ORIGINAL ARTICLE

The Role of Indigenous Plants in Sustaining Food Sources in Lesten Village, Gayo Lues Regency, Indonesia

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Article History

Received
21 August 2024

Accepted
24 October 2024

Available Online
29 October 2024

Keywords

Indigenous plant biodiversity
Food sovereignty
Sustainable food security
Aceh local knowledge
Edible plants

Abstract

The Gayo tribe in Lesten Village has historically relied on plants to fulfill their nutritional needs. Expanding knowledge about diverse plant-based food sources offers a promising strategy for addressing future food insecurity. A dependence on conventional plant species has often resulted in inadequate food supplies, highlighting the need for alternative approaches that incorporate a broader range of plant resources to mitigate food scarcity. Located within the Leuser mountain buffer landscape, Lesten Village in Gayo Lues Regency, Aceh Province, represents a key agricultural area with significant potential to benefit the local community. This study aimed to document and analyze the plant species used as food sources by the Lesten Village community. Data collection combined qualitative and quantitative methods, including exploration, direct observation, and semi-structured interviews. The results revealed that female respondents had a higher level of knowledge about plant use as food sources. Notably, 52.9% and 55.7% of these respondents were aged 50 years or older. The community in Lesten utilized a total of 51 plant species from 26 families as food ingredients. Vegetables constituted the largest category (34%), followed by spices (30%), fruits (21%), and carbohydrates (15%). Fruits were the most frequently used plant part for food (61%). The species with the highest use value was *Cacica papaya* (1.07). Additionally, the traditional food with the highest fidelity level was *serbet* (62.82%). These findings emphasize the importance of integrating a diverse range of plant resources into food systems to enhance food security and stimulate economic development in the region.

Introduction

Plant biodiversity constitutes a critical natural resource that underpins the survival and development of human societies by fulfilling essential needs such as clothing, shelter, food, and medicine [1,2]. Only a limited number of plant species, despite their extensive variety, serve as human food sources, suggesting that many remain underexplored and inadequately studied [3,4]. Plant provides more than 80% of the food consumed by human and contribute less than 1% of the calorie intake from rich nutritional sources. The utilization of plants, both agricultural products and non-timber forest products, becomes one of the food alternatives when the main food sources are limited. With high biodiversity, the community has access to various food sources, including wild plants, which can be vital for addressing food insecurity [5,6].

Exploration of plant species diversity can provide significant solutions to food insecurity issues. By increasing the availability and diversification of food through the utilization of lesser-known local plants, better sources of nutrition can be obtained, and a more resilient agricultural system against climate change can be created [7,8]. The use of these plants helps reduce dependence on staple crops, address malnutrition issues, and preserve local knowledge, which ultimately contributes to more sustainable food security [9,10]. The prevalence of food insecurity in Indonesia remains a challenge, especially in rural areas. Based on data from the Central Statistics Agency (BPS) and the National Food Agency (NFA), the prevalence of undernourishment (PoU) was recorded at 8.49% in 2021, meaning that approximately 8 out of 100 people in Indonesia are unable to meet their basic nutritional needs [11]. Therefore, traditional food practices and the exploration of locally rich nutritional resources can enhance food security through the diversification of local food. This dynamic emphasizes the important role of plant biodiversity in enhancing food security, especially in rural and impoverished areas of developing countries, where diverse plant sources can play a crucial role in addressing food insecurity [12].

Dependence on staple crops such as rice, wheat, and maize, which contribute 60% of plant-based calories in the human diet, increasingly threatens food security [13] [14]. This threat is exacerbated by the growing global population and the limited natural capacity to produce food [15]. Factors such as reduced purchasing power, inappropriate food use, poverty, natural disasters, and climate change contribute to food insecurity [16]. Climate change, in particular, is leading to rising global temperatures and increased frequency of droughts, which adversely affect agricultural production worldwide. Droughts are especially critical as they deplete water resources and impact the biophysical conditions necessary for plant growth [17]. Consequently, there is a pressing need for new strategies to mitigate the effects of climate change and enhance agricultural productivity to meet the food demands of the growing population. Exploring alternative crop types is therefore essential to addressing food insecurity effectively [18].

