood SA, Groot JCJ, Sunderland TCH. 2020. Conceptual links between landscape diversity and diet diversity: A roadmap for transdisciplinary research. BioScience 70(7): 563-575. doi: 10.1093/biosci/biaa048.

Hafizah N, Chikmawati T, Djuita NR, Purwanto Y. 2025. Ethnobotany and traditional food plant knowledge among the Malay community of Kuantan Singingi District, Riau, Indonesia. Asian Journal of Ethnobiology 8(2): 271-290. doi: 10.13057/asianjethnobiol/y080212.

Hardjanto, Hero Y, Patabang M. 2022. Bentuk dan ketersediaan pangan dari hutan rakyat untuk mendukung ketahanan pangan di perdesaan. Jurnal Penelitian Hutan Tanaman 19(1): 11-28. doi: 10.59465/jpht.v19i1.780.

Hartoyo APP, Supriyanto S, Siregar IZ, Theilade I, Prasetyo LB. 2018. Agroforest diversity and ethnobotanical aspects in two villages of Berau, East Kalimantan, Indonesia. Biodiversitas 19(2): 387-398. doi: 10.13057/biodiv/d190205.

Hayati D, Armanda F, Jamilah M, Rosita I, Muslih AM. 2023. Praktik agroforestri tradisional (lampoh) di Aceh Besar: Menilai potensi dan pemanfaatan oleh masyarakat di Kecamatan Simpang Tiga. Jurnal Agriment 8(1): 74-80. doi: 10.51967/jurnalagriment.v8i1.2486.

Hendra M, Oktaviani M. 2020. Etnobotani rempah tradisional masyarakat Dayak Kenyah Umaq Jalam di Kecamatan Segah, Kabupaten Berau. Jurnal Pendidikan Matematika dan IPA 11(2): 333-344. doi: 10.26418/jpmipa.v11i2.40977.

Hernawati D, Putra RR, Meylani V. 2022. Indigenous vegetables consumed as lalapan by a Sundanese ethnic group in West Java, Indonesia: Potential, traditions, local knowledge, and its future. South African Journal of Botany 151: 133-145. doi: 10.1016/j.sajb.2022.09.007.

Hunter D, Borelli T, Beltrame DMO, Oliveira CNS, Coradin L, Wasike VW, Wasilwa L, Mwai J, Manjella A, Samarasinghe GWL, Madhujith T, Nadeeshani HVH, Tan A, Ay ST, Güzelsoy N, Lauridsen N, Gee E, Tartanac F. 2019. The potential of neglected and underutilized species for improving diets and nutrition. Planta 250(3): 709-729. doi: 10.1007/s00425-019-03169-4.

Ickowitz A, McMullin S, Rosenstock T, Dawson I, Rowland D, Powell B, Mausch K, Djoudi H, Sunderland T, Nurhasan M, Nowak A, Gitz V, Meybeck A, Jamnadass R, Guariguata MR, Termote C, Nasi R. 2022. Transforming food systems with trees and forests. The Lancet Planetary Health 6(7): e632-e639. doi: 10.1016/S2542-5196(22)00091-2.

Iqbal M, Septina A. 2018. Pemanfaatan hasil hutan bukan kayu oleh masyarakat lokal di Kabupaten Sanggau, Kalimantan Barat. Jurnal Penelitian Ekosistem Dipterokarpa 4(1): 19-34. doi: 10.20886/jped.2018.4.1.19-34.

Irawan R, Oramahi HA, Hardiansyah G. 2020. Pemanfaatan tumbuhan sebagai bahan pangan di sekitar kawasan hutan Desa Sedahan Jaya, Kecamatan Sukadana, Kabupaten Kayong Utara. Jurnal Hutan Lestari 8(3): 552-565. doi: 10.26418/jhl.v8i3.41730.

Iskandar BS, Irawan B, Mulyanto D, Iskandar J, Afinanda A, Rajab B. 2023. Gastronomic ethnobotany of traditional vegetables among the Sundanese in rural West Java, Indonesia. Biodiversitas 24(7): 3932-3950. doi: 10.13057/biodiv/d240732.

Iskandar BS, Iskandar J. 2021. Kawung: Landraces, management, uses, and conservation based on moral versus economic interest among outer Baduy community, South Banten, Indonesia. Biodiversitas 22(12): 5572-5584. doi: 10.13057/biodiv/d221242.

Iskandar BS, Iskandar J, Irawan B, Partasasmita R. 2018. Traditional markets and diversity of edible plant trading: Case study in Ujung Berung, Bandung, West Java, Indonesia. Biodiversitas 19(2): 437-452. doi: 10.13057/biodiv/d190211.

Iskandar J, Iskandar BS. 2015. Studi etnobotani keanekaragaman tanaman pangan pada "Sistem Huma" dalam menunjang keamanan pangan Orang Baduy. Prosiding Seminar Nasional Masyarakat Biodiversitas Indonesia 1(6): 1265-1272. doi: 10.13057/psnmbi/m010601.

Iswandono E, Zuhud EAM, Hikmat A, Kosmaryandi N. 2015. Pengetahuan etnobotani suku Manggarai dan implikasinya terhadap pemanfaatan tumbuhan hutan di Pegunungan Ruteng. Jurnal Ilmu Pertanian Indonesia 20(3): 171-181. doi: 10.18343/jipi.20.3.171.

Jamili AS. 2022. Pemuda dan sagu: Perubahan konsumsi pangan pokok di Kabupaten Halmahera Barat, Maluku Utara. Jurnal Agrosains 7(2): 68-80. doi: 10.31102/agrosains.2022.7.2.68-80.

Jamnadass R, McMullin S, Iiyama M, Dawson IK, Powell B, Termote C, Ickowitz A, Kehlenbeck K, Vinceti B, Van Vliet N, Keding G, Stadlmayr B, Van Damme P, Carsan S, Sunderland T, Njenga M, Gyau A, Cerutti P, Schure J, Kouame C, Darko Obiri B, Ofori D, Agarwal B, Neufeldt H, Degrande A, Serban A. 2015. Understanding the roles of forests and tree-based systems in food provision. In: Vira B, Wildburger C, Mansourian S. (eds). Forests and food: Addressing hunger and nutrition across sustainable landscapes. Open Book Publishers, Cambridge, UK, Pp. 27-70. doi: 10.11647/OBP.0085.02.

