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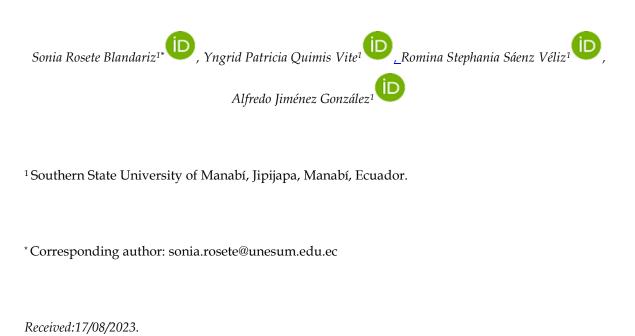


Translated from the original in spanish

Original article

Use of plants in the gastronomy of the El Anegado parish, Jipijapa, Manabí, Ecuador

Uso de plantas en la gastronomía de la parroquia El Anegado, Jipijapa, Manabí, Ecuador Uso de plantas na gastronomia da freguesia "O Anegado", em Jipijapa, Manabí, Equador



ABSTRACT

Approved:16/11/2023.

The fundamental purpose of this research was to document the use of plant species in the culinary practice of the El Anegado parish, with a notable focus on their applicability as foods, condiments and beverages, especially relevant for visitors. To achieve this goal, group discussions, interviews and dialogues with local residents were used to capture and document their knowledge of plants used in traditional cuisine. A total of 41 species were







identified, covering 24 families of gastronomic relevance. Most of these species are cultivated, reflecting the active interaction between local communities and the surrounding natural environment. Among the families, Fabaceae and Rutaceae stand out, which stand out for housing a greater number of species of culinary interest. 74 gastronomic uses were recorded, distributed in three main categories: drinks (29), edible plants (27) and condiments (18). It is important to note that the same species can be used for various culinary purposes. The importance attributed to species such as *Musa paradisiaca* and *Zea mays* is striking, which constitute the fundamental basis of numerous characteristic dishes of local gastronomy. The variety of species identified and the uses attributed to them reveal a rich and deep-rooted interaction between the community and its natural environment. The preservation of these culinary practices not only enriches the gastronomic experience, but also promotes the conservation of local biodiversity and the preservation of valuable traditions.

Keywords: Plant species, ethnobotany, local gastronomy, culinary uses, food biodiversity

RESUMEN

El propósito fundamental de esta investigación fue documentar el uso de especies vegetales en la práctica culinaria de la parroquia El Anegado, con un enfoque destacado en su aplicabilidad como alimentos, condimentos y bebidas, especialmente relevantes para los visitantes. Para alcanzar este objetivo, se emplearon discusiones grupales, entrevistas y diálogos con los residentes locales, con el fin de capturar y documentar su conocimiento sobre las plantas utilizadas en la cocina tradicional. Se logró identificar un total de 41 especies, abarcando 24 familias de relevancia gastronómica. La mayoría de estas especies son cultivadas, reflejando la interacción activa entre las comunidades locales y el entorno natural circundante. Entre las familias destacan Fabaceae y Rutaceae, que sobresalen por albergar un mayor número de especies de interés culinario. Se registró 74 usos gastronómicos, distribuidos en tres categorías principales: bebidas (29), plantas comestibles (27) y condimentos (18). Es importante notar que una misma especie puede ser aprovechada







para diversos fines culinarios. Resulta llamativa la importancia atribuida a especies como *Musa paradisiaca* y *Zea mays*, que constituyen la base fundamental de numerosos platos característicos de la gastronomía local. La variedad de especies identificadas y los usos atribuidos a ellas revelan una interacción rica y arraigada entre la comunidad y su entorno natural. La preservación de estas prácticas culinarias no solo enriquece la experiencia gastronómica, sino que también promueve la conservación de la biodiversidad local y la preservación de tradiciones valiosas.

Palabras clave: Especies vegetales, etnobotánica, gastronomía local, usos culinarios, biodiversidad alimentaria

RESUMO

O objetivo fundamental desta investigação foi documentar a utilização de espécies vegetais na prática culinária da freguesia de El Anegado, com destaque para a sua aplicabilidade como alimentos, condimentos e bebidas, especialmente relevantes para os visitantes. Para atingir este objetivo, foram utilizadas discussões em grupo, entrevistas e diálogos com residentes locais para captar e documentar o seu conhecimento sobre as plantas utilizadas na cozinha tradicional. Foram identificadas 41 espécies, abrangendo 24 famílias de relevância gastronômica. A maioria destas espécies é cultivada, refletindo a interação ativa entre as comunidades locais e o ambiente natural envolvente. Dentre as famílias destacamse Fagácea e Rutácea, que se destacam por abrigar um maior número de espécies de interesse culinário. Foram registrados 74 usos gastronômicos, distribuídos em três categorias principais: bebidas (29), plantas comestíveis (27) e condimentos (18). E importante ressaltar que a mesma espécie pode ser utilizada para diversos fins culinários. É marcante a importância atribuída a espécies como Musa paradisíaca e Zea mays, que constituem a base fundamental de numerosos pratos característicos da gastronomia local. A variedade de espécies identificadas e os usos que lhes são atribuídos revelam uma interação rica e profundamente enraizada entre a comunidade e o seu ambiente natural. A preservação destas práticas culinárias não só enriquece a experiência gastronómica, como







também promove a conservação da biodiversidade local e a preservação de valiosas tradições.

