RESEARCH ARTICLE

MEDIA KONSERVASI
SCIENTIFIC JOURNAL IN CONSERVATION OF NATURAL RESOURCES AND ENVIRONMENT

Quantitative Ethnobotany Approach on Local Food Plants in Banceuy Traditional Village, Subang Regency, West Java

Reza Raihandhany[a] and Purnomo[b]

[a] Study Program of Biology, Faculty of Biology, University of Gadjah Mada, Sleman 55281, Indonesia
[b] Department of Tropical Biology, Faculty of Biology, University of Gadjah Mada, Sleman 55281, Indonesia

Article Info:
Received 00 January 20xx
Revised 00 February 20xx
Accepted 00 March 20xx

Corresponding Author:
Purnomo
Department of Tropical Biology, University of Gadjah Mada
E-mail: purnomods@ugm.ac.id

Abstract

The Sundanese people of West Java, Indonesia, are well known for consuming raw plants, which are part of their food culture and are called *lalapan*. West Java consists of several traditional villages, one of which is Banceuy Traditional Village, located in Subang Regency. Usually, discourse about food is inseparable from culture since every place has unique dishes and cultures. This study aims to conduct a quantitative analysis of the inventory of food plant data using quantitative ethnobotanical indices. The research method used semi-structured interviews with 32 informants that consisted of two key informants and field-guided observation accompanied by one of the key informants around the village to identify and collect the food plant specimens. A quantitative data analysis was carried out using ethnobotany indices, namely, the Index of Cultural Significance (ICS), Use Values Index (UV), and Relative Frequency Citation (RFC). Banceuy indigenous people utilized 160 local food plant species belonging to 55 families. Fabaceae, Cucurbitaceae, Solanaceae, and Zingiberaceae were the dominant food plant families. These plant species were utilized as sources of carbohydrates, fruits, vegetables, spices, seeds, and beverages. The most applied food consumption manner by Banceuy indigenous people consisted of fresh food consumed, sauté, and boiling. *Arenga pinnata* had the highest ICS value (116) due to its utilization as seasoning and involvement in traditional rituals. *Manihot esculenta* and *Carica papaya* had the highest value in UV (1.81 & 1.69) and RFC (0.97) as they were used for daily consumption.

Keywords: ethnobotany indices, food plants, Index of Cultural Significance, quantitative ethnobotany, sundanese

1. Introduction

Ethnobotany is a multidisciplinary science related to using plants for generations and over a long period in a traditional community. Ethnobotany can also be used as a scientific instrument to document traditional communities' knowledge and local wisdom regarding the various uses of plants to support their life needs. Plants can be used for medicinal, food, building materials, traditional ceremonies, fabrics, coloring materials, and other uses [1]. By its definition, ethnobotany is a science that examines the relationship between humans and plants in their natural environment [2,3], following the term "ethno" which refers to a study of people or culture, and "botany" as a study of plants [4]. Ethnobotany studies interactions or relationships between plants and humans in time and space [5]. Quantitative ethnobotany can be described as "the utilization of quantitative methods for the direct examination of contemporary data on plant usage" [6,7]. Quantifying and conducting related hypothesis testing assist in producing high-quality information, thereby significantly contributing to both resource conservation and development [8].

The Sunda ethnic group is recognized for its distinctive cuisine known as *lalapan*, which involves the consumption of raw and fresh leaves or fruits that have recently been harvested. This plays an essential role in daily dietary habits [9]. In West Java Province, numerous traditional Sundanese villages continue to preserve their culture and local wisdom. Therefore, there may be some traditional or cultural uses of plants for food. Studies on local food plants in various traditional villages in West Java Province have been conducted by Irwin [10] in Cireundeu Traditional Village, Cimahi City; Septiani et al. [11] in Naga Traditional Village, Tasikmalaya Regency; Hernawati et al. [12] in Pulo Traditional Village and Dukuh Traditional Village in Garut Regency; Naga Traditional Village in Tasikmalaya Regency; and Kuta Traditional Village in Ciamis Regency.

According to the West Java Central Bureau of Statistics [13] and West Java Province Tourism and Culture Office through Jabar Open Data [14], there are 5,957 villages in West Java, and only 37 are considered traditional villages. The number of traditional villages is very small compared with regular villages that have been modernized and integrated with advanced technologies. Unlike in regular villages, the people of traditional villages still maintain their culture and practice it in their daily lives. Usually, people in traditional villages wisely utilize natural resources, as they consider themselves part of nature.

One of the traditional villages in West Java, Indonesia, is Banceuy Traditional Village (Kampung Adat Banceuy), located in Subang Regency, Ciater Sub-district. Banceuy indigenous people consider nature a part of themselves as this point of view was inherited from their ancestors, where they still implement several traditional rituals to prevent natural disasters caused by nature's anger and show gratitude towards God [15,16]. This study aimed to carry out a quantitative analysis of the inventory of food plant data using quantitative ethnobotanical indices in Banceuy Traditional Village, Subang Regency, West Java, Indonesia, as well as the knowledge of indigenous people regarding local food plant utilization, including food plant processing. The study regarding the ethnobotany of food plants in the Banceuy Traditional Village has not been documented yet. However, research on medicinal plants has been carried out by Weking et al. [17] and Gondokesumo et al. [18]. This study is crucial for documenting one of the most recent Sundanese food cultures.

2. Materials and Methods

2.1. Research Area

The research occurred in the Banceuy Traditional Village in (administratively Sanca Village, since Banceuy is kampung or known as hamlet and village is consisted of several kampung) Subang Regency, West Java, Indonesia. The village is located at an elevation of 770 m above sea level, with central coordinates of 6°42'16" Latitude South – 107°42'2" Longitude East. Covering an area of 157 ha, the village comprises 47 ha of forests, 78 ha of rice fields, 20 ha of gardens, and 12 ha of settlements. The population of Banceuy Traditional Village comprises 948 individuals, 470 males and 478 females. Predominantly, most indigenous Banceuy people engage in farming as their primary occupation. A map of the traditional Banceuy village is displayed in Figure 1.

