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Cadernos de Ciência & Tecnologia

ISSNe 0104-1096

www.embrapa.br/cct

Use and ethnobotanical knowledge of neglected food plants with nutritional potential in Brazil: a systematic review

ABSTRACT – In a context of growing food crises and biodiversity loss, Unconventional Food Plants (UFPs) represent a strategic resource to provide food security and sovereignty by promoting food biodiversity and valuing ethnobotanical knowledge. This study aims to synthesize and analyze the scientific literature on the use and ethnobotanical knowledge of UFPs in Brazil. Through a systematic review protocol, we performed a qualitative content analysis focusing on key analytical categories — plant diversity, geographic distribution — as well as the sociocultural and applied dimensions of use. A total of 17 articles met the inclusion criteria, collectively documenting 408 species with nutritional potential. However, this review reveals that a minimal fraction of these species — estimated at less than 5% of the analyzed sample — is included within the scope of published agronomic studies, reinforcing the urgency for applied research. The results indicate a research concentration on plant species likely to occur in the Atlantic Forest, Caatinga, and Cerrado, revealing critical knowledge gaps with regard to other biomes. For the effective integration of UFPs into resilient food systems, future research must advance beyond descriptive inventories so as to address specific agronomic, toxicological, and socioeconomic challenges, thereby providing the evidence base needed to effectively integrate UFPs into food systems.

Index terms: ethnobotany, food biodiversity, neglected species, food security, systematic review.

Uso e conhecimento etnobotânico de plantas alimentícias negligenciadas com potencial nutricional no Brasil: uma revisão sistemática

RESUMO – Em um cenário de crises alimentares e perda de biodiversidade, Plantas Alimentícias Não Convencionais (PANC) representam um recurso estratégico para fortalecer a segurança e soberania alimentar ao promover a biodiversidade e valorizar o conhecimento etnobotânico. Este estudo objetiva sintetizar e analisar a literatura científica sobre o uso e conhecimento etnobotânico de PANC no Brasil. Por meio de um protocolo de revisão sistemática, realizamos uma análise de conteúdo qualitativa com foco em categorias analíticas-chave — diversidade de plantas, distribuição geográfica — e nas dimensões socioculturais e aplicadas do uso. Um total de 17 artigos atendeu aos critérios de inclusão, documentando coletivamente 408 espécies com potencial nutricional. Contudo, esta revisão revela que uma fração mínima dessas espécies — estimada em menos de 5% da amostra analisada — está abrangida no âmbito de estudos agronômicos publicados, o que reforça uma urgência por pesquisas aplicadas. Os resultados indicam

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Received
November 4, 2024

Accepted
October 16, 2025

Published
December 19, 2025

How to cite
PENZO, T. de A. Use and ethnobotanical knowledge of neglected food plants with nutritional potential in Brazil: a systematic review. **Cadernos de Ciência & Tecnologia**, v.42, e27808, 2025. DOI: https://doi.org/10.35977/0104-1096.cct2025.v42.27808.

uma concentração de pesquisas sobre espécies de maior ocorrência na Mata Atlântica, Caatinga e Cerrado, revelando lacunas críticas de conhecimento quanto a outros biomas. Para a efetiva integração das PANC em sistemas alimentares resilientes, pesquisas futuras devem avançar para além dos inventários descritivos de modo a abordar desafios agronômicos, toxicológicos e socioeconômicos, fornecendo assim a base de evidências necessária para integrar efetivamente as PANC em sistemas alimentares.

Termos para indexação: etnobotânica, biodiversidade alimentar, espécies negligenciadas, segurança alimentar, revisão sistemática.

INTRODUCTION

Human food practices are shaped by complex cultural systems that define what is considered edible, thereby constructing local dietary habits and traditions (Silva et al., 2021). Despite this rich cultural diversity, contemporary food systems are marked by a progressive decline in the knowledge and use of native and wild edible plants, a phenomenon observed in both rural and urban communities worldwide.

In Brazil, this trend is particularly acute. The national food supply, driven by commercial and export demands, is overwhelmingly focused on a limited number of exotic species cultivated through intensive, high-input agriculture, marginalizing a vast and biodiverse repository of native plants with significant nutritional potential (Kinupp & Lorenzi, 2014).

In this context, the term Plantas Alimentícias Não Convencionais (PANC), or Unconventional Food Plants (UFPs), was coined in Brazil by botanist Valdely Kinupp to unify and promote research on this topic (Silva et al., 2021). UFPs are defined as all plants, or their parts, with food potential that are unknown, neglected, or underutilized by the majority of the population in a given area, region, or country (Medeiros et al., 2021b). This term – adopted as the standard throughout this article for its widespread use and unifying power – encompasses a wide range of species, from wild plants to neglected parts of conventional crops.