Palavras-chave: Espécies vegetais, etnobotânica, gastronomia local, usos culinários, biodiversidade alimentar

INTRODUCTION

In the field of gastronomy, the relationship between nature and culture has been an inexhaustible source of innovation and tradition (Hofstra and Huisingh, 2014). The use of plants for culinary purposes extends throughout human history, reflecting both the adaptation to the environment and the creativity of different communities. At the Latin American level, the use of plants in gastronomy has been used since immemorial times, even before the arrival of the Spanish to America. Native women use different types of plants for health, in the production of household utensils, and they discover their flavors and nutritional characteristics (Sánchez Trávez, 2017).

There are several researchers who have shown the importance of these uses for different cultures, and especially the species used in human nutrition. A research on the subject shows that gastronomy is a form of cultural expression that is nourished by the customs of its inhabitants, its geographical position and its historical past, as well as the conditions and economic opportunities of the group of people who share these customs, ideas and traditions (Macías *et al.*, 2021; Martínez Pacheco, 2021; Poveda Morales and Rivera Rosero, 2021 and Salas *et al.* 2021).

Ecuador is one of the most biodiverse areas on the planet. In the coastal region there is a wide range of native plant species, where our ancestors have been practicing their use as food. The study of these species for food use (Poveda Morales and Rivera Rosero *et al.*, 2021) allows the rescue of knowledge, knowing the main traditional dishes and marking a gastronomic difference between peoples. Therefore, encouraging alternative tourism and, therefore, the use of plant species creates a symbolic and historical value for the El Anegado







parish. This current study analyzes floristic diversity and its uses in gastronomy through a qualitative and quantitative approach. Giving importance to the knowledge and conservation of biodiversity based on tourism, as well as the efforts of producers in the sustainable management of natural resources and the promotion of high-quality products for local development. Thus, the findings will have important implications in the development and implementation of tourism strategies, particularly for the life cycle issues of tourism products.

Study area

The El Anegado Parish belongs to the Jipijapa canton, province of Manabí, and coastal region of Ecuador (Figure 1). It has a territorial area of 117.05 Km². It has a population of 6,864 inhabitants, positioning itself as one of the most populated parishes in the Jipijapa canton. It is located in the tropical megathermal climatic zone. It has a warm semi-humid climate whose temperature ranges between 23 and 24°C. Its rainfall is between 700 to 1,800 mm, which, added to an evapotranspiration between 1,250 mm to 1,450 mm, results in a water deficit between 375 to 650 mm that occurs in the months of June to December. The relief is mainly composed of three environmental units: "Cordillera Chongón Colonche", "Medio Alluvial" and "Structural Reliefs and Tertiary Hills". The third environmental unit covers 59.15% of the total surface, followed by "Cordillera Chongón Colonche" with 36.45%; these two being the main formations found in the territory.









Figure. 1. - El Anegado study area, Jipijapa canton, Manabí province, Ecuador

MATERIALS AND METHODS

The interviews were carried out following the classic methodology used in ethnobotany, previously described by other researchers (Balemie y Kebebew, 2006; Addis *et al.*, 2013, Hankiso *et al.*, 2023, Al Yamini *et al.*, 2023). These interactions focused on group discussions and conversations with members of the local community of El Anegado Parish, through which detailed information was collected about the plant species used in its gastronomy.

The research approach classified the information obtained into different categories: edible plants (including natural fruits), condiments (plants used to add flavor to various stews and popular dishes) and beverages (alcoholic, infusions, decoctions, soft drinks and juices). The data was collected through informal conversations with traditional cooks, and was complemented with questionnaires specifically designed to identify the plants used by them in their culinary preparations. In addition, both the harvesting process and the preparation of the different dishes were closely observed. This approach allowed a careful analysis of







the use attributed to edible plants, both wild and cultivated, as well as the identification of the parts of the plants most used by the participants (leaves, fruits, flowers, roots, among others).

The survey was structured in three sections. The first part collected information on the profile of the respondents (nationality, gender, age, level of education), since it is crucial to understand the context of the shared knowledge. The next two parts focused on utilization practices of local species. In total, 60 individuals participated in the survey (42 women and 18 men) (Figure 2), with the majority of them (39 respondents) having graduated from higher education (Figure 3).