Indonesia's diverse topography presents a range of alternative food sources that remain underutilized. One of the regions that utilizes plants as a food source is Lesten Village in Gayo Lues Regency, Aceh Province. Located in a remote and hard-to-reach area in the highlands, Lesten Village has extraordinary biodiversity, including flora and fauna species that have not yet been widely identified. As part of the buffer landscape of Gunung Leuser National Park, this village is rich in natural resources, especially plants that are traditionally utilized by the local community. The majority of the residents work as farmers, utilizing the land at the foot of Mount Leuser, while the limited transportation makes them highly dependent on nature to meet their daily However, reliance on conventional crops has led to challenges in food availability, underscoring the need for alternative food sources to address food insecurity. Despite this, the documentation and scientific validation of plant species used in Lesten Village remain insufficient. Consequently, there is a pressing need to explore and inventory the plant species available for food use in Lesten Village, Gayo Lues Regency to better understand and optimize these resources.

This study aimed to explore and inventory the plant species utilized by the community in Lesten Village as food sources. Identifying and documenting these plant types could provide viable alternatives for addressing future food insecurity. Furthermore, the potential development of functional foods from these plants offers prospects for enhancing public health. Additionally, leveraging plant-based food sources may contribute to the economic advancement of the community by boosting agricultural productivity and supporting economic growth within the region. By evaluating and promoting plants with significant food potential, this research aims to improve both the economic and nutritional aspects of the local agricultural sector in Lesten Village.

Materials and Methods

Study Area

This research was conducted from February to August 2024 in Lesten Village, Pining District, Gayo Lues Regency, Aceh Province. This village is located in the eastern part of Gayo Lues Regency, with a distance of 58 kilometers from Blangkejeren. Geographically, this village is located at coordinates 03°40'-04°17' N and 96°43'-97°55' E, with an altitude between 500 to 2000 meter above sea level (masl).

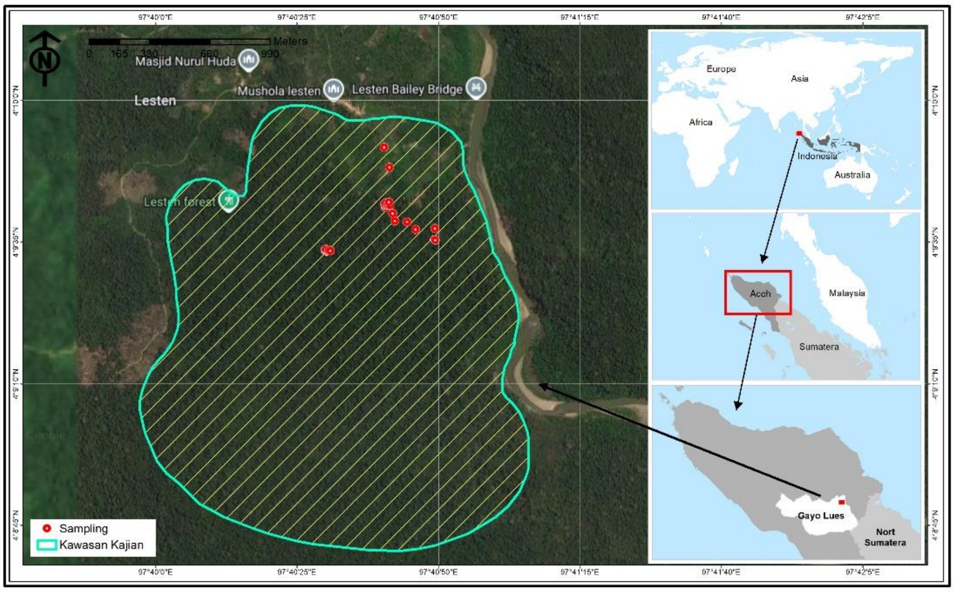

Figure 1. Map of the research location.