The knowledge associated with these plants, hereafter referred to as ethnobotanical knowledge, represents a complex and locally embedded body of information. It is not a monolithic concept but rather encompasses multiple dimensions, including: (i) ecological knowledge – identifying species, their habitats, and seasonality; (ii) practical knowledge – knowing which plant parts are edible and the methods for their collection, cultivation, and preparation; and (iii) cultural knowledge – understanding their role in local cuisine, medicine, and social practices. Preservation and revitalization of this multifaceted knowledge are crucial, as it underpins the potential for these plants to be reintegrated into contemporary diets, strengthening food security and sovereignty (Machado & Kinupp, 2020).

However, the transmission and also the application of this ethnobotanical knowledge are influenced by a range of socioeconomic factors, such as gender, age, education, and proximity to urban centers, as well as the pressures from dominant agricultural models (Campos et al., 2015; Medeiros et al., 2021b). Understanding these dynamics is an essential technical knowledge for developing effective strategies to promote UFP use. While individual studies have explored these issues in specific communities, a comprehensive synthesis of the research landscape in Brazil is still lacking.

Therefore, the objective of this study is to synthesize and critically analyze the scientific literature produced in Brazil on the ethnobotanical knowledge and use of Unconventional Food Plants (UFPs).

Through this systematic review, we aim to: (1) identify the primary plant families and species with nutritional potential documented in the literature; (2) map the existing research according to geographic and biome distribution so as to highlight key knowledge gaps; and (3) analyze the different dimensions of ethnobotanical knowledge – ecological, practical, and cultural – addressed in the studies.

Cadernos de Ciência & Tecnologia, Brasília, v. 42, e27808, 2025
DOI: 10.35977/0104-1096.cct2025.v42.27808

By providing this synthesis, this review seeks to offer a robust overview of the state of the art, identify critical research needs, and support future efforts to promote UFPs as a tool for enhancing food biodiversity and sovereignty in Brazil.

MATERIALS AND METHODS

This study was developed through a systematic review of scientific articles aimed at characterizing and identifying the use and/or environmental knowledge of neglected edible plants within the Brazilian territory. The temporal scope was defined from 2008 to 2022, and 2008 was chosen as the starting point due to increasing academic discussions, visibility, and support for food biodiversity through wild, neglected, or unknown plants with nutritional potential, particularly following the introduction of the term "Unconventional Food Plants" (UFPs).

Data collection was conducted using the Scopus, Web of Science, and SciELO databases. Search terms were applied in both English and Portuguese. The terms in English included: "Neglected Plants," "Alternative Food Plants," "Wild Edible Plants," "Wild Food Plants," "Unconventional Food Plants," "Unconventional Edible Plants," "Nonconventional Food Plants," "Nonconventional Edible Plants," "Edible Weed," and "Novel Crops." In Portuguese, the terms included: "Plantas Alimentícias Não Convencionais," "Plantas Negligenciadas," "Plantas Alimentícias Alternativas," "Plantas Silvestres Alimentícias," "Plantas Silvestres Comestíveis," "Hortaliças Tradicionais," "Hortaliças Não Convencionais," "Plantas Nativas Alimentícias," and "Plantas Nativas Comestíveis." The boolean operator "OR" was used for all terms to refine and identify scientific articles addressing the question: What is the scope of research in Brazil on the use and/or environmental knowledge of neglected edible plants between 2008 and 2022?

The following inclusion criteria for article selection were established: articles containing theoretical-empirical knowledge, studies conducted within Brazilian territory, open-access content, original full-text publications, focus on the use and/or environmental knowledge of plants, taxonomic identification, and publication date between 2008 and 2022 in the SciELO, Scopus, or Web of Science databases. Exclusion criteria were: review articles, data articles, duplicate articles, editorials, conference materials, preprints; articles that did not focus on the use and/or knowledge of UFPs; studies outside Brazilian territory; those lacking taxonomic identification; those published before 2008; and articles not published in the SciELO, Scopus, or Web of Science databases (Figure 1).

	Stage		
1	Formulation of the problem Guiding the research question	»	What is the prospect in Brazil regarding the use and/or knowledge of neglected plants with food potential?
2	Database of articles	»	Scopus, *Web of Science* and SciELO
3	Evaluation and screening of articles	»	Reading of titles, abstracts, and full texts; Inclusion criteria, exclusion criteria; Temporal cutoff 2008-2022
4	Data analysis	»	Identification and organization using Atlas.ti 7 software and Microsoft Word
5	Description of results and discussions		

Figure 1. Systematic review planning stages.

Following the selection of the articles, we conducted a qualitative content analysis to systematize the findings. Data from each study were extracted and categorized according to predefined analytical themes: (i) plant species, families, and genera; (ii) geographic distribution and biome; (iii) ethnobotanical data, including parts used, preparation methods, and cultural roles; and (iv) socioecological aspects, such as the profile of knowledge holders. This process was supported by version 7 of Atlas.ti (2013) software for data organization and coding.