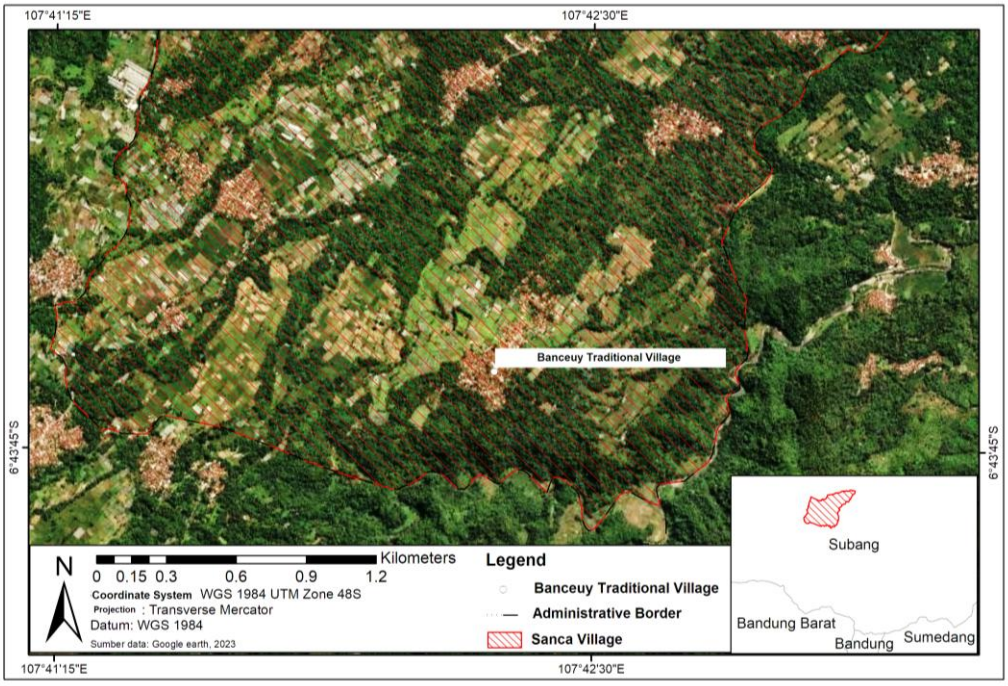

Figure 1. Study site **:** Banceuy Traditional Village, Subang Regency, West Java.

2.2. Data Collection

Data were collected between May and July of 2023 through semi-structured interviews. A total of 32 informants were interviewed, comprising two key informants (a traditional ruler and a farmer group leader) and 30 regular housewives. Their ages ranged from 20 to 90, averaging 48.5 ± 15.75. A total of 30 housewives, presumed to possess knowledge about food plants daily, were randomly selected. The minimum population sample size is determined from 273 households in Banceuy Traditional Village using a statistical approach with a confidence level of 95%, an error rate of 10%, and a population proportion of 10%. This results in a sample population of 30 households. It is assumed that one housewife prepares food for each household, so the sample taken is based on the number of households rather than the total number of individuals in the Banceuy Traditional Village.

Additionally, the two key informants were deliberately chosen because of their comprehensive knowledge of the village's cultural significance and crop commodities. The gathered data encompassed the diversity of food plant species and their uses, including local names, plant names, scientific plant names, plant families, habits, locations, utilized parts, and other aspects, whether for cultural or medicinal purposes, as well as the frequency of uses and preferences.

2.3. Specimens Identification

Herbarium voucher specimens gathered during field-guided observation were archived at the Plant Systematics Laboratory of the Faculty of Biology, University of Gadjah Mada, Special Region of Yogyakarta, Indonesia. These specimens were identified using key identification in the Flora of Java [19–21] and cross-referencing with local plant names in Tumbuhan Indonesia Berguna [22]. The botanical nomenclature and accepted plant species names were verified to ensure accuracy using the Plants of the World Online website (https://powo.science.kew.org/).

2.4. Data Processing and Analysis

Qualitative data collected from the interviews were edited and arranged. Each column is an attribute of local plant names, scientific plant names, plant families, habits, locations, parts used, and other aspects, whether for cultural or medicinal purposes. The quantitative data were analyzed using several ethnobotanical indices approaches below.

2.4.1. Use Value Index (UV)

The informant used this index to show the relative importance of a food plant species regarding its use for each species. It is calculated using the formula described by Phillips et al. [23].

$$UV = \frac{\sum UVi}{ni} \quad (1)$$

Where ΣUVi is sum of uses of a plant species mentioned by informants, and ni is total number of informants.

2.4.2. Index of Cultural Significance (ICS)

Index of cultural Significance (ICS) is a quantitative approach to assessing the significance of plants within a community. This index shows the importance of each plant species in terms of their cultural uses. It is calculated by following the formula which refers to Turner [24].

$$ICS = \sum_{i=1}^{n} (q\ x\ i\ x\ e) \quad (2)$$

Where the ICS is based on three parameters namely the first one is quality (q). which is aquality of use value, variation in different plant species used. Its score varies from 1 to 5, which means 5: main food ingredient, 4: supplementary food, 3: other food, secondary ingredients, and traditional medicinal ingredients, 2: ritual, mythical, and recreational material, 1: known benefits only. Secondly is intensity (i) which is the intensity of daily use of the plant species. Its score ranges from 1 to 5, which means 5: very high intensity, 4:

moderately high intensity, 3: medium intensity, 2: low intensity, 1: minimal intensity. Lastly, there is an intensity of exclusivity, which means the use of plant species based on preference. It only possesses lower scores, ranging from 0.5 to 2, which means 2: species that are most preferred, the primary choice, and irreplaceable, 1: there are several possible species to replace, and 0.5: secondary source.

2.4.3. Relative Frequency Citation (RFC)

This index assessed the importance of particular plant species and the evenness of indigenous people's knowledge. It was calculated by dividing the number of Indigenous peoples who mentioned the use of particular plant species by the total number of informants referred to Tardío and Pardo-de-Santayana [25].

$$RFC = \frac{Fc}{N} \quad (3)$$

Where Fc is the use of particular plant species and N is total number of informants.

3. Results

3.1. Species Diversity as Local Food Plants in Banceuy Traditional Village

Based on interviews and guided field observations, the indigenous Banceuy people used 160 local food species belonging to 55 families and 117 genera. Fabaceae is the most prevalent plant family, comprising 12 species, followed by Cucurbitaceae and Solanaceae, each with nine species, and Zingiberaceae with eight species.