Tools and Material

The tools and materials needed for this study are stationery, camera, GPS, questionnaire sheets, label paper, plant scissors, camera and stationery. The materials used are 70% alcohol.

Data Collection

Through semi-structured interviews and direct observation, ethnobotanical data on food plants were gathered. Purposive sampling was used to choose respondents and key informants [19]. Lesten Village's village chief and community leaders, or tuha peut, are key informants because they are well-versed in the management and use of plants as food sources. Residents of Lesten Village who frequently utilize plants as food and are aware of their applications make up the respondents; they were chosen based on demographic factors like age and gender. The total number of respondents interviewed in this study was 70, with an age range of 20 to 65 years. Interviews were conducted individually, through visits to the homes of key informants and respondents, guided by a structured interview protocol. During the interview, potential food plants identified by the community were documented, and plant samples such as leaves, flowers, and fruits were collected for herbarium purposes. Samples were labeled and identified in the laboratory [20] through morphological observation to ensure the type of plant utilized. This identification is supported by the Flora of Java and Plants of the World [21].

Data Analysis

Data analysis was conducted using descriptive quantitative methods with the Microsoft Excel 2021 application. The results were presented in tabular form. Data derived from community interviews were organized into tables and visualized using charts and diagrams. Quantitative analysis using Fidelity Level (FL) and Use Value (UV) methods is used to evaluate the use of plants as food ingredients based on local community knowledge in meeting local needs. It is also helped to determine the plants that are most important for community survival in terms of food availability.

The FL is defined as the percentage of informants who report using a particular plant species for the same food ingredient. This is calculated using the Equation 1:

$$FL\ (\%) = (Np/N) \times 100\% \quad (1)$$

where *Np* is the number of respondents who identified a specific plant species as being used for a particular food and *N* is the total number of respondents who mentioned the plant species for any food crop [22].

The UV is a quantitative index employed to assess the significance of food plant species. This index is computed using the Equation 2 [23]:

$$UV = \frac{U}{N} \quad (1)$$

where *U* represents the number of all uses mentioned per species and *N* is the number of informants that used this species.

Results and Discussion

Socio-Demographic Details

The study involved a total of 70 respondents, consisting of 37 women and 33 men, with ages ranging from 20 to 50 years. Analysis revealed that female respondents exhibited a higher level of knowledge regarding the use of plants as food ingredients, with 52.9% of this demographic demonstrating such knowledge. Additionally, 55.7% of respondents were aged 50 years or older. Respondents with lower educational levels also showed a greater percentage of knowledge about the use of plants as food ingredients. Gender and age emerged as significant factors influencing the frequency of plant use for culinary purposes (Table 1). This pattern can be attributed to women's roles in managing food resources, including menu planning and nutritional considerations for their families. Mota-Gutierrez et al. [24] noted that age and gender factors are associated with food consumption patterns, while Asfaw [1] highlighted a correlation between informants' knowledge of plant use as food and their age and gender.

Table 1. Demographic characteristics of respondents in Lesten Village concerning knowledge of plants as food ingredients.

Respondent Category		Number	Percentage (%)
Gender	Female	37	52.9
	Male	33	47.1
Age	Young (20-35)	12	17.1
	Adult (36-35)	19	27.1
	Older (>50)	39	55.7
Education	Illiterate	3	4.3
	Basic education	10	14.3
	Elementary (1–8)	32	45.7
	Secondary (9–12)	13	18.6
	Tertiary education (10+)	12	17.1