It is crucial to highlight that the final sample consisted of 17 articles. This relatively small number is not a limitation of the search strategy but rather a key finding of this review, reflecting the early stage of consolidated research on this specific topic within the selected high-impact databases. Consequently, quantitative bibliometric analyses, such as citation networks or keyword co-occurrence, were not feasible.

Therefore, this study is best framed as an exploratory systematic review, prioritizing a qualitative synthesis of the available evidence to map the current state of knowledge, identify primary research trends, and point out significant gaps, thus providing a robust foundation for future investigations.

RESULTS

From May to July 2022, an initial search was conducted using the indexing terms along with the boolean operator across the selected databases. A total of 172 articles were identified – 110 articles in SciELO, 38 in Scopus, and 24 in Web of Science. Based on inclusion and exclusion criteria, the first screening phase involved reviewing the titles and abstracts of these articles. Out of the 172 articles, 12 were excluded for duplication, and 143 were excluded based on the criteria. Subsequently, 17 articles were selected according to the inclusion criteria and their relevance to the research question (Figure 2). Finally, Atlas.ti (2013) software was used for the identification, organization, and analysis of qualitative data gathered from the full-text readings.

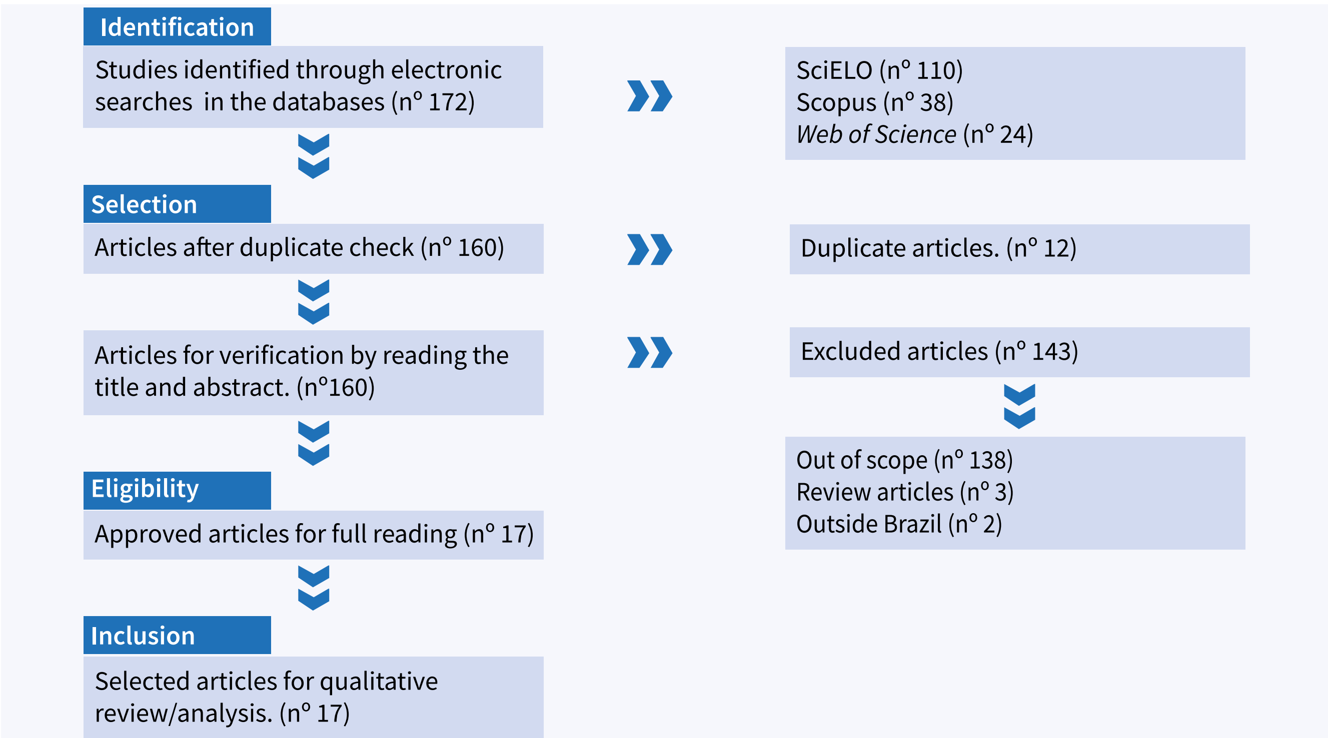

Figure 2. Screening procedure stages of the systematic review.

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DOI: 10.35977/0104-1096.cct2025.v42.27808

Characterization of the studies

The databases revealed which fields are most active in research on this topic. SciELO, showing 110 articles, yielded the highest number of articles based on the proposed indexing terms. The primary research fields were Agricultural Sciences (63 articles) as well as Biological Sciences (37 articles), both of them comprising 90.90% of the identified studies. Scopus, with 38 articles, also highlighted Biological Sciences and Agriculture (33 articles), representing 86.84% of its total. Meanwhile, Web of Science, with 24 articles, emphasized Plant Science (ten articles) and Conservation Biology (seven articles), accounting for 70.83% of its total.