3.2. Food Plant Processing by the Banceuy Indigenous People

The indigenous Banceuy people utilize six categories of food plants, as classified by Al-Yamini et al. [26], namely fruits, vegetables, spices, carbohydrates, beverages, and seeds. Vegetables were the most used category, constituting 33.83% (68 species), followed by fruits (22.37%, 51 species), spices (15.92%, 32 species), and beverages (13.43%, 27 species). Carbohydrates and seeds were the least utilized food categories, accounting for 5.97% (12 species) and 5.47% (11 species), respectively. Figure 2 displays the percentage distribution of the food plant categories.

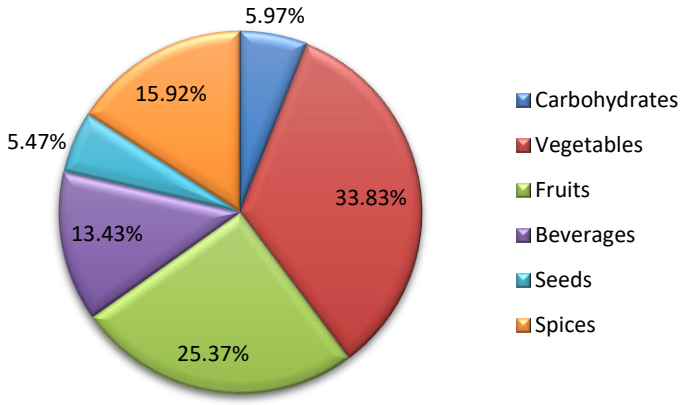

Figure 2. Proportion of food plant processing by the Banceuy indigenous people.

3.3. Food Plant Processing by the Banceuy Indigenous People

Banceuy indigenous people use various methods to process food plants for their daily consumption. Direct consumption was the most common method, accounting for 33.84% (89 species). This method is primarily used for fresh vegetables with their leaves and fruits consumed directly, such as *Pilea melastomoides*, *Ocimum basilicum*, *Mangifera indica*, and *Psidium guajava*. Cooking by sautéing, stir-frying, or making soups was the second most

applied processing method, accounting for 21.67% (57 species). Boiling is the next most frequently applied method for 16.73% (38 species) of food plants. Typically, tubers such as *Manihot esculenta*, *Canna indica*, *Ipomoea batatas*, and *Dioscorea hispida* are boiled to soften their texture and remove toxic substances. A chart of the processing methods for food plants is shown in Figure 3.

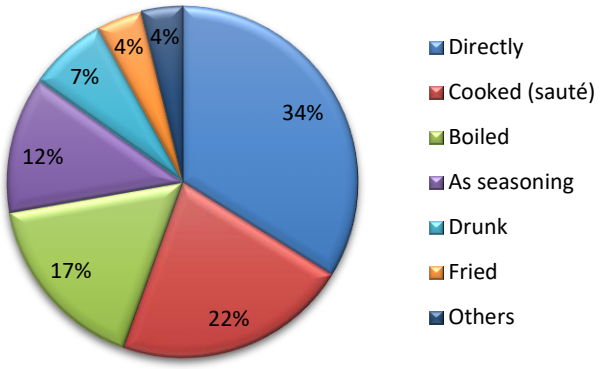

Figure 3. Proportion of food plant categories by the Banceuy indigenous people.

3.4. Use Value Index (UV)

Based on the Use Value Index (UV), five food plant species were categorized as high (>1). *M. esculenta* exhibited the highest UV value (1.81). The indigenous Banceuy people use *M. esculenta* evenly as a source of vegetables and carbohydrates. The leaves are consumed as *lalapan*, whereas the tubers are boiled or fried as cassava chips. *Carica papaya* is a food plant species with the second-highest UV value of 1.69. This plant provides fruits and vegetables, with its leaves and flowers used in stir-fries or sautéed dishes.

Phaseolus vulgaris has the second highest UV value of 1.31 and is used as a source of vegetables (chickpeas) and seeds (kidney beans). *Solanum lycopersicum* has a UV value of 1.22 and is used in various ways as a source of fruit, seasoning for cooking, making *sambal*, and as a beverage in the form of juice. *S. lycopersicum* holds economic value due to its use as fruit, vegetable, and seasoning. *Cucumis sativus* was the last food plant species with a high UV value of 1.031. This species is consumed directly, either raw or cooked. *C. sativus* is widely consumed in Indonesia and presents market opportunities. Table 1 shows the UV values.

Table 1. Food plant species with high UVI (>1) in Banceuy Traditional Village

No.	Species name	Family	Local name	UV	Food plant categories
1	*Manihot esculenta* Crantz	Euphorbiaceae	*sampeu*	1.81	1, 3
2	*Carica papaya* L.	Caricaceae	*papaya*, *gedang*	1.69	2, 3
3	*Phaseolus vulgaris* L.	Fabaceae	*buncis*	1.31	3, 4
4	*Solanum lycopersicum* L.	Solanaceae	*tomat*	1.22	2, 3, 5, 6
5	*Cucumis sativus* L.	Cucurbitaceae	*bonteng*	1.03	3

Information: 1 = Carbohydrates, 2 = Fruits, 3 = Vegetables, 4 = Seeds, 5 = Beverages, 6 = Spices

3.5. Index of Cultural Significance (ICS)

Based on the Index of Cultural Significance (ICS), 14 food plant species were categorized as having a high value (>50), and one species had a very high value (>100). *Arenga pinnata* (Figure 4) had the highest value of 116 because of its extensive utilization, high frequency, and exclusivity compared to other plant species. The plant species with the second highest ICS values were *Allium cepa* var. *aggregatum*, and *Allium sativum*, each with a value of 82, because of their high frequency of use as seasonings for daily cooking and making chili sauce. *Zingiber officinale* had an ICS value of 79. The rhizome of this species is used as a spice and herbal drink.

Figure 4. *Arenga pinnata* (kawung), as the food plant species with the highest number of ICS deu to its extensive, high frequency, and exclusivity utilization in daily life of Bancuey indigenous people.