Diversity of Know and Use Food Plants

A total of 51 types of food plants were identified from the survey in the research area, which were grouped into 26 families (Table 2). The most represented families were Zingiberaceae (9 types), Poaceae (4 types), Musaceae (3 types), Moraceae (3 types), Cucurbitaceae (3 types), Arecaceae (3 types), and Amaranthaceae, Amaryllidaceae, Malvaceae (2 types each). In addition, there were Apiaceae, Convolvulaceae, Athyriaceae, Bacaurea, Boraginaceae, Brassicaceae, Caricaceae, Clusiaceae, and Dennstaedtiaceae (1 type each) (Tabel 2, Fig 2). The number of types of food plants found in this study was greater than the food plants reported in the North Aceh region, which recorded 28 species in 16 families [25]. However, this is different from the Gayo community in Lokop Village, where the use of plants as food ingredients has successfully documented 52 species from 31 families used in traditional foods [26]. Other studies also document the use of plants as food ingredients in the East Aceh community, where there are 46 types of unknown plants used as food ingredients (Suwardi et al., 2022). Adnan et al. (2024) also reported 42 species of plants used as vegetables in the Aceh Tamiang community and 86 species by the South Aceh community [27][28].

Table 2. Types of plants used by the community as food resources.

Family	Scientific Name	Local name	Use Category	Plant Part Used	Use Value
Amaranthaceae	*Amaranthus spinosus*	Beyem	Vegetable	Leaf	0.64
	Amaranthus caudatus	Beyem	Vegetable	Leaf	0.73
Amaryllidaceae	*Allium cepa*	Bawang merah	Spice	Bulbus	0.69
	Aliium sativi	Bawang putih	Spice	Bulbus	0.63
Apiaceae	*Centella asiatica*	Peugaga	Vegetable	Leaf	0.69
Araceae	*Alocasia macrorrhizos*	Gedeng	Carbohydrate	Tuber	0.63
	Capsicum annum	Cabe	Spice	Fruit	0.59
Arecaceae	*Arenga pinnata*	Kolang kaleng	Fruits	Fruit	0.64
	Cocos nucifera	Nyior	Vegetable	Coconut pulp and Fruit	0.80
	Metroxylon sagu	Sagu	Carbohydrate	Seed	0.61
Athyriaceae	*Diplazium esculentum*	Keloang	Vegetable	Leaf	0.74
Bacaurea	*Baccaurea motleyana*	Rambe	Fruits	Fruit	0.53
Boraginaceae	*Cordia dishotoma*	Nunang	Fruits	Fruit	0.56
Brassicaceae	*Nasturtium officinale*	Parik	Vegetable	Leaf	0.66
Caricaceae	*Cacica papaya*	Pertik	Vegetable, Fruits	Fruit, Leaf, and young stem	1.07
Clusiaceae	*Garcinia mangostana*	Manggis	Fruits	Fruit	0.64
Colvolvulaceae	*Ipomeea batatas*	Ubi jalar	Carbohydrate	Tuber	0.83
Cucurbitaceae	*Momordica charantia*	Pare	Vegetable	Fruit	0.64
	Sechium edule	Labu Siam	Vegetable	Leaf shoot and fruit	0.83
	Cucurbita moschata	Labu Kuning	Vegetable	Leaf shoot and fruit	0.70
Dennstaedtiaceae	*Pteridium aquilinum*	Pakis	Vegetable	Leaf	0.59
Euphorbiaceae	*Manihot esculenta*	Ubi Kayu	Carbohydrate	Leaf and Fruit	0.63
Guttiferae	*Garcinia atroviridis*	Gelandis	Spice	fruit	0.60
Malvaceacce	*Theobroma cacao*	Coklat	Fruits	Fruit	0.56
	Durio zibethinus	Durian	Vegetable, Fruits	Fruit	0.71
Meliaceae	*Lansium parasiticum*	Langsat	Fruits	Fruit	0.69
Moraceae	*Artocarpus heterophyllus*	Nangka	Fruits	Fruit	0.70
	Artocarpus integer	Cempedak	Fruits	Fruit	0.63
	Artocarpus altilis	Sukun	Carbohydrate	Fruit	0.61
Musaceae	*Musa acuminata*	Pisang	Vegetable	Fruit, pseudostem, female bud	0.56
	Musa paradisiaca	Pisang awak	Vegetable	Fruit and female bud	0.70
	Cavendish banana	Pisang ameh	Vegetable	fruit and female bud	0.54
Myristicaceae	*Myristica fragrans*	*Pala*	Spice	Seed	0.64
Myrtaceae	*Syzygium aromaticum*	Lawang	Spice	Bark	0.83
Poaceae	*Oryza sativa*	Padi	Carbohydrate	Fruit	0.71
	Zea mays	Jagung	Carbohydrate	Fruit	0.61
	Oriza sativa var glutinosa	Beras ketan	Carbohydrate	Seed	0.70
	Cymbopogon citratus	Serah	Spice	Stem	0.64
Sapindaceae	*Nephelium lappcaeum*	Rambutan	Fruits	Fruit	0.61

