

Ethnobotany of Artistic Plant Uses. Crop Art in Baix Llobregat (Catalonia, NE Iberian Peninsula)

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Abstract Artistic uses of plants are rarely explored in ethnobotanical studies. However, in Baix Llobregat (Catalonia, NE Iberian Peninsula), seeds and other plant parts are utilized to create art expressions associated with agricultural fairs and promotion of local vegetal goods. The objective of this study is to catalog the plants used and to reflect on the current vitality and significance of this cultural and social activity. The contribution of the manuscript lies in the cataloging of plants used in crop art, which is a biocultural use that is not often registered in ethnobiological studies. The methodology employed involved semi-structured interviews, bibliography research, and observation. We have identified two distinct types of artistic creations. A total of 65 taxa have been identified, primarily comprising locally cultivated species. The results of this research emphasize the enduring presence of ethnobotanical knowledge related to cultural uses and underscore the significance of its preservation.

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Introduction

Modern European ethnobotanical literature often focuses on medicinal and food plant uses (Pardo de Santayana et al. 2015; Vallès 2019), especially in southern European countries such as Italy and Spain (Pardo de Santayana et al. 2010). However, few studies have described the use of plants for cultural and artistic purposes, as they are perceived to be less fundamental (Gras et al. 2016). Most of these studies refer to plants used in ritual contexts (Austin 2004; Barceló et al. 2019; Łuczaj 2011; Stryamets et al. 2021). Very few related studies on artistic uses can be found, such as the study on illustrated children's books (Łuczaj 2009), folk songs (Baránková 2022), or even on ceramics (Menezes et al. 2021).

Traditional artistic expressions, including handicrafts, are a valuable component of traditional knowledge (WIPO 2000). Those involving biological

materials can be considered part of the biocultural diversity (Pretty et al. 2009; Wiersum 2017) of a region and, as such, need to be fostered, preserved, and protected (Posey 1999).

In this study, we explore the use of plants for artistic purposes in two municipalities in the area of Barcelona (Catalonia, NE Iberian Peninsula). These artistic practices are observed during agricultural fairs. These folk activities can be classified as part of the artistic movement known as crop art, which involves creating sculptures and smaller-scaled architectural forms using grains, seeds, and other plant parts. Such practices are considered part of traditional heritage (Simpson 2005) and studying them provides insight into the ideas, beliefs, practices, and values of the culture (Simpson 2012).

The objectives of this research are twofold: i) to inventory the plants and their specific parts used in

the production of artistic creations within the studied region, and ii) to reflect on the current vitality and significance of this cultural and social activity.

Agricultural Fairs and Crop Art

Agricultural fairs, which have remained popular annual events in many Western countries since their origin in the eighteenth century, are often portrayed as significant and socially important gatherings that contribute to broader understandings of agriculture and rurality, attracting an increasing number of urban visitors (Irshad 2011; Larsen 2017). These exhibitions aim to foster a connection between rural and urban communities and emphasize the importance of farming and agricultural products. To further engage visitors, these fairs are sometimes complemented with amusement and leisure activities (Köksal et al. 2021). Art and handcrafts can be among these activities, attracting visitors to agricultural fairs (Sheehy 2007). No other modern artistic practices related to agricultural food fairs have been found in Spain or even Europe. The fact that there are not too many similar experiences worldwide makes this one even more relevant. However, at the Minnesota State Fair (USA), crop art was introduced in 1965 (Sheehy 2007). As Simpson (2005:190-92) observes, using food to create art served as an “icon of abundance,” showcasing a fertile territory but also adding an innovative and visually appealing element to the fair.

Brief History and Context Description

The artistic vegetable creations, known as *paneres artístiques* in Catalan, which translates to “artistic baskets,” have an interesting origin. At first, they were wicker baskets containing asparagus, but over time, the typology evolved while retaining the same name. These creations are an integral part of two agricultural exhibitions in the study area: the asparagus fair, locally known as *fira de l’espàrrec* and Saint Isidre's fair.