The 17 scientific studies covered in this review share typical characteristics of ethnobotanical research, often converging toward similar objectives, as detailed in Table 1. These studies focus on cataloging, characterizing, identifying, and analyzing the uses, knowledge, environmental insights, diversity, dietary habits, and the role of Unconventional Food Plants (UFPs) in both rural and urban contexts. This approach guides the selection of articles for chronological analysis and synthesis, emphasizing a systemic approach to understanding the relationship between communities and UFPs.

Synthesis of findings: profile of research and ethnobotanical knowledge

Socioecological and geographic profile of the studies

The analysis of the selected literature reveals a distinct profile of knowledge holders and a significant geographic skew in research focus, both of which are critical for contextualizing the documented ethnobotanical knowledge. A total of 1,262 individuals were interviewed across the studies, and data indicates a gendered division of ethnobotanical labor. Women were the predominant group of participants (655, or 51.9%), consistently identified as the primary holders of knowledge related to domestic spaces, home gardens, and culinary preparation (Tuler et al., 2019; Ranieri & Zanirato, 2021). In contrast, men (453, or 35.9%) were frequently cited as the main knowledge holders regarding wild species collected during foraging or hunting activities in forest environments (Campos et al., 2015; Chaves et al., 2019). This highlights that a comprehensive understanding of UFP use requires methodologies that capture these complementary knowledge systems.

Geographically, the body of research exhibits a pronounced concentration in Brazil's Northeast (eight studies) and Southeast (four studies) regions. This focus translates into a thematic dominance of the Atlantic Forest (six articles), Caatinga (five), and Cerrado (four) biomes. Consequently, this systematic review exposes a critical knowledge gap concerning several biomes of immense biodiversity and cultural importance. Amazon, Pampa, Pantanal, and Chaco biomes were represented by only a single study each, and no studies were found covering the Araucaria or Cocais forests. This imbalance not only limits a nationally representative understanding of UFPs but also signals a risk of ethnobotanical erosion, where valuable local knowledge in under-researched regions may disappear before it can be documented and supported.

Ethnobotanical knowledge: plant diversity and distribution

The collective ethnobotanical repertoire documented in the 17 articles comprises 408 plant species distributed across 80 botanical families. The data demonstrates that this knowledge is profoundly rooted in local ecosystems, with a vast majority of the identified plants being native species (75.5%).

Table 1. Selected articles for data analysis and synthesis and their main characteristics.

Nº	Author (year)	Objective	Field of study	Biome	Material and method	Participant	Result obtained	Journal
1	Ranieri & Zanirato (2021)	Characterize the practitioners of urban agriculture in the backyards of municipalities	Vale do Paraíba, São Paulo	Atlantic Forest	Snowball, direct documentation, participant observation, guided tour, and semi-structured interview	59 participants 35 Women 24 men	113 species	Advanced Studies
2	Medeiros et al. (2021b)	Provide a simple framework to identify wild food plants potential for popularization based on local knowledge and perception	Murici, Alagoas	Atlantic Forest	Rural settlement census, semi-structured interview, free listing	32 participants 19 Women 13 men	26 species	*Scientific Reports*
3	Medeiros et al. (2021a)	Characterize the traditional use of plants considered simultaneously as food and medicine by local specialists in the community of Caeté-Açu	Palmeiras, Bahia	Caatinga/ Cerrado	Snowball and free listing	13 participants 9 men 4 Women	46 species	*Journal of Ethnobiology and Ethnomedicine*
4	Silva et al. (2021)	Characterize the food social space and the role of spontaneous plants in the community of São João da Chapada	Diamantina, Minas Gerais	Cerrado	Theoretical saturation interview sampling, ethnobotanical walk, and semi-structured interviews	30 participants 30 Women 0 men	178 species	Environment & Society.
5	Machado & Kinupp (2020)	Survey of food plants, preparation methods, and differences between social patterns in botanical knowledge	Amazonas	Amazon Rainforest	Probabilistic sampling, free listing, semi-structured interview, and guided tour	195 participants 71 Women 66 men 58 Children	220 species 58 families	Rodriguésia
6	Gomes et al. (2020)	Answer the following question: what are the factors that determine the consumption and trade of certain wild fruit species among extractivists from two rural communities in Northeastern Brazil? And developed a participatory approach to identify the fruit species known and/or used by extractivists	Piaçabuçu, Alagoas	Atlantic Forest	Snowball and Likert Scale	52 participants 39 Women 13 men	17 species	*Ethnobiology and Conservation*
7	Mazon et al. (2020)	To assess the knowledge about UFPs by the population in the Southwestern region of the state of Paraná, Brazil	Pato Branco, Paraná	Atlantic Forest	Structured interview and CATA questionnaire (Check-all-that-apply)	84 participants 53 Women 31 men	NA	Food Science and Technology
8	Bartolotto et al. (2019)	Verify how many and which food species from the Chaco are used by three groups of eaters	Porto Murtinho, Mato Grosso do Sul	Chaco	Semi-structured interviews and botanical collections	106 participants 55 men 50 Women	29 species	Oecologia Australis
9	Chaves et al. (2019)	Understand the diversity of wild food species along with the subcategories of use in emergency and/or non-emergency situations in four peasant communities in the semi-arid region of Piauí, Brazil	Buriti dos Montes e Cocal, Piauí	Caatinga	Semi-structured interview and guided tour	93 participants	79 species 33 families	*Ethnobotany Research and Applications*