Piper nigrum, with a value of 76, is used similarly to *Zingiber officinale* as a spice and as one of the ingredients for *sambal papagan*. The rhizome of *Kaempferia galanga*, with a value of 70, is also utilized as a spice and ingredient for *sambal papagan.* The next two plant species that are key components in making *sambal papagan*, *Piper retrofractum* and the bark of *Lannea coromandelica*, with values of 54 and 51, respectively, were also categorized as high values owing to their high exclusivity and irreplaceability in this dish. *S. lycopersicum*, valued at 62, is used as an ingredient in making chili sauce as a seasoning for cooking and can be consumed directly as fruit or juice. The ICS values are presented in Table 2.

Table 2. Food plant species with high ICS (>50) in Banceuy Traditional Village

No.	Family	Species name	Local name	ICS	Processing
1	Arecaceae	*Arenga pinnata* (Wurmb) Merr.	kawung	116	As spices
2	Alliaceae	*Allium cepa* var. *aggregatum* G.Don	bawang beureum	82	As spices
3	Alliaceae	*Allium sativum* L.	bawang bodas	82	As spices
4	Zingiberaceae	*Zingiber officinale* Roscoe	jahe	79	As spices, boiled
5	Piperaceae	*Piper nigrum* L.	pedes, lada	76	As spices
6	Zingiberaceae	*Kaempferia galanga* L.	cikur	70	As spices, directly consumed
7	Cucurbitaceae	*Cucumis sativus* L.	bonteng	64	Directly consumed
8	Arecaceae	*Cocos nucifera* L.	kalapa	64	As spices, directly consumed
9	Solanaceae	*Solanum lycopersicum* L.	tomat	62	Directly consumed, as spices, cooked
10	Poaceae	*Cymbopogon citratus* (DC.) Stapf	sereh	58	As spices
11	Euphorbiaceae	*Manihot esculenta Crantz*	sampeu	57	Boiled, fried
12	Piperaceae	*Piper retrofractum Vahl*	cabe areuy	54	As spices
13	Solanaceae	*Capsicum annuum L.*	cabe	54	As spices
14	Musaceae	*Musa x paradisiaca L.*	cau	52	Raw, fried, roasted
15	Anacardiaceae	*Lannea coromandelica* (Houtt.) Merr.	kalijaran	51	As spices

3.6. Referral Frequency Citation (RFC)

Based on the Referral Frequency Citation (RFC), *M. esculenta* and *C. papaya* (Figure 5) were the food plant species with the highest value of 0.97, meaning that 31 out of 32 Banceuy Indigenous people mentioned both species during interviews. The high number of RFCs

indicates that these species are widely recognized throughout the traditional Banceuy Village. *Capsicum frutescens* had the second-highest RFC value (0.94). The indigenous people of Banceuy prefer *Ca. frutescens* over *Ca. annuum* to make chili sauce because of its spiciness. The RFC values are listed in Table 3.

Table 3. Food plant species with high RFC in Banceuy Traditional Village

No.	Family	Species name	Local name	RFC	Food processing
1	Euphorbiaceae	*Manihot esculenta* Crantz	*sampeu*	0.97	Boiled, fried
2	Caricaceae	*Carica papaya* L.	*papaya*, *gedang*	0.97	Raw
3	Solanaceae	*Capsicum frutescens* L.	*cengek*	0.94	As spices
4	Fabaceae	*Phaseolus vulgaris* L.	*buncis*	0.91	Raw, cooked
5	Cucurbitaceae	*Cucumis sativus* L.	*bonteng*	0.91	Raw, cooked
6	Convolvulaceae	*Ipomoea batatas* (L.) Lam.	*hui*, *boled*	0.91	Boiled
7	Alliaceae	*Allium ascalonicum* L.	*bawang beureum*	0.91	As spices
8	Alliaceae	*Allium sativum* L.	*bawang bodas*	0.91	As spices
9	Solanaceae	*Capsicum annuum* L.	*cabe*	0.87	As spices

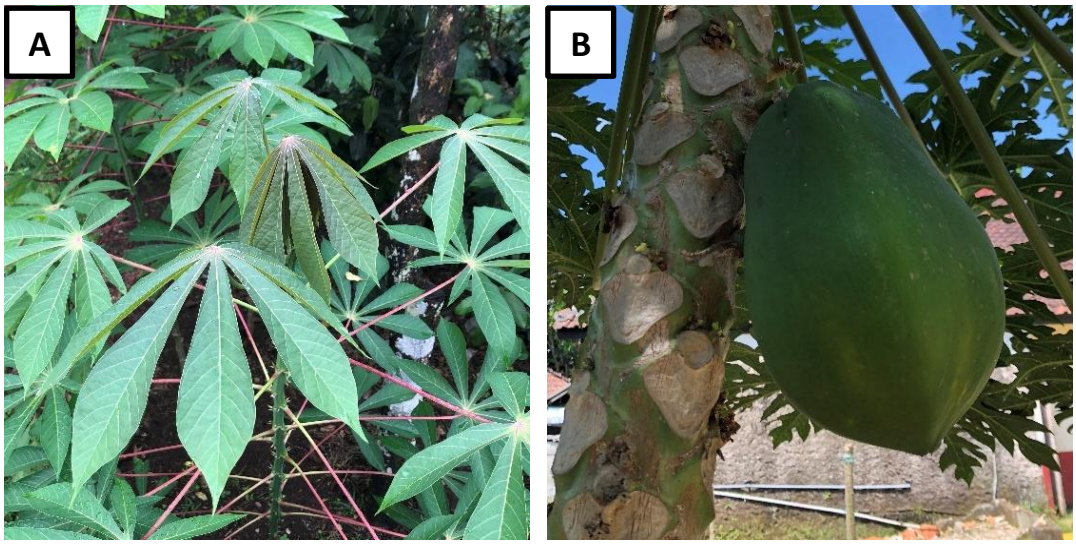

Figure 5. *Manihot esculenta* (sampeu) (A) and *Carica papaya* (gedang, papaya) (B); two food plant species with the highest number of UV and RFC due to their existence, easy to cultivate, and favorable flavour by Banceuy indigenous people.