Johns T, Eyzaguirre PB. 2006. Linking biodiversity, diet and health in policy and practice. Proceedings of the Nutrition Society 65(2): 182-189. doi: 10.1079/PNS2006494.

Johns T, Sthapit BR. 2004. Biocultural diversity in the sustainability of developing-country food systems. Food and Nutrition Bulletin 25(2): 143-155. doi: 10.1177/156482650402500207.

Jones AD. 2017. Critical review of the emerging research evidence on agricultural biodiversity, diet diversity, and nutritional status in low- and middle-income countries. Nutrition Reviews 75(10): 769-782. doi: 10.1093/nutrit/nux040.

Juli H, Yanti H, Lestariningsih SP. 2022. Pemanfaatan tumbuhan HHBK sebagai sumber pangan oleh masyarakat Desa Entikong, Kecamatan Entikong, Kabupaten Sanggau. Jurnal Lingkungan Hutan Tropis 1(1): 19-31.

Julia L, Oramahi HA, Hardiansyah G. 2020. Etnobotani tumbuhan sumber pangan masyarakat Dayak Bidayuh di Desa Hli Buei, Kecamatan Siding, Kabupaten Bengkayang. Jurnal Hutan Lestari 8(3): 653-667. doi: 10.26418/jhl.v8i3.42738.

Juliana, Linda R, Mukarlina. 2013. Pemanfaatan tumbuhan yang berpotensi sebagai sumber pangan di Gunung Peramas, Desa Pangkalan Buton, Kecamatan Sukadana, Kabupaten Kayong Utara. Protobiont 2(3): 117-121. doi: 10.26418/protobiont.v2i3.3877.

Jupri A, Milenia EW, Jannah W, Husain P. 2022. Ethnobotany of food plants used by local communities at Joben Resort, Mount Rinjani National Park, East Lombok. Jurnal Biologi Tropis 22(3): 1025-1032. doi: 10.29303/jbt.v22i3.4094.

Kanara N, Arifin HS, Zuhud EAM, Noorochmat BP. 2025. Plant diversity of ceremonial foods used by Minangkabau ethnic group in West Sumatra, Indonesia. Biodiversitas 26(12): 6352-6366. doi: 10.13057/biodiv/d261233.

Kuhnlein H, Erasmus B, Spigelski D, Burlingame B, eds. 2013. Indigenous peoples' food systems and well-being: Interventions and policies for healthy communities. FAO, Rome, Italy.

Kulsum NNS, Susandarini R. 2023. Diversity of wild edible fruits in the agroforestry area of Cigalontang Village, Tasikmalaya, Indonesia. Biodiversitas 24(7): 4161-4167. doi: 10.13057/biodiv/d240755.

Kurniawati TE, Turnip M, Lovadi I. 2015. Kajian pemanfaatan buah edibel suku Dayak Banyadu di hutan tembawang Desa Setia Jaya, Kecamatan Teriak, Kabupaten Bengkayang. Protobiont 4(1): 10-16. doi: 10.26418/protobiont.v4i1.8706.

Kuswati K, Adi W. 2021. Gathering nutritious edible wild plants based on societies indigenous knowledge from Sempolan, Jember Regency. Jurnal Biologi Tropis 21(2): 393-402. doi: 10.29303/jbt.v21i2.2607.

Leal ML, Alves RP, Hanazaki N. 2018. Knowledge, use, and disuse of unconventional food plants. Journal of Ethnobiology and Ethnomedicine 14(1): 6. doi: 10.1186/s13002-018-0209-8.

Lestari RW, Wahid MR, Pataya MR. 2025. Documentation of wild edible fruits in Palangka Raya City. Jurnal Biologica Samudra 7(2): 160-174. doi: 10.33059/jbs.v7i2.13341.

Levac D, Colquhoun H, O'Brien KK. 2010. Scoping studies: advancing the methodology. Implementation Science 5(1): 69. doi: 10.1186/1748-5908-5-69.

Limbu NU, Mau MC, Dipu F, Bao AP. 2024. Mapping local food in addressing food insecurity by farming communities in Wolomeze District, Ngada Regency. Jurnal Biologi Tropis 24(2b): 29-39. doi: 10.29303/jbt.v24i2b.8024.

Linda, Oramahi HA, Zainal S. 2022. Jenis tumbuhan yang dimanfaatkan sebagai sumber bahan pangan oleh masyarakat Desa Sepang, Kecamatan Toho, Kabupaten Mempawah. Jurnal Lingkungan Hutan Tropis 1(3): 921-935.

Marpaung AA, Fitmawati F, Nobis M. 2025. Wild plants in traditional markets of the Jakarta Metropolitan Area and their use in Indonesian culture: an ethnobotanical survey. Acta Societatis Botanicorum Poloniae 94: 203244. doi: 10.5586/asbp/203244.

Mazid A, Adhya I, Nurlaila A. 2022. Keanekaragaman tumbuhan pangan di Stasiun Riset Karangsari Taman Nasional Gunung Ciremai. Wana Raksa 16(2): 73-79. doi: 10.25134/wanaraksa.v16i02.9031.

Megawati, Wardoyo ERP, Rafdinal. 2020. Etnobotani tumbuhan pangan masyarakat Dayak Kanayant di Desa Babane, Kecamatan Samalantan, Kabupaten Bengkayang, Kalimantan Barat. Protobiont 9(2): 142-151. doi: 10.26418/protobiont.v9i2.45522.

Mutaqin AZ, Kurniadie D, Iskandar J, Nurzaman M, Partasasmita R. 2020. Ethnobotany of suweg (*Amorphophallus paeoniifolius*): Folk classification, habitat, and traditional conservation in Cisoka village, Majalengka district, Cimanuk watershed region, Indonesia. Biodiversitas 21(2): 546-555. doi: 10.13057/biodiv/d210216.

Naufal D, Duryat, Riniarti M. 2025. Kajian etnobotani pemanfaatan mangrove sebagai bahan pangan di pesisir Tulang Bawang. Jurnal Sylva Scienteae 8(1): 80-87. doi: 10.20527/jss.v8i1.14210.