Additionally, an observation tour was carried out in the area to identify and photograph the species present. For taxonomic identification, a series of Ecuadorian floristic catalogs were used and botanical specialists advised in the classification process.

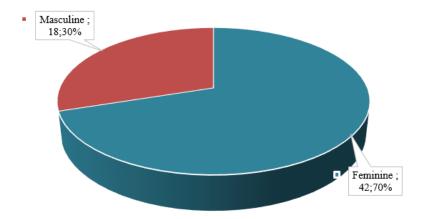


Figure. 2. - Distribution of the interviewed population by sex in the El Anegado parish, Jipijapa canton, Manabí, Ecuador







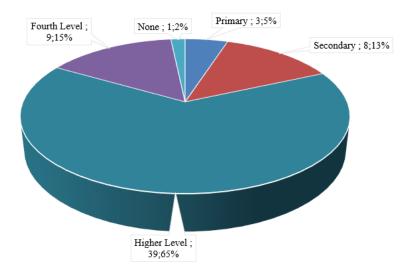


Figure. 3. - Distribution of the interviewed population by educational level in the El Anegado parish, Jipijapa canton, Manabí, Ecuador

RESULTS AND DISCUSSION

A total of 41 species were documented in a first record, all of them belonging to 24 families of gastronomic relevance for tourists exploring El Anegado Parish (Table 1). The largest proportion of these species correspond to cultivated varieties (80%) (Figure 4), which are predominantly found in orchards, land adjacent to homes and gardens. The families Fabaceae (with 5 species) and Rutaceae (with 5 species) top the list in terms of species diversity. They are followed in descending order by the families Solanaceae (3 species), Lamiaceae (3 species), Sapotaceae (2 species), Poaceae (2 species), Arecaceae (2 species), Bixaceae (2 species) and Amaryllidaceae (2 species).

The findings obtained from the survey highlight that the species most used in local gastronomy are those grown in orchards, land near homes and gardens. On certain occasions, the extraction of wild species, such as: *Cochlospermum vitifolium*, *Crescentia cujete*, *Inga edulis* and *Prosopis juliflora*, present in the forests of the mountainous region of the parish. These results coincide with what was previously reported by De la Torre *et al.* (2008) for the country, where most of the registered useful species are cultivated (751 species,







representing 15%), while the rest are found in the wild (49 species; <1%). It also stands out that the legume family (Fabaceae) is the one that exhibits the greatest diversity of useful species. In general terms, the families most abundant in useful species are also the most diverse both nationally in Ecuador and globally.

A total of 74 gastronomic uses were recorded, distributed in three categories: drinks (29), edible plants (27) and condiments (18). It is important to mention that the same species can be used for multiple culinary purposes. The key species *Musa paradisiaca* and *Zea mays* stand out in the perception of those surveyed, which constitute the basis of numerous emblematic dishes in local gastronomy. Next in importance are the species of the *Citrus genus*, used both in drinks and in the seasoning of various dishes. It should be noted that these species are grown in the gardens and patios of homes. Another widely mentioned species is *Eryngium foetidum*, whose main use is in the preparation of soups, followed by *Plectranthus amboinicus* and *Mentha spicata*.

Among the species that stand out for their versatility in terms of the uses derived from their fruits are *Averrhoa carambola* and *Vitex cymosa*. These plants exhibit a wide range of applications, ranging from consumption in their natural state to inclusion in preserves, juices and jams. Obviously, their ability to adapt to different culinary preparations makes them exceptionally versatile and valuable options for local gastronomy.

The analysis that fruits are the parts of the plants most used in local gastronomy highlights the importance of these elements in the food culture of the community studied. The preference for fruits is attributed to their variety of flavors, textures and nutrients, which makes them versatile ingredients for various culinary preparations. The presence of similar results in other studies, such as those carried out by Balemie and Kebebew (2006), Addis *et al.* (2013) and Pardo Salas *et al.* (2023), suggest a consistency in the importance of fruits in culinary practices not only in the community studied, but also in other regions and cultures. This consistency is related to the availability and accessibility of the fruits in surrounding natural environments, as well as deep-rooted culinary traditions that have endured over time.







Within the repertoire of species used in the production of beverages, *Averrhoa carambola* stands out, whose predominant use is in its natural form and in the preparation of juices, due to its distinctive authentic flavor. In addition, it is used in the creation of jams and preserves, thus expanding its versatility in local gastronomy. Regarding the species considered edible, it is interesting to note that the majority of respondents mention the use of *Vitex cymosa* in the production of preserves. On the other hand, *Inga edulis* is characterized by being consumed mainly in its natural state, while the fruit of *Chrysophyllum Cainite* is used mostly unprocessed, directly in nature.