Table 1. Continuation.

Nº	Author (year)	Objective	Field of study	Biome	Material and method	Participant	Result obtained	Journal
10	Tuler et al. (2019)	Analyze the knowledge and use of unconventional food plants (UFPs) in the rural community of São José da Figueira	Durandé, Minas Gerais	Cerrado	Snowball, semi-structured interviews, and guided tour	18 participants 12 Women 4 men	56 species 29 families	Rodriguésia
11	Leal et al. (2018)	Investigate the knowledge about UFP of residents, report the UFP species, parts used, processing methods, and the reasons for the reduction of use, and even the abandonment of the use of UFP, and discuss the implications of these observations	Florianópolis, Santa Catarina	Atlantic Forest	Snowball, free listing, guided tour, and semi-structured interview	26 participants 17 Women 9 men	63 species 25 families	*Journal of Ethnobiology and Ethnomedicine*
12	Barreira et al. (2015)	Record the diversity, forms of use, propagation environment, growth habits, domestication status, production cycle, and botanical identification of Unconventional Food Plants (UFPs)	Viçosa, Minas Gerais	Atlantic Forest	Snowball, semi-structured interview, and guided tour	20 participants 12 men 8 Women	59 species 30 families	Revista Brasileira de Plantas Medicinais
13	Bortolotto et al. (2015)	Identifying wild plants and edible uses known in four rural communities of the Pantanal-Brazil	Rio Paraguai, Mato Grosso do Sul	Pantanal	Snowball and semi-structured interview	71 participants 46 men 25 Women	54 species 31 families	*Journal of Ethnobiology and Ethnomedicine*
14	Campos et al. (2015)	To assess whether extractive communities living in proximity to a protected area used their entire repertoire of known native food species and whether socioeconomic characteristics influenced the knowledge and use of these species	Planalto do Araripe, Ceará	Cerrado	Random probabilistic sampling, free listing, and guided tour	317 participants 193 Women 124 men	33 species 13 families	*Journal of Arid Environments*
15	Cruz et al. (2014)	Analyze people's perceptions of native wild edible plants in a rural Caatinga community in Northeast Brazil and the relationships between the use of these resources and socioeconomic factors	Altinho, Pernambuco	Caatinga	Convenience sampling, semi-structured interview	39 participants 27 Women 12 men	12 species	*Journal of Ethnobiology and Ethnomedicine*
16	Cruz et al. (2013)	Analyze existing relationships between knowledge, use, and management of native wild edible plants and socioeconomic factors such as age, gender, family income, individual income, past occupation and current occupation	Altinho, Pernambuco	Caatinga	Semi-structured interview and lectures	39 participants 27 Women 12 men	14 species	*Journal of Ethnobiology and Ethnomedicine*
17	Nascimento et al. (2013)	To investigate the knowledge and use of food plants, particularly native wild species, in two rural communities	Altinho, Pernambuco e Soledade, Paraíba	Caatinga	Semi-structured interview, free listing, and guided tour	68 participants 45 Women 23 men	169 species	Ecology of Food and Nutrition

This underscores a deep-seated, long-term relationship between traditional communities and the local flora. Concurrently, the inclusion of naturalized (10.3%) and exotic (14.2%) species illustrates the dynamic and adaptive nature of these food systems, which integrate new resources into their cultural practices.

Taxonomic analysis reveals that this knowledge is concentrated within a few key families. Myrtaceae (42 species), Fabaceae (29), Arecaceae (28), and Solanaceae (19) were the most species-rich families. This taxonomic concentration is not arbitrary, however it reflects the ecological abundance and high cultural utility of these groups in the studied biomes. The prominence of Myrtaceae (*Eugenia, Psidium*) is linked to its role as a primary source of edible fruits, while Fabaceae (*Inga, Hymenaea*) is recognized for providing both protein-rich seeds and fruits, holding strategic value for nutritional improvement (Bartolotto et al., 2019; Machado & Kinupp, 2020).