Navia ZI, Suwardi AB, Harmawan T, Syamsuardi, Mukhtar E. 2020. The diversity and contribution of indigenous edible fruit plants to the rural community in the Gayo Highlands, Indonesia. Journal of Agriculture and Rural Development in the Tropics and Subtropics 121(1): 89-98. doi: 10.17170/kobra-202004061145.

Nelly C, Fitriyana L, Santi TD, Saudah. 2024. Diversity of traditional vegetables and spices as local food security for the Gayo tribe, Aceh, Indonesia. Biodiversitas 25(12): 4699-4711. doi: 10.13057/biodiv/d251206.

Ningrum W, Oramahi HA, Dirhamsyah M. 2023. Pemanfaatan tumbuhan pangan yang dikonsumsi oleh masyarakat di tembawang Angkabang, Desa Paloan, Kabupaten Landak. Jurnal Lingkungan Hutan Tropis 2(1): 148-162.

Ningsih V, Wardhani HAK. 2025. Etnobotani tumbuhan pangan suku Dayak Seberuang, Kecamatan Tempunak, Kalimantan Barat. Biology Natural Resources Journal 3(2): 62-67. doi: 10.55719/binar.v3i2.1520.

Oktavianingsih L, Wulandari N, Susanto D, Arif MF. 2025. Ethnobotanical utilization and cultural significance of taro (*Colocasia* spp.) in Berau District, East Kalimantan, Indonesia. Biodiversitas 26(11): 5458-5467. doi: 10.13057/biodiv/d261107.

Pardo-de-Santayana M, Tardío J, Blanco E, Carvalho AM, Lastra JJ, San Miguel E, Morales R. 2007. Traditional knowledge of wild edible plants used in the northwest of the Iberian Peninsula (Spain and Portugal): A comparative study. Journal of Ethnobiology and Ethnomedicine 3(1): 27. doi: 10.1186/1746-4269-3-27.

Pawera L, Khomsan A, Zuhud EAM, Hunter D, Ickowitz A, Polesny Z. 2020. Wild food plants and trends in their use: From knowledge and perceptions to drivers of change. Foods 9(9): 1240. doi: 10.3390/foods9091240.

Peters MDJ, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil H. 2024. Scoping reviews. In: Aromataris E, Lockwood C, Porritt K, Pilla B, Jordan Z. (eds). JBI manual for evidence synthesis. JBI. doi: 10.46658/JBIMES-24-09.

Powell B, Thilsted SH, Ickowitz A, Termote C, Sunderland T, Herforth A. 2015. Improving diets with wild and cultivated biodiversity from across the landscape. Food Security 7(3): 535-554. doi: 10.1007/s12571-015-0466-5.

Prastianto E, Dewantara I, Diba F, Yani A, Dirhamsyah M. 2022. Pemanfaatan hasil hutan berupa pangan dari Kawasan Hutan Mangrove Surya Perdana Mandiri, Kelurahan Setapuk Besar, Kota Singkawang. Jurnal Lingkungan Hutan Tropis 1(1): 121-137.

Prayogi J, Wardenaar E, Kartikawati SM. 2022. Etnobotani bahan pangan masyarakat Dusun Pematang Merbau, Desa Sungai Awan Kiri, Kecamatan Muara Pawan, Kabupaten Ketapang. Jurnal Hutan Lestari 10(2): 319-332. doi: 10.26418/jhl.v10i2.50762.

Pujinisa W, Henri, Romdhoni E. 2023. Etnobotani tumbuhan bahan pangan di Taman Wisata Alam Gunung Permisan, Kabupaten Bangka Selatan. Jurnal Ilmu Lingkungan 21(3): 453-462. doi: 10.14710/jil.21.3.453-462.

Purba EC, Silalahi M. 2021. Edible plants of the Batak Karo of Merdeka district, North Sumatra, Indonesia. Ethnobotany Research and Applications 22: 1-15. doi: 10.32859/era.22.01.1-15.

Purnomo, Daryono BS, Rugayah, Sumardi I. 2012. Studi etnobotani *Dioscorea* spp. (Dioscoreaceae) dan kearifan budaya lokal masyarakat di sekitar hutan Wonosadi Gunung Kidul Yogyakarta. Jurnal Natur Indonesia 14(3): 191-198. doi: 10.31258/jnat.14.3.191-198.

Rahayu YYS, Dwiartama A, Sujarwo W, Irsyam ASD, Peniwidiyanti. 2025a. Three faces of urban foraging: Recreational, subsistence, and traditional practices in Indonesia. Economic Botany 79(4): 551-571. doi: 10.1007/s12231-025-09658-w.

Rahayu YYS, Sujarwo W, Irsyam ASD, Dwiartama A, Rosleine D. 2024. Exploring unconventional food plants used by local communities in a rural area of West Java, Indonesia: Ethnobotanical assessment, use trends, and potential for improved nutrition. Journal of Ethnobiology and Ethnomedicine 20: 68. doi: 10.1186/s13002-024-00710-y.

Rahayu YYS, Suwardi AB, Anggraeni A, Irsyam ASD, Purwaningtias RM, Sujarwo W. 2025b. What shapes traditional food plant use? Correlates of consumption and associations with perceived well-being in three socio-ecological settings of Indonesia. Ethnobotany Research and Applications 32: 1-25. doi: 10.32859/era.32.44.1-25.

Rahmi AS, Tavita GE, Nurhaida. 2021. Pemanfaatan tumbuhan sebagai bahan pangan oleh masyarakat di sekitar Hutan Desa Lingkar Indah, Kecamatan Sayan, Kabupaten Melawi. Jurnal Hutan Lestari 8(4): 840-847. doi: 10.26418/jhl.v8i4.45186.

Raihandhany R, Purnomo. 2025. Quantitative ethnobotany approach on local food plants in Banceuy Traditional Village, Subang Regency, West Java. Media Konservasi 30(1): 172-183. doi: 10.29244/medkon.30.1.172.

Ramaidani, Navia ZI. 2022. Documentation of the traditional Gayo food in Lokop Village, East Aceh, Indonesia. Biodiversitas 23(4): 2017-2024. doi: 10.13057/biodiv/d230437.

Rarasti KA, Astuti AR, Putra CDH, Damayanti K, Amar, Saensouk S, Setyawan AD. 2025. Diversity and traditional knowledge of wild edible plants in the karst ecosystems of Paranggupito, Central Java, Indonesia. International Journal of Tropical Drylands 9(1): 74-84. doi: 10.13057/tropdrylands/t090107.