Family	Scientific Name	Local name	Use Category	Plant Part Used	Use Value
Solanaceae	*Solanom nigrum*	Ruku-ruku	Vegetable	Leaf	0.56
	Solanum melongena	Terong ungu	Vegetable	Fruit	0.59
	Solanum torvum	Ungke	Vegetable	Fruit	0.64
Zingiberaceae	*Curcuma zanthorrhiza*	Temulawak	Spice	Rhizome	0.64
	Curcuma longa	Kuning	Spice	Rhizome and leaf	0.64
	Curcuma zedoaria	Kuning Gajah	Spice	Rhizome	0.73
	Etlingera elatior	Kinchung	Spice	Rhizome, stem, young stem, fruit, and flower	0.66
	Kaempfria galanga	Tekur	Spice	Rhizome	0.63
	Zingiber cassumunar	Bungle	Spice	Rhizome	0.67
	Zingiber officinale	Baing	Spice	Rhizome	0.66
	Zingiber officinale Roscoe	Baing Ilang	Spice	Rhizome	0.57
	Zingiber zerumbet	Lempuyang	Spice	Rhizome	0.64

Based on the usefulness these plants are categorized based on their use into vegetables, spices, fruits and carbohydrate. Among these categories, vegetables constitute the largest proportion at 34%, followed by spices at 30%, fruits at 21%, and carbohydrates at 15% (Figure 3). This distribution is consistent with findings from Susandarini [29], which also identified vegetables as the most frequently used category of food ingredients.

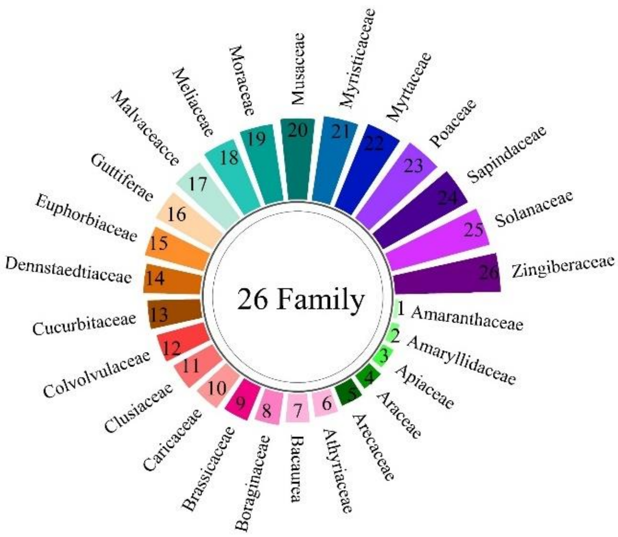

Figure 2. Types of plant families used as food.