Ethnobotanical knowledge in practice: edible parts and culinary applications

The reviewed literature documents a sophisticated body of operational knowledge, which encompasses the crucial understanding of which plant parts to use and the methods required to transform them into food. This practical dimension of ethnobotany is what unlocks the nutritional and cultural potential of the plants.

The most frequently utilized plant part was the fruit, indicating a strong reliance on resources that often require minimal processing. However, the studies also documented the use of a wide array of other parts, including leaves, seeds, flowers, roots, tubers, stems, and cladodes. The documented use of leafy vegetables like ora-pro-nóbis (*Pereskia aculeata*) and taioba (*Xanthosoma taioba*) suggests more complex management systems, often tied to home gardens, that contribute to daily dietary diversity (Tuler et al., 2019; Silva et al., 2021).

Furthermore, the research catalogs a complex culinary grammar that extends far beyond raw consumption. The documented preparation methods, including cooking, sauteing, baking, frying, and processing into storable forms like flour, jams, jellies, and sauces, represent a body of knowledge essential for enhancing palatability, neutralizing anti-nutritional factors, and preserving food for later use. The study by Machado & Kinupp (2020), which alone detailed 105 distinct preparation methods, stands as a testament to the depth of this knowledge, which is fundamental for the cultural acceptance and integration of these plants into local diets.

Key species and their potential for food security

From the total plant diversity, a group of 29 species, cited at least in four articles, emerges as cornerstone species within the local food systems investigated (Table 2). Their recurrent mention across different studies and biomes points to their widespread cultural significance and high potential for broader applications in food security. The most prominent were *Hymenaea courbaril* L. (Jatobá) and *Psidium guineense* Sw. (Araçá) – cited in seven articles each –, followed by *Spondias mombin* L. (Cajá/Taperebá) and *Genipa americana* L. (Jenipapo) – six articles each.

These key species are valued for a combination of nutritional attributes, cultural importance, and accessibility. *Hymenaea courbaril is* recognized as a high-energy food source; *Psidium guineense* for its palatability and micronutrient content; and *Genipa americana* for its high vitamin C concentration, although its perishability presents a post-harvest challenge that necessitates processing knowledge (Medeiros et al., 2021b). Likewise, *Acrocomia aculeata* (Bocaiúva) is valued as a multi-purpose food source, as its pulp and almond offers distinct nutritional benefits (Bortolloto et al., 2015).

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DOI: 10.35977/0104-1096.cct2025.v42.27808

Table 2. Most cited plants with edible potential.

Scientific name	Common name	A.I (Table 1)	OG	P.U	U.C
Amarantaceae					
Amaranthus viridis L.	Caruru/ Bredo	1; 2; 4; 7; 10	Nz	F/ S	Re/ Ps/ Bb
Anacardiaceae					
Spondias mombin L.	Taberebá/ Caju-manga/ Cajarana	5; 6; 9; 11; 13; 17	Nv	Fr	I.N/ Bb/ Dc
Araceae					
Xanthosoma sagittifolium (L.) Schott	Taioba	1; 3; 4; 5; 10	Ex	F/ T	Cz/ Re
Arecaceae					
Acrocomia aculeata (Jacq.) Lodd. Ex Mart.	Bocaiúva/ Macaúba	8; 13; 14; 17	Nv	Fr/ F/ Me	I.N/ Bb/ Az
Syagrus cearenses Nobllick	Coco Catolé	14; 15; 16; 17	Nv	Fr	I.N/ Bb/ Az
Apocynaceae					
Hancornia speciosa Gomes	Mangaba	4; 6; 13; 14	Nv	Fr	I.N/ Bb/ Dc
Mandevilla tenuifolia Woodson	Manofê	9; 15; 16; 17	Nv	Fl	Gl/ Sl
Asteraceae					
Bidens pilosa L.	Picão	1; 4; 9; 12	Nz	F	Sl/ Re/ Os
Sonchus oleraceus L.	Serralha	1; 4; 10; 11; 12	Nv	F	Sl/ Re
Cactaceae					
Cereus jamacaru DC	Mandacaru	8; 11; 15; 16; 17	Nv	Cl/ Fr	I.N/ Gl
Pereskia aculeata Mill.	Ora-pro-nóbis/ Lobrobô-miúdo	1; 4; 7; 10; 12	Nv	F	Em/ Re/ Bb/ Sr
Capparaceae					
Crateva tapia L.	Trapiá	8; 9; 15; 16; 17	Nv	Fr	I.N/ Bb/ Dc
Convolvulaceae					
Ipomoea batatas (L.) Lam.	Batata-doce	5; 10; 12; 17	Nz	F/ R	Re/ Cz
Cucurbitaceae					
Momordica charantia L.	Melão-de-São-Caetano	4; 9; 10; 11	Nz	S	I.N
Euphorbiaceae					
Manihot esculenta Crantz	Mandioca	5; 10; 12; 17	Nv	F/ R	Cz/ Re/ Fn
Fabaceae					
Hymenaea courbaril L.	Jatobá/ Jataí	5; 9; 13; 14; 15; 16; 17	Nv	Fr/ S/ Ca	If/ Fn/ Bb/ Dc/ Sr
Inga edulis Mart.	Ingá/ Ingá-de-metro	5; 10; 11; 17	Nv	Fr	I.N/ Fn
Inga vera Willd.	Ingá-do-Mato	1; 8; 10; 12; 13	Nv	Fr	I.N/ Fn
Myrtaceae					
Eugenia uniflora L.	Pitanga	1; 8; 10; 12; 13	Nv	Fr	I.N/ Dc/ Bb
Eugenia pyriformis Cambess	Ubaia/ Uvaia	1; 15; 16; 17	Nv	Fr	In/ Gl
Plinia cauliflora (Mart.) *Kausel*	Jabuticaba	4; 8; 11; 13; 17	Nv	Fr	I.N/ Dc/ Bb
Psidium guineense Sw.	Araçá	2; 4; 5; 6; 10; 14;17	Nv	Fr	I.N/ Dc
Syzygium cumini (L.) Skeels	Jamelão/ Azeitona roxa/ Jambolão	1; 2; 6; 11; 12	Nz	Fr	I.N/ Dc/ Bb
Passifloraceae					
Passiflora cincinnata Mast	Maracujá-do-mato/ Maracujá-boi	3; 9; 13; 14; 17	Nv	Fr	I.N/ Dc/ Bb