Remans R, Flynn DFB, DeClerck F, Diru W, Fanzo J, Gaynor K, Lambrecht I, Mudiope J, Mutuo PK, Nkhoma P, Siriri D, Sullivan C, Palm CA. 2011. Assessing nutritional diversity of cropping systems in African villages. PLoS ONE 6(6): e21235. doi: 10.1371/journal.pone.0021235.

Romana, Burhanuddin, Thamrin E. 2018. Tumbuhan sumber pangan yang dikonsumsi oleh masyarakat pada tembawang Pak Kuning di Sengah Temila. Jurnal Hutan Lestari 6(4): 869-874. doi: 10.26418/jhl.v6i4.29847.

Royyani MF, Sihotang VBL, Efendy O. 2018. Bertahan di tengah samudra: Pandangan etnobotani terhadap Pulau Enggano, alam, dan manusianya. Jurnal Biologi Indonesia 14(2): 235-242. doi: 10.47349/jbi/14022018/235.

Safitri RN, Hanum U, Pratiwi VMR, Hermawan WG, Nurcahyati M, Budiharta S, Setyawan AD. 2025. Ethnobotanical knowledge of edible plants in a karst landscape of Gawang Hamlet, Ketro Village, Pacitan District, Indonesia. International Journal of Tropical Drylands 9(1): 85-97. doi: 10.13057/tropdrylands/t090108.

Sartika S, Umam AH, Iqbar I. 2021. Studi etnobotani tumbuhan hutan sebagai bahan pangan (Studi kasus Kecamatan Terangun, Kabupaten Gayo Lues). Jurnal Ilmiah Mahasiswa Pertanian 6(4): 966-972. doi: 10.17969/jimfp.v6i4.18376.

Setiawan E. 2016. Umbi non spesifik Madura (2): Etnobotani tekkay (*Eleocharis dulcis*) pada ekosistem sawah rawa sebagai bahan pangan di Pulau Madura. Rekayasa 9(2): 116-126. doi: 10.21107/rekayasa.v9i2.3348.

Setiawan H, Qiptiyah M. 2014. Kajian etnobotani masyarakat adat suku Moronene di Taman Nasional Rawa Aopa Watumohai. Jurnal Penelitian Kehutanan Wallacea 3(2): 107-117. doi: 10.18330/jwallacea.2014.vol3iss2pp107-117.

Sholichah L, Alfidhdhoh D. 2020. Etnobotani tumbuhan liar sebagai sumber pangan di Dusun Mendiro, Kecamatan Wonosalam, Jombang. Jurnal Ilmu Pertanian Indonesia 25(1): 111-117. doi: 10.18343/jipi.25.1.111.

Silalahi M, Nisyawati, Anggraeni R. 2018. Studi etnobotani tumbuhan pangan yang tidak dibudidayakan oleh masyarakat lokal subetnis Batak Toba di Desa Peadungdung, Sumatera Utara, Indonesia. Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan 8(2): 241-250. doi: 10.29244/jpsl.8.2.241-250.

Simanjuntak S. 2023. Etnobotani mangrove sebagai bahan pangan oleh masyarakat di Kecamatan Percut Sei Tuan, Kabupaten Deli Serdang, Sumatera Utara. Thesis, Universitas Medan Area.

Siregar ES, Jumilawaty E, Tanjung M, Risnasari I, Basyuni M, Syafitri A, Hartanto A. 2025. Quantitative ethnobotany of mangrove plant uses by the coastal community of Sicanang Belawan, North Sumatra, Indonesia. Biodiversitas 26(10): 5181-5194. doi: 10.13057/biodiv/d261032.

Srianta I, Arisasmita JH, Patria HD, Epriliati I. 2012. Ethnobotany, nutritional composition and DPPH radical scavenging of leafy vegetables of wild *Paederia foetida* and *Erechtites hieracifolia*. International Food Research Journal 19(1): 245-250.

Sujarwo W, Arinasa IBK, Caneva G, Guarrera PM. 2016. Traditional knowledge of wild and semi-wild edible plants used in Bali (Indonesia) to maintain biological and cultural diversity. Plant Biosystems 150(5): 971-976. doi: 10.1080/11263504.2014.994577.

Sujarwo W, Rahayu YYS, Sukenti K, Lugrayasa N, Keim AP, Zuccarello V. 2025. Bio-cultural habits of plant consumption in the food system of traditional Sasak's villages (Indonesia). Ethnobotany Research and Applications 30: 1-15. doi: 10.32859/era.30.22.1-15.

Sumarlin D, Dirhamsyah M, Ardian H. 2015. Identifikasi tumbuhan sumber pangan di hutan tembawang Desa Aur Sampuk, Kecamatan Sengah Temila, Kabupaten Landak. Jurnal Hutan Lestari 4(1): 32-39. doi: 10.26418/jhl.v4i1.14481.

Supiandi MI, Leliavia, Syafruddin D, Utami YE, Sekunda R. 2019. Plant fruits used as food by the Dayak community of Tamambaloh in Labian Ira'ang Village, Kapuas Hulu District, Indonesia. Biodiversitas 20(7): 1827-1832. doi: 10.13057/biodiv/d200706.

Susanti AD, Nahlunnisa H, Farma A. 2024. Etnobotani tumbuhan pangan masyarakat sekitar agroforestri repong damar Pahmungan, Provinsi Lampung. Jurnal Silva Samalas: Journal of Forestry and Plant Science 7(2): 14-20. doi: 10.33394/jss.v7i2.14228.

Susiarti S, Setyowati N, Rugayah. 2012. Etnobotani *Tacca leontopetaloides* (L.) O.Kuntze sebagai bahan pangan di Pulau Madura dan sekitarnya, Jawa Timur. Pangan 21(2): 161-170. doi: 10.33964/jp.v21i2.122.

Suwardi AB, Baihaqi B, Harmawan T. 2025. Diversity, utilization, and sustainable management of wild edible fruit plants in agroforestry systems: A case study in Central Kalimantan, Indonesia. Agroforestry Systems 99: 64. doi: 10.1007/s10457-025-01165-0.