Plant species classified as secondary food ingredients are those primarily utilized as carbohydrates. These include *Alocasia macrorrhizos* (taro), *Metroxylon sagu* (sago), *Ipomoea batatas* (sweet potatoes), *Manihot esculenta* (cassava), *Artocarpus altilis* (breadfruit*), Oryza sativa* (rice), and *Zea mays* (corn). In the Lesten region, rice serves as a principal secondary staple food, reflecting its significant role in Indonesia and globally. Rice is a crucial cereal crop and a primary staple for much of the world's population, providing over 21% of global calorie intake [30]. It is valued for its high-calorie carbohydrate content and is rich in micronutrients and phytochemicals. Among various rice types, research has shown that brown rice exhibits the highest α-glucosidase inhibition at 54%, followed by boiled rice at 52%, idly rice at 48%, hand-pounded rice at 42%, and basmati rice at 39% [31]. Additionally, corn serves as a significant secondary food, valued for its high carbohydrate content, essential micronutrients (including vitamins and minerals), and dietary fiber, making it a substantial source of energy [32]. Beyond its role as a major global cereal, corn is rich in various phytochemicals, such as carotenoids and nivalis agglutinin compounds (corn GNA), which contribute essential fatty acids beneficial for both children and adults [33].

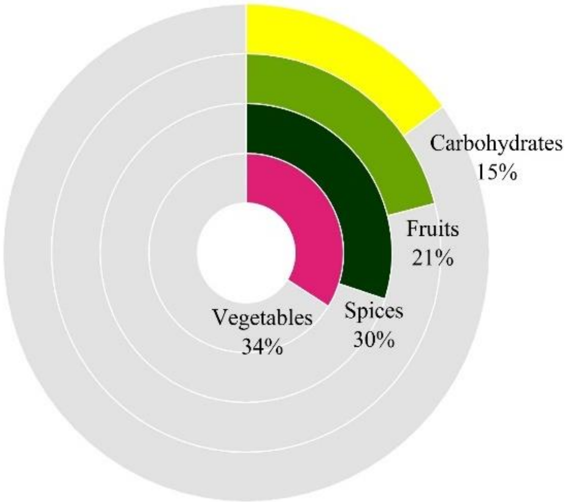

Figure 3. Food plant utilization category.

Similarly, sago, a traditional secondary food, has been recognized for its high carbohydrate content, comparable to that of rice, and its versatility in food processing. According to Syartiwidya [34], sago is a viable alternative to rice. The productivity of sago palm surpasses that of Oryza sativa, yielding approximately 150–300 kg of sago per palm[35]. Sago palms are capable of thriving in extreme environmental conditions, thereby contributing significantly to food security[36]. Likewise, tubers such as cassava have long been utilized as high-energy food sources due to their substantial carbohydrate and fiber content. Cassava is also rich in essential minerals, including calcium, iron, potassium, magnesium, copper, zinc, and manganese[37].

Ipomoea batatas, commonly known as sweet potato, is a highly nutritious and valuable crop. Following cereals such as wheat and corn, sweet potatoes rank among the most important staple foods. They are notable for their high nutritional content, with approximately 60% starch. Sweet potatoes are rich in protein, dietary fiber, and micronutrients, including iron, vitamin C, carotenoids, and phenylpropanoids [38]. They are also a significant source of antioxidants, particularly due to their high polyphenol content, including substantial amounts of phenolic acids. Dominant polyphenols in sweet potatoes are anthocyanins, natural pigments associated with antioxidant and anti-inflammatory effects. Thus, sweet potatoes not only serve as a staple food but also hold potential as a functional food source for the future[39].

Alocasia macrorrhizos, commonly known as taro, is a plant renowned for its high carbohydrate content. Traditionally, taro is processed by boiling and is commonly consumed with coconut or used as a vegetable component in traditional Acehnese cuisine. Taro is notable for its rich carbohydrate content, which provides substantial energy, making it an appropriate staple food. Additionally, the high fiber content in taro contributes to digestive health and helps prevent constipation. Taro is also abundant in antioxidants, including vitamins C and E, which combat free radicals [40]. Due to its high nutritional value, small starch granules, and hypoallergenic starch type, taro possesses significant potential as a superior product for enhancing food and nutritional security in the future [41].