The asparagus fair is located in Gavà and it has been organized by the Agricultural Union of Gavà since 1932. The main goal is to praise the most significant agricultural product in the region: asparagus (*Asparagus officinalis*) (Tarrida 2003). Over the years, it has evolved into a prominent regional and supraregional event, serving as an agricultural, commercial, and cultural showcase (Gabetnet 2003). Initially, the fair solely exhibited asparagus baskets, but starting in 1964, local farmers began displaying baskets featuring other vegetables in a more or less creative manner. In 1971, recognition of the best

artistic vegetable creations was introduced (Tarrida 2003). Currently, the fair hosts several contest categories. Under the realm of artistic creations, a distinction is made between those crafted using fresh vegetable materials and those created with grains. Participants in both categories have the freedom to choose their themes, but they must incorporate some part of the asparagus plant into their creations, though this requirement is not always strictly fulfilled.

Saint Isidre's fair is located in Viladecans and it was established in the 1970s, possibly in response to the successful fair in Gavà. This annual event takes place on May 15, in honor of Sant Isidre's day, the patron saint of farmers, and aims to showcase the agricultural products of local farmers (Luengo 2018). Over time, the fair has evolved into a platform not only for agriculture but also for trade, industry, and local entities. This fair includes also a contest for artistic vegetable creations, which is divided into two sections: creations made with fresh vegetal material, referred to as “vegetal skin creations,” and creations made from grains or seeds. The notable distinction between the two fairs is that in Viladecans, the artistic grain creations are three-dimensional, whereas in Gavà, they remain two-dimensional.

Materials and Methods

Study Area

Gavà and Viladecans are two neighboring municipalities located in the Baix Llobregat region, on the central coast of Catalonia, situated on the NE Iberian Peninsula (Figure 1), with populations of 47,057 and 67,197 inhabitants, respectively (Institut d'Estadística de Catalunya 2023). Currently, the study area is part of the peri-urban area of Barcelona and the interdependence with Barcelona and its extensive area of influence is highly significant (Palos 1999). Regarding the economy, 44% of the population is engaged in the tertiary sector, while only 1% is involved in the primary sector (Diputació de Barcelona 2023), experiencing clear regression. Despite its limited economic impact, agriculture holds significant social importance within the study area, primarily due to the creation of the Baix Llobregat Agricultural Park (BLAP) in the 1990s. BLAP is a local public consortium aimed at conserving and enhancing the region's territorial values. BLAP has gained recognition and has been extensively studied as a Spanish model for preserving agricultural activities in a highly urbanized setting (Breton et al. 2001; Pàul and McKenzie 2013; Zazo 2011; Zazo et al. 2020).

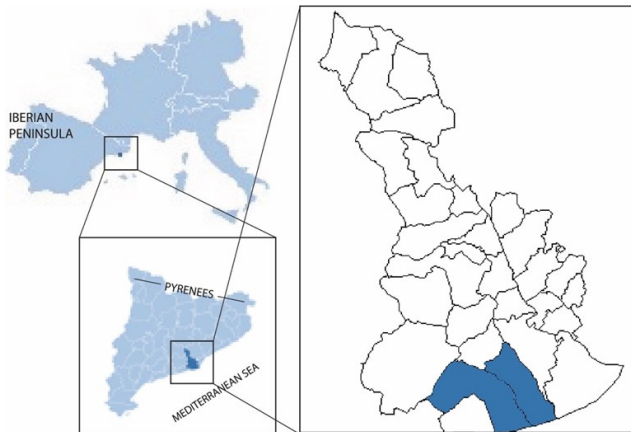


Figure 1 Studied area in Europe and Catalonia. On the right, the dark-blue area corresponds to the municipalities studied. Source: own elaboration.

BLAP comprises 2938 ha where vegetables and fruit trees are cultivated. It is estimated that approximately 80% of production is distributed through the wholesale market Mercabarna, and 20% is distributed through alternative food networks, such as farmers' markets (Soler 2013).

Methodology

The research methods employed involved a combination of archival data and fieldwork, and the study was conducted between 2014 and 2023, allowing for the assessment of vitality and evolution over time.