Suwardi AB, Navia ZI. 2023. Sustainable use and management of wild edible fruit plants: A case study in the Ulu Masen Protected Forest, West Aceh, Indonesia. Journal of Sustainable Forestry 42(8): 811-830. doi: 10.1080/10549811.2022.2123355.

Suwardi AB, Navia ZI, Harmawan T, Mukhtar E. 2020a. Ethnobotany and conservation of indigenous edible fruit plants in South Aceh, Indonesia. Biodiversitas 21(5): 1850-1860. doi: 10.13057/biodiv/d210511.

Suwardi AB, Navia ZI, Harmawan T, Mukhtar E. 2020b. Wild edible fruits generate substantial income for local people of the Gunung Leuser National Park, Aceh Tamiang region. Ethnobotany Research and Applications 20: 1-13. doi: 10.32859/era.20.11.1-13.

Suwardi AB, Navia ZI, Sutrisno IH, Efriani, Elisa H, Kurniatuhadi R, Reza A, Gunawan WR. 2026. Ecological functions, ecosystem services, and biocultural significance of wild edible fruits in a biodiversity hotspot: Evidence from West Kalimantan, Indonesia. Ecological Frontiers 46(2): 627-635. doi: 10.1016/j.ecofro.2025.10.014.

Syafira F, Nurainas, Syamsuardi. 2023. Ethnobotanical study of *Zingiber album* Nurainas, an endemic ginger from Sumatra. IOP Conference Series: Earth and Environmental Science 1255(1): 012035. doi: 10.1088/1755-1315/1255/1/012035.

Syamsuardi, Mukhtar E, Nurainas, Suwardi AB. 2022. Diversity and use of wild edible fruits in the Bukit Rimbang-Bukit Baling Wildlife Reserve, Kampar, Riau, Indonesia. Biodiversitas 23(10): 5035-5042. doi: 10.13057/biodiv/d231009.

Thrupp LA. 2000. Linking agricultural biodiversity and food security: The valuable role of agrobiodiversity for sustainable agriculture. International Affairs 76(2): 265-281. doi: 10.1111/1468-2346.00133.

Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, Moher D, Peters MDJ, Horsley T, Weeks L, Hempel S, Akl EA, Chang C, McGowan J, Stewart L, Hartling L, Aldcroft A, Wilson MG, Garritty C, Lewin S, Godfrey CM, Macdonald MT, Langlois EV, Soares-Weiser K, Moriarty J, Clifford T, Tunçalp Ö, Straus SE. 2018. PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. Annals of Internal Medicine 169(7): 467-473. doi: 10.7326/M18-0850.

Triyana E, Iskandar AM, Setyawati D. 2022. Pemanfaatan tumbuhan sumber pangan oleh masyarakat di hutan tembawang Dusun Penyalimau Empaong, Kabupaten Sanggau. Jurnal Lingkungan Hutan Tropis 1(1): 44-52.

Triyanto A, Purnamasari F, Paramita FS, Wicaksono FR, Ramadhan FA, Budiharta S, Saensouk S, Setyawan AD. 2024. Ethnobotany of wild edible plants used by local communities in three districts along the upper Bengawan Solo River, Central Java, Indonesia. Biodiversitas 25(4): 1596-1605. doi: 10.13057/biodiv/d250428.

Wardah, Ariani DA. 2020. Ethnobotany study of jalawure (*Tacca leontopetaloides*) as a source of nutrition quality improvement on the south coastal people in West Java. IOP Conference Series: Earth and Environmental Science 458(1): 012047. doi: 10.1088/1755-1315/458/1/012047.

Yangdon P, Araki T, Rahayu YYS, Norbu K. 2022. Ethnobotanical study of wild edible fruits in eastern Bhutan. Journal of Ethnobiology and Ethnomedicine 18(1): 27. doi: 10.1186/s13002-022-00526-8.

Zamin M, Adnan M, Begum S, Ullah I. 2024. Novel plant uses and their conservation status in a semiarid subtropical region of Pakistan. Ethnobotany Research and Applications 29: 1-49. doi: 10.32859/era.29.13.1-49.

Zamin M, Adnan M, Hamdard MH, Murad W, Begum S. 2026. Tribal traditions and conservation perspectives of wild plants in Orakzai District, Pakistan. Scientific Reports. doi: 10.1038/s41598-026-57524-z.

Zebua LI, Walujo EB. 2016. Pengetahuan tradisional masyarakat Papua dalam mengenali, mengklasifikasi dan memanfaatkan pandan buah merah (*Pandanus conoideus* Lam.). Jurnal Biologi Papua 8(1): 23-37. doi: 10.31957/jbp.42.

Zikri M, Hikmat A, Zuhud EAM. 2017. Retensi pengetahuan tumbuhan pangan suku Rejang di Kampung Rindu Hati dalam ketahanan pangan. Media Konservasi 21(3): 270-277. doi: 10.29244/medkon.21.3.270-277.

Supplementary Materials (Table S1 and Table S2)

Supplementary Table S1. Retained core studies (n = 90) included in the main analysis.