In addition to serving as staple foods, certain plants are utilized as vegetables and spices. Traditionally, various vegetables form fundamental components of typical Lesten cuisine. One notable vegetable is forest fern, specifically its young shoots, which are prepared as a vegetable and combined with kerling fish (Katsuwonus pelamis). This particular dish is regarded as a delicacy and is traditionally served at grand events or for welcoming distinguished guests. In India, ferns are recognized as a highly nutritious vegetable commodity [42].

Utility Value (UV)

Quantifies the relative importance of plant species based on their benefits to a specific community, considering both the diversity of uses and the number of individuals who utilize each species. The analysis reveals that UV values for food source plants range from 0.53 to 1.07. The species with the highest UV is *C. papaya* (UV 1.07), followed by *C. nucifera* (UV 0.80). *Carica papaya* exhibits the highest UV due to its extensive use in various parts of the plant, including both fruit and vegetables. *Cocos nucifera* also holds a significant UV index because coconut milk is a staple ingredient in the Lesten culinary tradition. Traditionally, *C. nucifera* serves multiple roles, including as a source of vegetables, fruit, fat, oil, and beverages for the community. This finding is consistent with Agesti [43], who reported that Minangkabau cuisine consistently incorporates coconut milk.

Parts of Plants Used as Food Ingredients

The plant parts utilized as food ingredients include stem, seed, fruit, flower, and leaf. Among these, fruits are the most commonly used part as food ingredients (61%), whereas seeds, flowers, and shoots were the least utilized (Figure 4). Amboupe [44] reported that 54.3% of the food ingredients used by the Betong tribe in South Sulawesi are fruits, while flowers and shoots are used infrequently, represented by only one species. Additionally, in North Sulawesi, local fruits are primarily employed for medicinal purposes and consumed in various forms, including raw, as juice, or in processed products [45]. In addition, fruits and rhizomes are widely utilized as spices in everyday cuisine. Kurniahu [46] also reported that rhizomes are extensively used as spices in traditional foods in Tuban Regency, East Java.

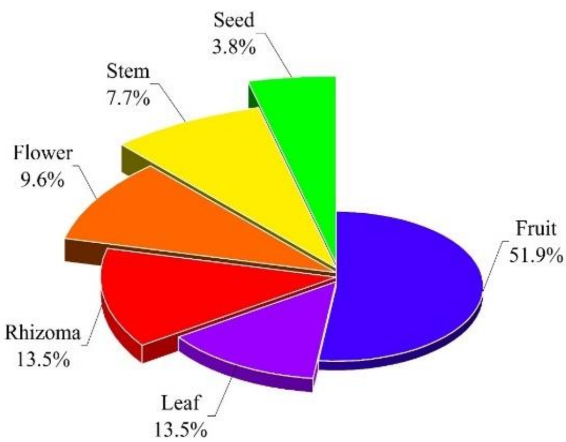

Figure 4. Parts of plants used as food ingredients.

The Use of as Traditional Foods

Utilizing plant resources is the outcome of ancestors' experiences and experiments gained via interaction with nature, which have been verbally transmitted from generation to generation up to this point. Through the practice of using different kinds of plants found in the surrounding area as culinary ingredients, the community continues to preserve and spread this ancient knowledge. In-depth local knowledge about the utilization of plant species for food has been developed by the community's ability to blend plants, which not only protects cultural history but also enhances distinctive and varied eating habits. The utilization of plants is not only a source of food but also contributes significantly to the preservation of local knowledge and the fortification of the local community's cultural identity [43].

Traditional foods represent a cultural product created to meet primary needs, incorporating local wisdom. Various types of traditional dishes are prepared from plants sourced from the surrounding environment (Table 3). In addition to offering nourishment, plants—both as functional meals and beverages—also contribute significantly to health maintenance [47].