In the context of plants intended for use as condiments, respondents highlight that, since ancient times, they have used *Eryngium foetidum* leaves to enhance the flavor and aroma of foods, considering them an easily accessible resource in the community. In the case of *Mentha spicata*, *Cymbopogon citratus* and *Plectranthus amboinicus*, are specifically used in soups to provide flavor and aroma, as well as in infusions to relieve stomach upsets. This set of spices highlights the rich diversity of ingredients that enrich and distinguish the local culinary tradition.

Table 1. - Inventory of plant species for gastronomic use in the El Anegado parish, Jipijapa canton, Manabí province, Ecuador. 1 - Edible plants (includes natural fruits, sweets), 2 - Condiments (plants to flavor different stews and popular dishes), and 3 - Beverages (alcoholic, infusions, decoctions, soft drinks, juices)

Scientific Names	Common name	Family	Applications
wild species			
Acnistus arborescens (L.) Schltdl.	lame	Solanaceae	1
Acrocomia crispa (Kunth) C. F. Baker ex. Becc .	corozo	Arecaceae	1
Cochlospermum vitifolium (Willd.) Spreng	bototillo	Bixaceae	3
Crescentia cujete L.	mate	Bignoniaceae	3
Eryngium foetidum L.	cilantro	Apiaceae	23
Inga edulis Mart.	guava	Fabaceae	1, 3
Prosopis juliflora (Sw.) DC.	carob tree	Fabaceae	1
Phytelephas aequatorialis spruce	cady	Arecaceae	3
Cultivated species			







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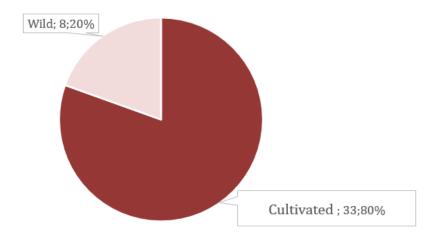


Figure. 4. - Percentage of wild and cultivated species used in gastronomy in the El Anegado parish, Jipijapa canton, Manabí Province, Ecuador

This study has shed a deep and enriching vision on the intimate relationship between local biodiversity and gastronomy rooted in the El Anegado Parish, Jipijapa, Manabí, Ecuador. Through the application of ethnobotanical methodologies, it has been possible to meticulously capture and analyze the interaction between plant species and their role in the creation of dishes that tell stories of identity and tradition.

The diversity of plants used for drinks, foods and condiments highlights the wealth of culinary resources that this community has been able to take advantage of and adapt over time. The combination of species grown in orchards and gardens, along with those extracted from nearby forests, has given rise to a palette of flavors and aromas that not only satisfy nutritional needs, but also weave a deep link with the land and local culture.

The presence of multifunctional species, such as *Averrhoa carambola* and *Vitex cymosa*, demonstrates the culinary versatility that some plants bring to gastronomy. These species not only provide unique flavors, but also adapt to various uses, from consuming them naturally to incorporating them into more elaborate preparations such as jams and preserves. Traditional seasonings, such as *Eryngium foetidum*, *Mentha spicata*, *Cymbopogon citratus* and *Plectranthus amboinicus*, illustrate how plants can be used to enhance flavors and address specific health needs. These culinary practices passed down from generation to







generation reveal the accumulated wisdom of the community in using the beneficial properties of plants.

The relevance of plants enriching local gastronomy, not only as culinary ingredients, but as fundamental elements of the history and cultural identity of the El Anegado Parish, is conclusively manifested through this research. The ethnobotanical knowledge shared by local residents underscores the close interdependence between nature and culture, serving as a link between the natural environment and traditions embedded in the community. This insight not only highlights the relevance of plants from a food perspective, but also as carriers of cultural meaning and heritage.

The studies by Addis *et al.* (2013) and Balemie and Kebebew (2006) in Ethiopia corroborate the universality of this connection between plants and culture, evidencing its presence in various communities around the world. Additional research conducted in Ecuador (De La Torre *et al.*, 2008) and Mexico (Pardo Salas *et al.*, 2021) supports the connection between nature and culture in various geographic regions. The interdependence highlighted in these studies suggests that communities find in plants not only resources for food, but also elements that shape their identity and ways of life. This analysis highlights the importance of recognizing and preserving ethnobotanical knowledge, as it not only reveals the intricate relationship between plants and local culture, but also highlights the need to save these practices rooted in the interaction between people and their natural environment.

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The contribution of both projects has been crucial to the successful completion of this research, allowing us to better understand the interaction between biodiversity, gastronomy and local identity in the El Anegado parish, Manabí, Ecuador. Our thanks go to your valuable support and commitment to research and community development.

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Conflict of interests:

The authors declare not to have any interest conflicts.

Authors' contribution:

The authors have participated in the writing of the work and analysis of the documents.



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