To compile a comprehensive inventory of plants associated with the artistic creations, nine informants were interviewed, comprising five women and four men. All of them were native to the study area and either are currently participating or have participated in the fair. Semi-structured interviews were used (Silva et al. 2014), focusing on the creation of artistic works. Participants were asked about the species, plant parts, and techniques used. They were also encouraged to discuss other related aspects, such as their motivations to participate, past experiences, and more general aspects related to the agricultural fair and the contest. These interviews were conducted with some artistic creations present (either in physical format or through images), allowing participants to directly refer to visual elements when discussing their creative processes. This approach enabled a deeper understanding of the practices, not only through verbal responses but also through the direct observation of the artworks and their relationship with the participants' experiences.

Prior to conducting the interviews, the researchers adhered to the ethical guidelines outlined in the International Society of Ethnobiology Code of Ethics (International Society of Ethnobiology 2008) to obtain informed consent and address related ethical considerations. Plant vouchers were deposited in the herbarium BCN, located at the Centre de Documentació de Biodiversitat Vegetal, Universitat de Barcelona. The nomenclature used for plant identification follows the Flora Manual dels Països Catalans (Bolòs et al. 2005), and Sánchez-Monge (1991) for cultivated plants not appearing in the former, and for plant families, we have adopted the APG IV system (Angiosperm Phylogeny Group 2016). The basic information unit is the use report (UR), i.e., each mention made by an informant regarding one use of a specific part of a plant species for a particular purpose within those considered in this work.

To determine the frequency of use of the taxa reported, a total of 79 artistic creations dating from 1979 to 2023 were analyzed. This analysis included on-site observations and archival photograph reviews for further insights. These observations were conducted both as desk work and field work, in collaboration with some of the informants.

Results and Discussion

In the present study, data were collected from a total of 65 taxa, with two identified at the genus level and the rest classified at specific or infraspecific levels. These taxa belong to 26 botanical families. Throughout the study, a total of 157 use reports (UR) were documented. In terms of the number of taxa, the most well-represented families are Poaceae (12%), Fabaceae (11%), and Apiaceae (9%), which have a high representation of cultivated food species. These results partially differ from the studies on general ethnobotanical uses in the Mediterranean area, where Lamiaceae, Rosaceae, or Asteraceae are the most represented families (González-Tejero et al. 2008; Vallès 2007). The inventory of taxa and their respective information, including the part of the plant used and the type of artistic creation it is typically associated with, are presented in Table 1.

According to the ethnofloristic catalogue of the studied area (Marín et al. 2023), 22% of the taxa recorded are used for artistic purposes, alongside other potential applications, such as food or medicinal uses. In fact, within the studied area, 68% of the taxa

Table 1 Plant species used for artistic creations in the Baix Llobregat agricultural fairs.