4. Discussion

4.1. Food Plant Categories and Processing by the Banceuy Indigenous People

The Banceuy indigenous people prefer to consume raw, fresh vegetables and fruits that are eaten directly without processing. Fresh vegetables and fruits contain more micronutrients than processed ones. Nutrient loss can occur during the preparation and cooking phases [27]. However, processing through cooking or boiling vegetables and fruits can reduce their nutrient content [28]. Therefore, the Banceuy indigenous people also process food plants such as vegetables and fruits by cooking them as stir-fry or sauté. Moreover, cooking makes food plants, particularly vegetables, palatable [29]. The bitter taste of some vegetables, identified as a significant obstacle to their consumption, can be minimized through certain cooking processes and the addition of spices [30–32]. According to Poelman et al. [33], enhancing the flavor of vegetables by cooking can increase their consumption, particularly among children.

4.2. Usage of Food Plants

The Use Value Index (UV) determines the relative usage value of a particular food plant species. One of the most used food plants by Banceuy Indigenous people is *M. esculenta,* and the other is *C. papaya.* Amrinanto et al. [34] stated that many Sundaneses consume *M. esculenta* leaves as processed *lalapan*, primarily by boiling. Based on the study by Alamu *et al*. [35], *M. esculenta* can produce various products, such as boiled tubers, flour, and chips, by frying. Additionally, the tubers of *M. esculenta* serve as a carbohydrate source [36], considered the third most important carbohydrate source after rice and corn [37]. Among the Sundanese, the tubers of *M. esculenta* are often processed into *tape* or *peuyeum*, which are fermented products [38].

The next one is *C. papaya*. The young leaves of *C. papaya* can be consumed as a vegetable [39]. This plant is not only cultivated for its sweet fruit, but also for its flowers, seeds, roots, and leaves, which have medicinal properties [40,41]. From here, it can be understood that almost all parts of the C. papaya plant can be utilized. Besides *M. esculenta* and *P. vulgaris,* there is *P. vulgaris* which is surprisingly has the third most used plant species. It is because this commodity is one of Banceuy farmer group cultivated plants. The young fruit of *P. vulgaris* is consumed directly as fresh vegetables (*lalapan*) or sautéed [42]. *S. lycopersicum* is the food plants with the most various utilization categories. It is used almost daily by people worldwide, cooked with chicken, beans, vegetables, or beef, and consumed as a puree or in salads [43–45].

According to Kumar et al. [46], the fruit of *S. lycopersicum* can be processed into tomato sauces and beverages such as juice. The last one is *C. sativus*. This species is also used as lalapan and vegetables and has become a commodity of the Banceuy farmer group. According to Victor and Julius [47], it can provide profitability and increase farmers' income, especially since most of the Banceuy Indigenous people are engaged in farming.

4.3. Significance of Uses of Food Plants

The Index of Cultural Significance can assess the significance of the role of food plants within the community. Unexpectedly, *A. pinnata*, in the form of a sugar palm, is used almost daily as an ingredient in chili sauce and others cooking. According to Rahman [48], chili sauce is a mandatory menu item for Sundanese food, alongside *lalapan*. As mentioned earlier, sugar palm is used as a seasoning in daily cooking. The leaves of *Arenga pinnata* are essential for making *sawén* and *héék* during Ruwatan Bumi, a special day in the Banceuy Traditional Village, contributing to the species' high exclusivity value. A day before Ruwatan Bumi, men of the Banceuy indigenous people worked together to make *sawén* and *héék* [49]. However, Weking et al. [17] reported that *A. pinnata* is also a component of traditional musical instruments in Banceuy's traditional village, although no respondents mentioned this use during the interviews.

Al. cepa var. *Aggatum* and *Al. sativum* are basic seasonings commonly used in Indonesian recipes, providing a delicious taste and enhancing aroma when added before or during cooking [50]. Both species are also used in several traditional rituals, such as Ruwatan Bumi and Hajat Wawar, and as components of *the sambal papagan*. The next significant food plant species is *Z. officinale.* Other than its usage as a beverage, the Banceuy indigenous people believe that a decoction of the rhizome is also effective in curing coughs, a use also reported by Weking et al. [17] and Gondokesumo et al. [18]. Additionally, *Z. officinale* is involved in the traditional ritual Ruwatan Bumi and is one of the components of *sambal papagan*.

Besides *Z. officinale, K. galanga* has also become a significant food plant species. In addition to its use as a spice, this species is also used by the Banceuy indigenous people as a balm for sprains, which was also reported by Weking et al. [17]. *L. coromandelica* is known by the Banceuy indigenous people due to its bark utilization for making sambal papagan as its main component. Moreover, *L. coromandelica* has been planted as a land fence, as noted by Argus et al. [51]. *S. lycopersicum* is also involved in the traditional Ruwatan Bumi ceremony. In addition to being used as a seasoning, this species can be consumed raw, with a fresh and sweet-sour taste [52].

4.4. Most Recognized Food Plants

Both *M. esculenta* and *C. papaya* species are commonly found in the yards, plantations, and rice fields of the Indigenous Banceuy people. *M. esculenta* is an economically important crop cultivated across Africa, South America, and Asia in various climates, altitudes, and soils, including in Indonesia [53]. Irwin [10] reported that in Cireundeu Traditional Village, *M. esculenta* has an RFC value of 1, indicating its significance and recognition by all villagers. As previously mentioned, most indigenous Banceuy people are farmers. A similar situation is observed in Cireundeu Traditional Village, where many villagers work as farmers and cultivate the same species, such as *M. esculenta*, *A. fistulosum*, *Z. officinale*, *K. galanga*, *and Cu. longa*, and *Co. esculenta*, according to a study on ethnoagriculture in Cireundeu Traditional Village by Primasongko and Raihandhany [54]. *C. papaya* is commonly found in Indonesia, where all parts of the plant, including leaves, fruits, flowers, and roots, are utilized for food and medicinal purposes [55–57].

A study conducted by Hernawati *et al.* [12] across four traditional villages in West Java (Dukuh, Pulo, Naga, and Kuta) reported a Relative Frequency of Citation (RFC) value of 0.87 for *C. papaya*, indicating that it is not the most highly cited species in those areas. In a separate study, Author et al. [58] observed that in the Pariangan Sub-district, Tanah Datar District, West Sumatra, *C. papaya* leaves are consumed as a vegetable, typically sautéed. At the same time, the fruits are eaten fresh and used to treat constipation. Sharmin et al. [59] also reported that *Ca. frutescens* is one of the most common species in Indonesia. Musfiroh et al. [60] further support this preference, noting that *Ca. frutescens* contains higher levels of capsaicinoids, contributing to its superior flavor to other chili species, such as *Ca. annuum*.