Continue...

Table 2. Continuation.

Scientific name	Common name	A.I (Table 1)	OG	P.U	U.C
Piperaceae					
Piper umbellatum L.	Caapeba/ Pariparoba	1; 3; 4; 5	Nv	F	Cz/ Re/ Iv
Portulacaceae					
Portulaca oleracea L.	Beldroega	1; 4; 7; 10; 12	Nv	F	Sl/ Bb
Rosaceae					
Rubus rosifolius SM	Amorinha	4; 10; 11; 12	Nv	Fr	I.N/ Dc/ Bb
Rubiaceae					
Genipa americana L.	Jenipapo/ Genipapo	2; 5; 6; 8; 9; 13	Nv	Fr	I.N/ Dc/ Bb
Sapindaceae					
Talisia esculenta Radlk.	Pitomba/ Olho-de-boi	6; 9; 13; 17	Nv	Fr	I.N/ Gl

Legend: A.I = Identified Articles; OG = Origin; Ex = Exotic; Nv = Native; Nz = Naturalized. P.U (Part Used): Ca = Bark; Cl = Cladode; F = Leaf; Fl = Flower; Fr = Fruit; Me = Mesocarp; R = Root; S = Seed; T = Tuber. U.C (Culinary Use): Az = Oil; Bb = Beverage; Cz = Cooked; Dc = Sweet; Em = Pastry; Fn = Flour; Gl = Jelly; I.N = Fresh; If = Infusion; Re = Sautéed; Sl = Salad; Sr = Ice Cream.

Despite their potential, the integration of these species into formal and informal markets faces a critical paradox: while scientific and consumer interest grows, their use is constrained by significant socioeconomic and logistical barriers. These include challenges in production scalability, the lack of established supply chains, post-harvest losses, and persistent negative cultural perceptions that associate these foods with poverty, all of which must be addressed to fully realize their contribution to dietary diversity and food sovereignty (Bortolotto et al., 2019; Mazon et al., 2020).

DISCUSSIONS

The synthesis of the selected studies allows for a critical discussion of the evolution, thematic trends, and persistent gaps in ethnobotanical research on Unconventional Food Plants (UFPs) in Brazil. The findings, when analyzed together, reveal a complex interplay between academic interest in these plants, the socioeconomic contexts of local communities, and the pragmatic barriers to their integration into broader food systems.

The temporal distribution of the articles indicates that the establishment of the term "UFP" around 2008 acted as a catalyst, unifying disparate research on wild, neglected, and alternative food plants under a single, communicable concept, which likely contributed to its growing popularity in social movements and gastronomy. The initial wave of research, exemplified by studies such as those by Cruz et al. (2013) and Nascimento et al. (2013), focused on foundational ethnobotanical surveys, primarily in the Caatinga biome. These early works established a critical baseline, highlighting a dialectic that permeates the entire literature: the direct correlation between the erosion of local knowledge and the reduced consumption of UFPs, especially in communities undergoing urbanization or those with easier access to conventional food markets.