Family/species	Part used	Type of creation
Actinidiaceae		
<i>Actinidia chinensis</i>	Epicarp	Fresh
Amaranthaceae		
<i>Amaranthus</i> sp.	Seed	Grain
<i>Beta vulgaris</i> subsp. <i>vulgaris</i> var. <i>conditiva</i>	Root epidermis, leaf, stem	Fresh
<i>Chenopodium quinoa</i>	Seed	Grain
Amaryllidaceae		
<i>Allium cepa</i>	Cataphyll, leaf, stem	Fresh
<i>Allium porrum</i>	Cataphyll, leaf, root	Fresh
<i>Allium sativum</i>	Root, bulb epidermis	Fresh
Apiaceae		
<i>Anethum graveolens</i>	Seed	Grain
<i>Apium graveolens</i>	Leaf	Fresh
<i>Daucus carota</i> subsp. <i>sativus</i>	Root, root epidermis, fruit	Fresh, grain
<i>Foeniculum vulgare</i>	Fruit	Grain
<i>Pastinaca sativa</i> var. <i>hortensis</i>	Root	Fresh
<i>Petroselinum crispum</i>	Leaf	Fresh
Araliaceae		
<i>Hedera helix</i>	Leaf	Fresh
Asparagaceae		
<i>Asparagus acutifolius</i>	Turion	Fresh, grain
<i>Asparagus officinalis</i>	Cladode, turion	Fresh
Asteraceae		
<i>Cichorium endivia</i>	Leaf	Fresh
<i>Cichorium intybus</i>	Leaf	Fresh
<i>Cynara scolymus</i>	Inflorescence's bracts	Fresh
<i>Helianthus annuus</i>	Fruit	Grain
<i>Lactuca sativa</i>	Leaf, fruit	Fresh, grain
Brassicaceae		
<i>Brassica napus</i>	Root epidermis, seed	Fresh, grain
<i>Brassica oleracea</i> subsp. <i>oleracea</i> var. <i>botrytis</i>	Inflorescence	Fresh
<i>Brassica oleracea</i> subsp. <i>oleracea</i> var. <i>capitata</i>	Leaf	Fresh
<i>Raphanus raphanistrum</i> subsp. <i>sativus</i>	Root, seed	Fresh, grain
Bromeliaceae		
<i>Ananas comosus</i>	Epicarp	Fresh
Cucurbitaceae		
<i>Citrullus lanatus</i>	Epicarp, seed	Grain
<i>Cucumis melo</i>	Seed	Fresh, grain
<i>Cucumis sativus</i>	Epicarp	Fresh
<i>Cucurbita maxima</i>	Fruit, seed	Fresh, grain
<i>Cucurbita pepo</i> var. <i>oblonga</i>	Epicarp	Fresh
Fabaceae		
<i>Cicer arietinum</i>	Seed	Grain
<i>Lens culinaris</i>	Seed	Grain
<i>Phaseolus vulgaris</i>	Seed	Grain
<i>Pisum sativum</i>	Seed	Fresh, grain

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Family/species	Part used	Type of creation
Fabaceae (cont.)		
<i>Vicia faba</i>	Seed	Grain
<i>Vigna angularis</i>	Seed	Grain
<i>Vigna radiata</i>	Seed	Grain
Schisandraceae		
<i>Illicium verum</i>	Fruit	Grain
Juncaceae		
<i>Juncus acutus</i>	Young leaf	Fresh
Lamiaceae		
<i>Salvia hispanica</i>	Seed	Grain
Lauraceae		
<i>Laurus nobilis</i>	Leaf	Fresh
Linaceae		
<i>Linum usitatissimum</i>	Seed	Grain
Nictaginaceae		
<i>Bougainvillea</i> sp.	Bract	Fresh
Oleaceae		
<i>Olea europaea</i> subsp. <i>europaea</i>	Fruit	Fresh
Papaveraceae		
<i>Papaver rhoeas</i>	Seed	Grain
Pedaliaceae		
<i>Sesamum indicum</i>	Seed	Grain
Poaceae		
<i>Arundo donax</i>	Stem	Fresh
<i>Hordeum murinum</i>	Inflorescence	Fresh
<i>Oryza sativa</i>	Fruit, grain crushing	Fresh, grain
<i>Panicum miliaceum</i>	Fruit	Grain
<i>Phalaris canariensis</i>	Fruit	Grain
<i>Triticum aestivum</i>	Inflorescence, fruit, grain crushing	Fresh, grain
<i>Zea mays</i>	Epicarp, style and stigma, fruit, grain crushing	Fresh, grain
<i>Zizania aquatica</i>	Fruit	Grain
Rosaceae		
<i>Prunus persica</i>	Seed	Fresh
<i>Pyrus malus</i> subsp. <i>mitis</i>	Epicarp	Fresh
Rubiaceae		
<i>Coffea arabica</i>	Seed	Fresh
Rutaceae		
<i>Citrus limon</i>	Epicarp, mesocarp, seed	Fresh, grain
<i>Citrus sinensis</i>	Epicarp	Fresh
Solanaceae		
<i>Capsicum annum</i>	Fruit	Fresh
<i>Solanum lycopersicum</i>	Fruit	Fresh
<i>Solanum melongena</i>	Epicarp	Fresh
<i>Solanum tuberosum</i>	Tuber epidermis	Fresh
Vacciniaceae		
<i>Vaccinium myrtillus</i>	Fruit	Fresh

reported for artistic uses also have food-related uses, while 45% have medicinal uses.