5. Conclusions

The local food plant species hold significant value for the indigenous Banceuy people, as reflected in their daily uses (food plant categories), frequency of use, and cultural and exclusive utilization. These plant species are essential for carbohydrates, vegetables, fruits, seasonings, seeds, and beverages. Regarding processing, direct consumption, sautéing, and boiling were the most common methods employed by indigenous Banceuy people. *A. pinnata* had the highest ICS value (116) because of its use as a seasoning in daily cooking and its involvement in traditional rituals such as the production of *sawén* and *héék* during Ruwatan Bumi, where the use of *A. pinnata* leaves is mandatory, indicating high exclusivity in the ICS aspect formula. *M. esculenta* and *C. papaya* had the highest values in UV (1.81 and 1.69) and RFC (0.97) as they are widely used for daily consumption. The tubers of *Manihot esculenta* are consumed as a carbohydrate source, whereas the leaves are used as vegetables or *lalapan*. In contrast, *C. papaya* is a source of vitamin-rich fruits, with its leaves and flowers often sautéed. The high UV and RFC values of *M. esculenta* and *C. papaya* indicate that these species are well recognized throughout the Banceuy traditional village.

Author Contributions

RR: Conceptualization, Methodology, Writing, & Editing; **P**: Conceptualization, Methodology, Writing - Review & Editing, Supervision.

Conflicts of Interest

There are no conflicts to declare.

Acknowledgments

We express our gratitude to The Indonesia Endowment Fund for Education, Ministry of Finance, Republic of Indonesia (*Lembaga Pengelolaan Dana Pendidikan*/LPDP-*Kementerian Keuangan Republik Indonesia*) for providing financial support for this study.

References

1. Kim, J.Y. *Ethnobotany*. Chelsea House: New York, USA, 2007; ISBN 0791089630.
2. Martin, G.J. *Ethnobotany*. Natural History Publication: Kota Kinabalu, Malaysia, 1998.
3. Walujo, E.B. Research ethnobotany in Indonesia and the future perspectives. *Biodiversitas* **2008**, *9*, 59–63, doi: 10.13057/biodiv/d090113.
4. Martin, J.R. Sense and sensibility: Texturing evaluation. In *New Perspectives on Education and Discourse*; Foley, J., Eds.; Cassell: London, England, UK, 2004.
5. Ijaz, F.; Iqbal, Z.; Rahman, I.U.; Alam, J.; Khan, S.M.; Shah, G.M.; Khan, K.; Afzal, A. Investigation of traditional medicinal floral knowledge of Sarban Hills, Abbottabad, KP, Pakistan. *Journal of Ethnopharmacology* **2016**. 179: 208–233. doi: 10.1016/j.jep.2015.12.050
6. Phillips, O.L.B.; Gentry, A.H. The useful plants of Tambopata, Peru: I. Statistical hypothesis tests with a new quantitative technique. *Economic Botany* **1993**, *47*, 15–32.
7. Phillips, O.L.B.; Gentry, A.H. The useful plants of Tambopata, Peru: II. Additional hypothesis testing in quantitative ethnobotany. *Economic Botany* **1993**, 47: 15–32.
8. Höft, M.; Barik, S.K.; Lykke, A.M. Quantitative ethnobotany. Applications of multivariate and statistical analyses in ethnobotany. *People and Plants Working Paper 6* **1999**, 1–49.
9. Hendariningrum, R. Budaya dan komunikasi kesehatan (studi pandangan kesehatan pada masyarakat sunda dalam tradisi makan lalapan). *LUGAS Jurnal Komunikasi* **2018**, *2*, 13–19.
10. Irwin, A.A. Kajian Etnobiologi Pangan Pendamping Rasi (Beras Singkong) Masyarakat Adat Kampung Cireundeu, Cimahi Selatan. Undergraduate Thesis, Universitas Pendidikan Indonesia, Bandung, Indonesia, 2018.
11. Septiani, N.; Hernawati, D.; Putra, R.R. Biodiversity of potentially "lalapan" vegetables in Kampung Adat Naga Tasikmalaya, Indonesia. *Biosfer: Jurnal Pendidikan Biologi* **2020**, *13*, 201–215, doi: 10.21009/biosferjpb.v13n2. 201-215.
12. Hernawati, D.; Putra, R.R.; Meylani, V. Indigenous vegetables consumed as lalapan by Sundanese Ethnic group in West Java, Indonesia: potential, traditions, local knowledge, and it's future. *South African Journal of Botany* **2022**, *151*, 133–145, doi: 10.1016/j.sajb.2022.09.007.
13. Badan Pusat Statistik Jawa Barat. Jumlah Desa Menurut Kabupaten/Kota, 2020-2021. Available online: https://jabar.bps.go.id/indicator/101/138/1/jumlah-desa-menurut-kabupaten-kota.html (accessed on 20 November 2023).
14. Dinas Pariwisata dan Kebudayaan Jawa Barat. Jumlah Kampung Adat Berdasarkan Kabupaten/Kota di Jawa Barat. Available online: https://opendata.jabarprov.go.id/id/dataset/jumlah-kampung-adat-berdasarkan-kabupaten kota-di-jawa-barat (accessed on 20 November 2023).
15. Afifah, S.N.; Moeis, S. Kehidupan Masyarakat Adat Kampung Banceuy: Kebertahanan adat istiadat menghadapi perubahan sosial budaya (kajian historis tahun 1965-2008). *FACTUM: Jurnal Sejarah dan Pendidikan Sejarah* **2017**, *6*, 96–114, doi: 10.17509/factum.v6i1.10181.
16. Afif, S. Kebudayaan Kampung Adat Banceuy Desa Sanca Kecamatan Ciater Kabupaten Subang. *AL-TSAQAFA Jurnal Ilmiah Peradaban Islam* **2020**, *17*, 43–57, doi: 10.15575/al-tsaqafa.v17i1.9004.
17. Weking, C.J.P.; Hafsah; Lestari, T.R. Study of medicine plants ethnobotany in Banceuy Indigenous People Subang Regency, West Java. *Media Konservasi* **2023**, *28*, 8–16, doi: 10.29244/medkon.28.1.8-16.
18. Gondokesumo, M.E.; Aini, S.Q.; Rahmadani, S. Quantitative analysist of ethnomedicinal practice and used by the Banceuy Tribe in Subang Village of Indonesia. *Pharmacognosy Journal* **2023**, *15*, 655–667, doi: 10.5530/pj.2023.15.134.
19. Backer, C.A.; van den Brink, R.C.B. *Flora of Java;* Wolters-Noordhoff N.V.: Groningen, The Netherlands, 1963; Volume 1.
20. Backer, C.A.; van den Brink, R.C.B. *Flora of Java;* Wolters-Noordhoff N.V.: Groningen, The Netherlands, 1965; Volume 2.
21. Backer, C.A.; van den Brink, R.C.B. *Flora of Java;* Wolters-Noordhoff N.V.: Groningen, The Netherlands, 1968; Volume 3.
22. Heyne, K. *Tumbuhan Berguna Indonesia*. Yayasan Sarana Wana Jaya: Jakarta, Indonesia, 1987.