No.	Study reference	Region/island	Specific location	Primary evidence theme	Food type reported
1	Adnan *et al.* (2023)	Sumatra and nearby islands	Aceh Selatan and Aceh Barat Daya	Village and mixed-rural food settings	Vegetables / leafy foods
2	Hafizah *et al.* (2025)	Sumatra and nearby islands	Riau	Village and mixed-rural food settings	Mixed food plants
3	Pawera *et al.* (2020)	Sumatra and nearby islands	West Sumatra; Minangkabau and Mandailing communities	Village and mixed-rural food settings	Mixed food plants
4	Ramaidani & Navia (2022)	Sumatra and nearby islands	Aceh / Lokop Village, Serbajadi, East Aceh	Village and mixed-rural food settings	Mixed food plants
5	Silalahi *et al.* (2018)	Sumatra and nearby islands	Peadungdung Village, Pakkat, Humbang Hasundutan, North Sumatra	Village and mixed-rural food settings	Fruits / edible fruit plants
6	Zikri *et al.* (2017)	Sumatra and nearby islands	Bengkulu; Bengkulu Tengah; Kampung Rindu Hati; Rejang community	Village and mixed-rural food settings	Mixed food plants
7	Gemilang *et al.* (2019)	Sumatra and nearby islands	Riau Islands	Managed tree-based systems	Staples / tubers / local staple foods
8	Hayati *et al.* (2023)	Sumatra and nearby islands	Aceh / Ateuk Monpanah, Ateuk Blang Asan, Ateuk Bak Sukon, Simpang Tiga	Managed tree-based systems	Mixed food plants
9	Kanara *et al.* (2025)	Sumatra and nearby islands	West Sumatra / Lima Puluh Kota District and Payakumbuh Municipality	Managed tree-based systems	Mixed food plants
10	Navia *et al.* (2020)	Sumatra and nearby islands	Gayo Highlands, Central Aceh; Linge, Bintang and Cilala districts	Managed tree-based systems	Fruits / edible fruit plants
11	Syamsuardi *et al.* (2022)	Sumatra and nearby islands	Riau / Bukit Rimbang-Bukit Baling Wildlife Reserve, Kampar	Forest-linked and protected-area settings	Fruits / edible fruit plants
12	Pujinisa *et al.* (2023)	Sumatra and nearby islands	Bangka Belitung; Gunung Permisan Nature Tourism Park, South Bangka	Forest-linked and protected-area settings	Mixed food plants
13	Purba & Silalahi (2021)	Sumatra and nearby islands	North Sumatra; Merdeka District	Forest-linked and protected-area settings	Mixed food plants
14	Royyani *et al.* (2018)	Sumatra and nearby islands	Bengkulu / Enggano Island	Forest-linked and protected-area settings	Mixed food plants
15	Sartika *et al.* (2021)	Sumatra and nearby islands	Terangun District, Gayo Lues Regency, Aceh	Forest-linked and protected-area settings	Fruits / edible fruit plants
16	Suwardi *et al.* (2020b)	Sumatra and nearby islands	Gunung Leuser National Park, Aceh Tamiang, Aceh	Forest-linked and protected-area settings	Fruits / edible fruit plants
17	Suwardi & Navia (2023)	Sumatra and nearby islands	Ulu Masen Protected Forest, West Aceh	Forest-linked and protected-area settings	Fruits / edible fruit plants

No.	Study reference	Region/island	Specific location	Primary evidence theme	Food type reported
18	Suwardi *et al.* (2020a)	Sumatra and nearby islands	South Aceh District, Aceh	Forest-linked and protected-area settings	Fruits / edible fruit plants
19	Syafira *et al.* (2023)	Sumatra and nearby islands	Simanau village, Solok District, West Sumatra	Forest-linked and protected-area settings	Vegetables / leafy foods
20	Desti *et al.* (2024)	Sumatra and nearby islands	Bengkalis District (coastal) and Kuantan Singingi District / Sentajo Raya Protected Forest (non-coastal), Riau.	Cross-setting	Vegetables / leafy foods
21	Naufal *et al.* (2025)	Sumatra and nearby islands	Lampung / coastal Tulang Bawang	Mangrove, coastal, swamp, and wetland settings	Mangrove, coastal, swamp, and wetland food plants
22	Simanjuntak (2023)	Sumatra and nearby islands	Percut Sei Tuan, Deli Serdang, North Sumatra	Mangrove, coastal, swamp, and wetland settings	Fruits / edible fruit plants
23	Siregar *et al.* (2025)	Sumatra and nearby islands	Belawan Sicanang, Medan Belawan, Medan, North Sumatra	Mangrove, coastal, swamp, and wetland settings	Mixed food plants
24	Chikmawati *et al.* (2023)	Sumatra and nearby islands	Belitung District, Bangka Belitung Islands	Cross-setting	Mixed food plants
25	Nelly *et al.* (2024)	Sumatra and nearby islands	Aceh / Pining Sub-district, Gayo Lues	Cross-setting	Vegetables / leafy foods
26	Al Yamini *et al.* (2023)	Java	Sampang and Pamekasan Districts, Madura, East Java	Village and mixed-rural food settings	Mixed food plants
27	Aulia *et al.* (2025)	Java	West Java / Sundanese historical and contemporary ethnobotanical literature	Village and mixed-rural food settings	Vegetables / leafy foods
28	Hernawati *et al.* (2022)	Java	West Java / four Sundanese traditional villages in East Priangan	Village and mixed-rural food settings	Vegetables / leafy foods
29	Kuswati & Adi (2021)	Java	East Java / Jember / Sempolan Village / Plalangan	Village and mixed-rural food settings	Mixed food plants
30	Mutaqin *et al.* (2020)	Java	West Java / Cisoka Village, Majalengka, Cimanuk watershed	Village and mixed-rural food settings	Staples / tubers / local staple foods
31	Raihandhany & Purnomo (2025)	Java	West Java; Banceuy Traditional Village, Subang	Village and mixed-rural food settings	Vegetables / leafy foods
32	Triyanto *et al.* (2024)	Java	Central Java; Sragen, Karanganyar, and Sukoharjo along upper Bengawan Solo River	Village and mixed-rural food settings	Fruits / edible fruit plants
33	Alfinandah *et al.* (2025)	Java	West Java; Cijambu Village, Tanjungsari Sub-district, Sumedang District	Managed tree-based systems	Mixed food plants
34	Anggraeni *et al.* (2023)	Java	West Java; Urug Village, Bogor Regency	Managed tree-based systems	Fruits / edible fruit plants