Delving deeper into this issue, subsequent studies demonstrated that proximity to urban centers and a higher economic status often lead to a greater dependence on commercial food sources, diminishing ethnobotanical knowledge. Factors such as taste, ease of collection, and perceived availability also directly influence consumption patterns, suggesting that the decline in UFP use is not just a matter of knowledge loss but is also driven by pragmatic decisions based on convenience and perceived value. In this context, researchers like Campos et al. (2015) and Leal et al. (2018) identified age as a significant factor, revealing the elderly

Cadernos de Ciência & Tecnologia, Brasília, v. 42, e27808, 2025
DOI: 10.35977/0104-1096.cct2025.v42.27808

consistently being the main repositories of this knowledge, signaling an urgent need for intergenerational transmission mechanisms.

However, the transition from documented knowledge to widespread practice is marked by significant challenges. In addition to knowledge erosion, tangible barriers hinder the integration of UFPs. Leal et al. (2018) provided alarming data on this, observing a significant reduction in both the cultivation (35%) and collection (42%) of UFPs in their study area, attributing this decline not only to sociocultural changes but also to factors such as the disappearance of resources, restrictions on land access, and competition with market-bought foods. A critical barrier, identified in multiple studies, is the negative perception associated with these plants, often stigmatized as “poor people’s food” and linked to periods of scarcity. Overcoming this stigma, along with resolving logistical obstacles in production, storage, and distribution, is fundamental for the successful integration of UFPs into local and regional food systems.

After a publication hiatus between 2016 and 2017, a new wave of research emerged from 2019 onwards, expanding into previously under-researched biomes, such as the Chaco, and exploring the role of these plants in different social contexts. This new phase emphasizes the need for a holistic approach, connecting ethnobotanical knowledge to education, public health, and conservation policies.

Despite this renewed interest, it is essential to contextualize this analysis, recognizing that it is based on a final sample of 17 articles. This relatively small number should not be interpreted as a failure of the search methodology but rather as a central finding in itself, reflecting the nascent and fragmented nature of the scientific literature on this topic in high-impact indexed databases.

This limited dataset restricts the ability to draw robust and generalizable conclusions with regard to all of Brazil, making it difficult to identify clear scientific consensuses or divergent findings on a national scale. Therefore, this review is best understood as an exploratory and qualitative synthesis, whose strength lies in offering a map of existing research, clearly identifying critical geographical and thematic gaps, and establishing a baseline against which future research growth can be measured.

FINAL CONSIDERATIONS

This review synthesized the scientific literature on Unconventional Food Plants (UFPs) in Brazil, revealing a research field that is both growing in importance and marked by significant knowledge gaps. The analysis goes beyond confirming the potential of UFPs, providing a critical assessment of the current state of knowledge. It is important, however, to acknowledge the methodological limitations of this review. The time frame (2008–2022) and the selection of high-impact databases – SciELO, Scopus, Web of Science – may introduce a publication bias, potentially excluding relevant studies from conference proceedings, books, and non-indexed journals. Likewise, the focus on ethnobotanical keywords may not have captured the full extent of existing agronomic or toxicological research, which may be published under different descriptors. Recognizing these limitations is important to contextualize our findings and reinforce that the scenario outlined here, although solid, represents a specific cross-section of scientific production.

The evidence confirms that Brazil’s rich biodiversity harbors a vast repository of neglected, underutilized, and unknown plant resources that can offer solutions adapted to regional food challenges, strengthening community autonomy in the face of a hegemonic and standardized global food model.

However, realizing this potential requires a shift from basic documentation to strategic, problem-solving-oriented research. Our findings reveal a sharp geographical imbalance, with biomes such as the Amazon, Pantanal, Pampa, and Chaco being critically under-researched. This fact not only limits our national understanding but also leaves valuable ethnobotanical knowledge vulnerable to erosion. Therefore, a central direction for future studies is to prioritize research in these neglected biomes, employing methodologies that capture the complexity of local food systems.

Furthermore, to effectively bridge the gap between ethnobotanical knowledge and tangible contributions to food security and sovereignty, future research must propose more specific and practical questions in an integrated manner. A priority path is the deepening of agronomic and domestication studies, focusing on the potential of key species to investigate propagation techniques, cultivation requirements, productivity, and pest resistance, a necessary step to move these plants from extractivism to reliable components of diversified agricultural systems.

In parallel, the promotion of UFPs must be grounded in rigorous scientific validation, which requires the expansion of bromatological analyses to provide complete nutritional profiles and the conduct of toxicological studies to ensure consumer safety. Finally, investigating and overcoming the socioeconomic barriers that hinder the integration of UFPs by developing research on post-harvest processing, storage technologies, and the development of viable supply chains for local and regional markets, ensuring that economic benefits revert to the communities that hold the knowledge.

This review highlights that the era of simple UFP cataloging must evolve. The next phase of research needs to be more targeted and interdisciplinary, articulating ethnobotany with agronomy, food science, toxicology, and economics. By pursuing these concrete research avenues, the scientific community can provide the necessary evidence to support policies and practices that transform UFPs from a niche interest into a pillar of a more biodiverse, resilient, and sovereign Brazilian food system.

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