23. Phillips, O.L. Some quantitative methods for analyzing ethnobotanical knowledge. In Se*lected Guidelines for Ethnobotanical Research: A Field Manual*; Alexiades, M., Sheldon, J.W., Eds. New York Botanical Garden Press: Bronx, New York, USA, 1996.
24. Turner, N.J. *The Importance of A Rose: Evaluating the Cultural Significance of Plants in Thompson and Lillooet Interior Salish*. Royal British Columbia Museum: British Columbia, Canada, 1988.
25. Tardío, J.; Pardo-de-Santayana, M. Cultural Importance indices: A comparative analysis based on the useful wild plants of Southern Cantabria (Northern Spain). *Economic Botany* **2008**, *62*, 24–39.
26. Al-Yamini, T.H.; Djuita, N.R.; Chikmawati, T.; Purwanto, Y. Ethnobotany of wild and semi-wild edible plants of the Madurese Tribe in Sampang and Pamekasan Districts, Indonesia. *Biodiversitas* **2023**, *24*, 947–957, doi: 10.13057/biodiv/d240234.
27. Fabbri, A.D.; Crosby, G.A. A review of the impact of preparation and cooking on the nutritional quality of vegetables and legumes. *International Journal of Gastronomy and Food Science* **2016**, *3*, 2–11, doi: 10.1016/j.ijgfs.2015.11.001.
28. Rickman, J.C.; Barrett, D.M.; Bruhn, C.M. Nutritional comparison of fresh, frozen, and canned fruits and vegetables. Part I. Vitamins C and B and phenolic compounds. *Journal of the Science of Food and Agriculture* **2007**, *87*, 930–944, doi: 10.1002/jsfa.2825.
29. Pellegrini, N.; Fogliano, V. Cooking, industrial processing and caloric density of foods. *Current Opinion in Food Science* **2017**, *14*, 98–102, doi: 10.1016/j.cofs.2017.02.006.
30. Dinehart, M.E.; Hayes, J.E.; Bartoshuk, L.M.; Lanier, S.L.; Duffy, V.B. Bitter taste markers explain variability in vegetable sweetness, bitterness, and intake. *Physiology & Behavior* **2006**, *87*, 304-313, doi: 10.1016/j.physbeh.2005.10.018.
31. Sharafi, M.; Hayes, J.E.; Duffy, V.B. Masking vegetable bitterness to improve palatability depends on vegetable type and taste phenotype. *Chemosensory Perception* **2013**, *6*, 8–19
32. Carney, E.M.; Stein, W.M.; Reigh, N.A.; Gater, F.M.; Bakke, A.J.; Hayes, J.E.; Keller, K.L. Increasing flavor variety with herbs and spices improves relative vegetable intake in children who are propylthiouracil (PROP) tasters relative to nontasters. *Physiology & Behavior* **2018**, *188*, 48–57, doi: 10.1016/j.physbeh.2018.01.021.
33. Poelman, A.A.M.; Delahunty, C.M.; de Graaf, C. Cooking time but not cooking method affects children's acceptance of *Brassica* vegetables. *Food Quality and Preference* **2013**, *28*, 441–448, doi: 10.1016/j.foodqual.2012.12.003.
34. Amrinanto, A.H.; Hardinsyah, H.; Palupi, E. The eating culture of the Sundanese: Does the traditional salad (lalapan) improve vegetable intake and blood β-carotene concentration?. *Journal on Food, Agriculture and Society* **2019**, *7*, 1–10, doi: 10.17170/kobra-20190709593.
35. Alamu, E.O.; Maziya-Dixon, B.; Dixon, A.G. Effects of traditional preparatory techniques on the chemical and pasting characteristics of yellow-fleshed cassava roots (*Manihot esculenta*). *International Journal of Food Science & Technology* **2023**, *58*, 5904–5913, doi: 10.1111/ijfs.16693.
36. Anjos, F.R.; Tivana, L.; Francisco, J.D.C.; Kagande, S.M. Cassava (*Manihot esculenta* crantz): an affordable energy source in dairy rations. *Online Journal of Animal and Feed Research* **2014***, 4*, 10–14.
37. Oni, A.O.; Onwuka, C.F.I.; Arigbede, O.M.; Anele, U.Y.; Oduguwa, O.O.; Onifade, O.S.; Tan, Z.L. Chemical composition and nutritive value of four varieties of cassava leaves grown in South-Western Nigeria. *Journal of Animal Physiology and Animal Nutrition* **2011**, *95*, 583–590, doi: 10.1111/j.1439-0396.2010.01086.x.
38. Suryaningrat, I.B.; Amilia, W.; Choiron, M. Current condition of agro-industrial supply chain of cassava products: A case survey of East Java, Indonesia. *Agriculture and Agricultural Science Procedia* **2015**, *3*, 137–142.
39. Sharma, A.; Sharma, R.; Sharma, M.; Kumar, M.; Barbhai, M.D.; Lorenzo, J.M.; Sharma, S.; Samota, M.K.; Atanassova, M.; Caruso, G., et al. *Carica papaya* L. leaves: Deciphering its antioxidant bioactives, biological activities, innovative products, and safety aspects. *Oxidative Medicine and Cellular Longevity* **2022**, *2022*, 1–20, doi: 10.1155/2022/2451733.
40. Vij, T.; Prashar, Y. A review on medicinal properties of *Carica papaya* Linn. *Asian Pacific Journal of Tropical Disease* **2015**, 5, 1–6, doi: 10.1016/S2222-1808(14)60617-4.
41. Singh, S.P.; Kumar, S.; Mathan, S.V. Therapeutic application of *Carica papaya* leaf extract in the management of human diseases. *DARU Journal of Pharmaceutical Sciences* **2020**, *28*, 735–744, doi: 10.1007/s40199-020-00348-7.