No.	Study reference	Region/island	Specific location	Primary evidence theme	Food type reported
35	Hardjanto *et al.* (2022)	Java	West Java / Gunung Bunder 2, Pamijahan, Bogor	Managed tree-based systems	Mixed food plants
36	Iskandar *et al.* (2023)	Java	West Java / Cijambu, Sumedang	Managed tree-based systems	Vegetables / leafy foods
37	Iskandar & Iskandar (2021)	Java	Banten / Outer Baduy	Managed tree-based systems	Staples / tubers / local staple foods
38	Iskandar & Iskandar (2015)	Java	Banten / Kanekes (Baduy)	Managed tree-based systems	Mixed food plants
39	Kulsum & Susandarini (2023)	Java	Cigalontang Village, Tasikmalaya, West Java	Managed tree-based systems	Fruits / edible fruit plants
40	Rahayu *et al.* (2024)	Java	Rancakalong District, Sumedang Regency, West Java	Managed tree-based systems	Mixed food plants
41	Rarasti *et al.* (2025)	Java	Central Java / Paranggupito karst, Wonogiri	Managed tree-based systems	Mixed food plants
42	Safitri *et al.* (2025)	Java	East Java / Gawang Hamlet karst landscape	Managed tree-based systems	Mixed food plants
43	Cita & Hasibuan (2019)	Java	Nyangkewok Hamlet, Kalaparea Village, Sukabumi, West Java	Forest-linked and protected-area settings	Mixed food plants
44	Fatimah & Mulyanto (2025)	Java	West Java	Forest-linked and protected-area settings	Mixed food plants
45	Purnomo *et al.* (2012)	Java	Yogyakarta; villages around Wonosadi Forest, Gunungkidul	Forest-linked and protected-area settings	Staples / tubers / local staple foods
46	Sholichah & Alfidhdhoh (2020)	Java	Mendiro Hamlet, Panglungan Village, Wonosalam, Jombang, East Java	Forest-linked and protected-area settings	Mixed food plants
47	Srianta *et al.* (2012)	Java	Jatiarjo and Dayurejo villages, Pasuruan, East Java	Forest-linked and protected-area settings	Vegetables / leafy foods
48	Wardah & Ariani (2020)	Java	West Java; south coast of Sukabumi, Cianjur, Garut; Leuweung Sancang	Mangrove, coastal, swamp, and wetland settings	Staples / tubers / local staple foods
49	Setiawan (2016)	Java	East Java / Madura swamp-rice/coastal wetland ecosystem	Mangrove, coastal, swamp, and wetland settings	Staples / tubers / local staple foods
50	Susiarti *et al.* (2012)	Java	Madura Island and East Java	Mangrove, coastal, swamp, and wetland settings	Staples / tubers / local staple foods
51	Marpaung *et al.* (2025)	Java	Jakarta Metropolitan Area	Market circulation	Mixed food plants
52	Anjeliana *et al.* (2024)	Kalimantan	West Kalimantan; Serengkah Kanan Village, Ketapang Regency	Village and mixed-rural food settings	Mixed food plants

No.	Study reference	Region/island	Specific location	Primary evidence theme	Food type reported
53	Linda *et al.* (2022)	Kalimantan	West Kalimantan; Mempawah; Desa Sepang; Kecamatan Toho	Village and mixed-rural food settings	Mixed food plants
54	Megawati *et al.* (2020)	Kalimantan	West Kalimantan / Babane Village, Samalantan, Bengkayang	Village and mixed-rural food settings	Mixed food plants
55	Ningsih & Wardhani (2025)	Kalimantan	West Kalimantan / Suka Jaya Village, Tempunak	Village and mixed-rural food settings	Mixed food plants
56	Oktavianingsih *et al.* (2025)	Kalimantan	East Kalimantan; Berau District	Village and mixed-rural food settings	Staples / tubers / local staple foods
57	Prayogi *et al.* (2022)	Kalimantan	West Kalimantan; Pematang Merbau Hamlet, Sungai Awan Kiri, Ketapang	Village and mixed-rural food settings	Mixed food plants
58	Dasman *et al.* (2015)	Kalimantan	West Kalimantan	Managed tree-based systems	Mixed food plants
59	Hartoyo *et al.* (2018)	Kalimantan	East Kalimantan / Kampung Birang and Kampung Merabu, Berau	Managed tree-based systems	Fruits / edible fruit plants
60	Iqbal & Septina (2018)	Kalimantan	West Kalimantan / Sanggau	Managed tree-based systems	Mixed food plants
61	Kurniawati *et al.* (2015)	Kalimantan	West Kalimantan / Bengkayang / Setia Jaya / Teriak	Managed tree-based systems	Fruits / edible fruit plants
62	Ningrum *et al.* (2023)	Kalimantan	West Kalimantan / Tembawang Angkabang, Paloan Village, Landak	Managed tree-based systems	Mixed food plants
63	Sumarlin *et al.* (2015)	Kalimantan	Aur Sampuk Village, Sengah Temila, Landak, West Kalimantan	Managed tree-based systems	Mixed food plants
64	Suwardi *et al.* (2025)	Kalimantan	Central Kalimantan	Managed tree-based systems	Fruits / edible fruit plants
65	Romana *et al.* (2018)	Kalimantan	Sengah Temila, Landak, West Kalimantan	Managed tree-based systems	Mixed food plants
66	Triyana *et al.* (2022)	Kalimantan	West Kalimantan; Sanggau; Dusun Penyalimau Empaong	Managed tree-based systems	Mixed food plants
67	Arini *et al.* (2021)	Kalimantan	West Kalimantan; Mensiau Village, Kapuas Hulu	Forest-linked and protected-area settings	Mixed food plants
68	Bella *et al.* (2025)	Kalimantan	Botuh Bosi, Simpang Hulu, Ketapang, West Kalimantan	Forest-linked and protected-area settings	Mixed food plants
69	Dewantara *et al.* (2024)	Kalimantan	West Kalimantan; Desa Dalam, Selimbau District, Kapuas Hulu Regency	Forest-linked and protected-area settings	Fruits / edible fruit plants
70	Diba *et al.* (2021)	Kalimantan	Sebaju customary/village forest, Nanga Kebebu Village, Nanga Pinoh District, Melawi Regency, West Kalimantan	Forest-linked and protected-area settings	Fruits / edible fruit plants