Table 3. Types of traditional foods utilized by the community in Lesten Village.

Traditional Food or Beverage	Total Respondent	FL (%)
Serbet	44.00	62.82
Bubur Pedas	34.00	48.57
Gutel	28.00	40.00
Tumpi	18.00	25.71
Sagu Lipet	9.00	12.86

Serbet is a traditional beverage commonly consumed during the month of Ramadan. Also referred to as "the king's drink," it is made from a mixture of lemongrass, ginger, and palm sugar, which are boiled together. This beverage is traditionally believed to warm the body and prevent colds during Ramadan. Among the respondents, 62.82% demonstrated knowledge of the plant ingredients used in *Serbet*. This indicates that the drink remains a valued part of traditional practices in Lesten Village. Pamela[48] reported that herbal plants containing ginger, lemongrass, and pandan leaves can be processed into functional beverages that support immune health. Additionally, Maleš [49] emphasized that aromatic plants are associated with biological effects and health benefits. Consequently, the use of these plants in beverage production presents an opportunity to develop functional products that may reduce consumer preference for carbonated and high-calorie drinks.

Bubur Pedas (Spicy porridge), a distinctive culinary tradition of the Gayo tribe in Lesten, is prepared with a base of rice, coconut milk, turmeric, shallots, garlic, coriander, and chili. It is typically consumed with anchovies and cepokak (*Solanum torvum*). The prevalence of public knowledge about this dish remains notably high, at 48.57%, indicating that spicy porridge continues to be an integral part of the Gayo Lues culinary heritage.

Another traditional Gayo dish, *gutel*, is made from rice flour, coconut, sugar, and water. The mixture is shaped into small ovals and wrapped in *Pandanus amaryllifolius* leaves. Historically, gutel was used as a provision for hunting expeditions and continues to be a customary food during the rice harvest season. Navia [50] describes *gutel* as a traditional snack of the Gayo tribe, specifically from the Lokop area in East Aceh.

Tumpi is a traditional snack composed of a mixture of *O. sativa* (rice), *A. pinnata* (sugar palm), and *C. nucifera* (coconut), with a touch of salt, shaped into flat patties, and then fried. This snack is commonly served at traditional events such as weddings and circumcision ceremonies and is characteristic of the Gayo and Alas tribes [51]. Additionally, the Gayo tribe's traditional snack known as sago lipet is frequently prepared during Ramadan. This snack is made from glutinous rice flour mixed with brown sugar, salt, and coconut and cooked into a rolled omelet. It is typically served for breaking the fast and during ceremonial gatherings or significant events within the Gayo community. The community regarded sago lipet as a nutrient-rich food that provides substantial carbohydrates.

Conclusions

The Lesten community utilized a total of 51 plant species from 26 families as food ingredients. Female respondents demonstrated a higher level of knowledge concerning the use of plants as food ingredients. Specifically, 52.9% and 55.7% of these respondents were aged 50 years or older. Vegetables represented the largest proportion of the categories (34%), followed by spices (30%), fruits (21%), and carbohydrates (15%). Fruits were the most commonly used part as food ingredients (61%). The species with the highest value of use was *Cacica papaya* (1,07).

Additionally, the traditional food exhibiting the highest fidelity level was *serbet* (62,82%). These findings underscore the importance of integrating a diverse range of plant resources into food systems to enhance food security and promote economic development in the region.

Funding: This research was funded by Universitas Syiah Kuala through the PTNBH grant for the fiscal year 2024, under grant number 497/UN1 1.2.1/PG.01.03/SPK/PTNBH/2024.

Ethical Clearance: Not applicable

Informed Consent Statemen: Not applicable

Data Availability Statement: The data used in this study are available upon request from the corresponding author in accordance with applicable data protection and privacy regulations.

Acknowledgments: We would like to express our sincere gratitude to the residents of Lesten Village for their warm hospitality.

Conflicts of Interest: All the authors declare that there are no conflicts of interest.

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