42. Chaurasia, S. Green beans. In *Nutritional composition and antioxidant properties of fruits and vegetables*. Jaiswal A.K., Eds. Academic Press: Cambridge, Massachusetts, USA, 2020.
43. Saleem, M.Y.; Asghar, M.; Iqbal, Q.; Rahman, A.; Akram, M. Diallel analysis of yield and some yield components in tomato (*Solanum lycopersicum* L.). *Pakistan Journal of Botany* **2013**, *45*, 1247–1250.
44. Ramzan, A.; Khan, T.N.; Nawab, N.N.; Hina, A.; Noor, T.; Jillani, G. Estimation of genetic components in F1 hybrids and their parents in determinate tomato (*Solanum lycopersicum* L.). *Journal of Agricultural Research* **2014**, 52(1): 65–75.
45. Rai, G.K.; Jamwal, D.; Singh, S.; Parveen, A.; Kumar, R.R.; Singh, M.; Rai, P.K.; Salgotra, R.K. Assessment of genetic variation in tomato (*Solanum lycopersicum* L.) based on quality traits and molecular markers. *SABRAO Journal of Breeding & Genetics* **2016**, *48*, 80–89.
46. Kumar, M.; Tomar, M.; Bhuyan, D.J.; Punia, S.; Grasso, S.; Sa, A.G.A.; Carciofi, B.A.M.; Arrutia, F.; Changan, S.; Radha; et al. Tomato (*Solanum lycopersicum* L.) seed: A review on bioactives and biomedical activities. *Biomeicine* & *Pharmacotheraphy* **2021**, *142*, 1–18, doi: 10.1016/j.biopha.2021.112018.
47. Victor, A.O.; Julius, A.B. Comparative effect of sesasons, organomineral fertilizer ratios and profitability of cucumber production (*Cucumis sativus* L.) in Southwest Nigeria. *Agricultural Research* **2019**, *4*, 1–7.
48. Rahman, F. Sunda dan budaya lalaban: Melacak masa lalu budaya makan Sunda. *Metahumaniora* **2018**, *8*, 289–300, doi: 10.24198/metahumaniora.v8i3.20708.
49. Umaya, R.; Cahya; Setyobudi, I. Ritual numbal dalam Upacara Ruwatan Bumi di Kampung Banceuy-Subang (Kajian liminalitas). *Jurnal Budaya Etnika* **2020**, *3*, 41–60, doi: 10.26742/be.v3i1.1126.
50. Fibri, D.L.N.; Anjani, D.M.; Maymunah; Putro, A.W.; Muhammad, D.R.A. Spice mapping profile in Indonesian traditional side dishes and beverages. *Research Square* **2022**, 1–31, doi: 10.21203/rs.3.rs-2048305/v1.
51. Argus; Hariyati, J.R.; Hakim, L.; Batoro, J. Ethnobotany of homegarden in The Island of Gili Iyang, Sumenep Regency. *Journal of Indonesian Tourism and Development Studies* **2022**, *10*, 65–73.
52. Kumar, A.; Kumar, V.; Gull, A.; Nayik, G.A. Tomato (*Solanum Lycopersicon*). In *Antioxidants in Vegetables and Nuts - Properties and Health Benefits*; Nayik G.A., Gull. A., Eds. Springer: Singapore, 2020.
53. Allem, A.C. The origins and taxonomy of cassava. In *Cassava: Biology, Production, and Utilization*; Hillocks, R.J., Tresh, J.C., Eds. CAB International: Wallingford, UK, 2002.
54. Primasongko, A.; Raihandhany, R. Ethnoagriculture of Cirendeu Traditional Village, Cimahi, West Java: Local knowledge implementation on agricultural practices. *Genbinesia Journal of Biology* **2022**, *2*, 23–34, doi: 10.55655/genbinesia.v2i1.24.
55. Dawkins, G.; Hewitt, H.; Wint, Y.; Obiefuna, P.C.; Wint, B. Antibacterial effect of *Carica papaya* fruit on common wound organism. *The West Indian Medical Journal* **2003**, *52*, 290–292.
56. Fakeye, T.O.; Oladipupu, T.; Showande, O.; Ogunremi, Y. *Tropical Journal of Pharmaceutical Research* **2007**, *6*, 671–678, doi: 10.4314/tjpr.v6i1.6.
57. Yogiraj, V.; Goyal, P.K.; Chauhan, C.S.; Goyal, A.; Vyas, B. *Carica papaya* Linn: An overview. *International Journal of Herbal Medicine* **2014**, *2*, 1–8.
58. Author, M.R.A.; Nisyawati; Walujo, E.B. The diversity and utilization of plants in the homegardens of Pariangan subdistrict, Tanah Datar district, West Sumatra. *AIP Conference Proceeding International Conference On Biology and Applied Science (ICOBAS)*, 1–9.
59. Sharmin, A.; Hoque, M.E.; Haque, M.M.; Khatun, F. Molecular diversity analysis of some chilli genotypes using SSR markers. *American Journal of Plant Sciences* **2018**, *9*, 368–379, doi: 10.4236/ajps.2018.93029.
60. Musfiroh, I.; Mutakin; Angelina, T.; Muchtaridi. Capsaicin level of various capsicum fruits. *International Journal of Pharmacy and Pharmaceutical Sciences* **2013**, *5*, 248–251.