No.	Study reference	Region/island	Specific location	Primary evidence theme	Food type reported
71	Hendra & Oktaviani (2020)	Kalimantan	East Kalimantan / Batu Rajang, Siduung Indah, Tepian Buah, Segah, Berau	Forest-linked and protected-area settings	Spices/condiments
72	Irawan *et al.* (2020)	Kalimantan	West Kalimantan; Sedahan Jaya Village, Sukadana District, North Kayong Regency	Forest-linked and protected-area settings	Fruits / edible fruit plants
73	Juli *et al.* (2022)	Kalimantan	West Kalimantan / Entikong Village, Sanggau	Forest-linked and protected-area settings	Mixed food plants
74	Julia *et al.* (2020)	Kalimantan	West Kalimantan / Hli Buei Village, Siding, Bengkayang	Forest-linked and protected-area settings	Mixed food plants
75	Juliana *et al.* (2013)	Kalimantan	West Kalimantan / Gunung Peramas, Pangkalan Buton, Sukadana, Kayong Utara	Forest-linked and protected-area settings	Mixed food plants
76	Rahmi *et al.* (2021)	Kalimantan	West Kalimantan; Lingkar Indah Village, Sayan, Melawi	Forest-linked and protected-area settings	Mixed food plants
77	Supiandi *et al.* (2019)	Kalimantan	Labian Ira'ang Village, Batang Lupar, Kapuas Hulu, West Kalimantan	Forest-linked and protected-area settings	Fruits / edible fruit plants
78	Suwardi *et al.* (2026)	Kalimantan	Landak and Sekadau, West Kalimantan	Forest-linked and protected-area settings	Fruits / edible fruit plants
79	Prastianto *et al.* (2022)	Kalimantan	West Kalimantan; Setapuk Besar, Singkawang	Mangrove, coastal, swamp, and wetland settings	Mangrove, coastal, swamp, and wetland food plants
80	Lestari *et al.* (2025)	Kalimantan	Central Kalimantan / Palangka Raya City	Market circulation	Fruits / edible fruit plants
81	Sujarwo *et al.* (2016)	Bali and Nusa Tenggara	Bali; 13 Bali Aga villages across Buleleng, Bangli, Tabanan, and Karangasem	Village and mixed-rural food settings	Mixed food plants
82	Sujarwo *et al.* (2025)	Bali and Nusa Tenggara	Traditional Sasak villages, Lombok, West Nusa Tenggara	Village and mixed-rural food settings	Mixed food plants
83	Iswandono *et al.* (2015)	Bali and Nusa Tenggara	East Nusa Tenggara / Ruteng Mountains / Manggarai	Forest-linked and protected-area settings	Mixed food plants
84	Jupri *et al.* (2022)	Bali and Nusa Tenggara	West Nusa Tenggara / Joben Resort, Mount Rinjani National Park, East Lombok	Forest-linked and protected-area settings	Mixed food plants
85	Limbu *et al.* (2024)	Bali and Nusa Tenggara	East Nusa Tenggara / Ngada / Wolomeze District	Cross-setting	Staples / tubers / local staple foods
86	Amboupe *et al.* (2019)	Sulawesi	Bulo-Bulo Village, Barru Regency, South Sulawesi	Village and mixed-rural food settings	Mixed food plants

No.	Study reference	Region/island	Specific location	Primary evidence theme	Food type reported
87	Setiawan & Qiptiyah (2014)	Sulawesi	Hukaea-Laea customary area, Rawa Aopa Watumohai National Park, Southeast Sulawesi	Forest-linked and protected-area settings	Mixed food plants
88	Jamili (2022)	Maluku	North Maluku / West Halmahera Regency	Managed tree-based systems	Staples / tubers / local staple foods
89	Zebua & Walujo (2016)	Papua	Papua and West Papua; Arfak-Manokwari, Serui, Cyclops-Jayapura, Jayawijaya	Cross-setting	Fruits / edible fruit plants
90	Rahayu *et al.* (2025b)	Cross-region / national	West Java, West Nusa Tenggara and Aceh	Cross-setting	Mixed food plants

Note: The final analytical core comprises 90 studies, each listed once under its dominant primary evidence theme, although several contribute to more than one part of the analysis. Theme counts: Forest-linked and protected-area settings = 29; Managed tree-based systems = 24; Village and mixed-rural food settings = 22; Mangrove, coastal, swamp, and wetland settings = 7; Market circulation = 2; Cross-setting = 6.

Supplementary Table S2. Search strategies used to identify literature on wild and forest-associated edible plants in Indonesia.

Source/interface	Search ID	Search date	Exact search query / syntax	Records retrieved/ exported
Scopus	SC1	11 Mar 2026	(ethnobotan* OR "traditional knowledge" OR "local knowledge") AND (Indonesia* OR Sumatra* OR Java OR Jawa OR Kalimantan OR Borneo OR Sulawesi OR Papua OR Bali OR Lombok OR Sumbawa OR Flores OR Timor OR Maluku OR Moluccas OR Aceh) AND ("edible plant*" OR "food plant*" OR "wild edible plant*" OR "traditional food plant*" OR "indigenous vegetable*" OR "leafy vegetable*" OR "food use" OR "edible flora")	56
Scopus	SC2	11 Mar 2026	(Indonesia* OR Sumatra* OR Java OR Jawa OR Kalimantan OR Borneo OR Sulawesi OR Papua OR Bali OR Lombok OR Sumbawa OR Flores OR Timor OR Maluku OR Moluccas OR Aceh) AND (ethnobotan* OR ethnobiolog* OR biocultural OR "traditional knowledge" OR "local knowledge" OR "indigenous knowledge" OR "traditional ecological knowledge") AND ("food plant*" OR "edible plant*" OR "wild edible plant*" OR vegetable* OR fruit* OR tuber* OR spice* OR condiment*) AND NOT (phytochem* OR pharmacolog* OR antioxidant* OR antimicrobial* OR cytotoxic* OR "essential oil*" OR timber OR wood OR ornamental OR fiber)	200
Google Scholar via Publish or Perish	GS1	12 Mar 2026	etnobotani indonesia pangan makanan	200
Google Scholar via Publish or Perish	GS2	12 Mar 2026	tanaman pangan lokal tradisional	200
Google Scholar via Publish or Perish	GS3	12 Mar 2026	indonesia "pengetahuan tradisional" tanaman pangan	200
Google Scholar via Publish or Perish	GS4	12 Mar 2026	konsumsi pangan tradisional lokal	200
Google Scholar via Publish or Perish	GS5	12 Mar 2026	konsumsi sumber daya hayati tradisional lokal	200
Google Scholar via Publish or Perish	GS6	12 Mar 2026	konsumsi sumber daya hayati tumbuhan tradisional lokal	200
Google Scholar via Publish or Perish	GS7	12 Mar 2026	konsumsi sumber daya hayati tanaman tradisional lokal	200
Google Scholar via Publish or Perish	GS8	12 Mar 2026	sumber daya hayati tanaman tumbuhan liar	200
Google Scholar via Publish or Perish	GS9	12 Mar 2026	pangan hutan liar	200
Google Scholar via Publish or Perish	GS10	12 Mar 2026	konsumsi pangan hutan liar	179