The most frequently reported taxa are *Allium porrum* (8 UR; 5%), *Oryza sativa* (8 UR; 5%), *Solanum melongena* (7 UR; 4%), *Beta vulgaris* subsp. *vulgaris* var. *conditiva* (6 UR; 4%), and *A. officinalis* (5 UR; 3%). These findings align with the patterns observed in the artistic creations, as detailed below.

Regarding plant parts, seeds (21%) and fruit (18%) are the most commonly used components. These parts are primarily used for creating grain mosaics. Additionally, epicarps (16%) and leaves (8%) are also reported, with exclusive use in fresh vegetal material creations.

Fresh Vegetal Material Creations

The artistic creations made with fresh vegetal material are free-themed dioramas or sculptures (Figures 2 and 3). Artistic creations encompass a wide range of heterogeneous themes, including local current events (e.g., 50th anniversary of a local association), representations of animals, everyday scenes (e.g., children playing at the park), landscapes, clothing items, and representations from worldwide cultural references (e.g., replicas of Andy Warhol's work). The creation process unfolds primarily in two phases: first, crafting a pre-form made of foam or a similar material in advance, and second, selecting the plant materials and covering the pre-forms, securing them in place using pins or white glue. To ensure the freshness of the plant material, these creations are crafted the night



Figure 2 Example of a fresh vegetal material creation. For this creation, eggplant, leek, carrot, asparagus, olive, red pepper, and pumpkin parts are used. Gavà's fair, 2007.



Figure 3 Example of a fresh vegetal material creation. For this creation, leek, eggplant, orange, lemon, asparagus, potato, apple, and parsnip parts are used. Gavà's fair, 2007.

before the fair, often with the assistance of the entire family, neighbors, and friends (Figure 4). This is an example of socialization of this biocultural knowledge, and, at the same time, may serve to transmit it, particularly to younger generations.

In fact, this community creation process holds significant value for several interviewed participants. As one interviewee emphasized, "in the past, creating the artworks was a family celebration. It enabled us to craft much larger creations, but what we were truly fostering was a sense of belonging." This aligns with Lowe (2000), who views community art processes as a ritualistic setting for social interaction and documents the construction of neighborhood community. It might be one of the reasons why farmers continue with this tradition.

Forty-eight taxa were identified in the 55 artistic creations considered in this study. The most frequently used taxa are *A. porrum*, which appears in 76% of the artistic creations, followed by *S. melongena* (67%) and *A. officinalis* (64%). The dominant use of *A. porrum* and *S. melongena* can be attributed to the appealing characteristics of their leaves and epicarps, respectively. Their color, texture, and ease of application make them popular choices for artistic creations. As for *A. officinalis*, the contest rules mandate its incorporation in all cases, primarily in its turion form, though occasionally cladode is also used. However, compliance with this rule is not consistently observed in all creations. Over time, we mainly



Figure 4 Community creation process during the evening and night before the fair. Gavà's fair, 2017.

observed the use of the previously mentioned species. However, in recent years, we have observed the use of non-locally cultivated species due to predominantly aesthetic factors, such as *Actinidia chinensis*. The most frequently used plant parts in the artistic creations are epicarps and fruits (Figure 5).

Grain Creations

There are two type of grain creations: two-dimensional creations are typical of Gavà's fair (Figures 6 and 7), while three-dimensional creations are the hallmarks of Viladecans' fair (Figure 8). In two

-dimensional creations, the main lines are typically sketched on the canvas, and seeds are then fixed with glue. In three-dimensional creations, a pre-form is crafted, which is subsequently covered with selected seeds fixed with glue. In both cases, participants prepare their works in advance, sometimes during the whole year, and, usually, on an individual basis. Occasionally, seeds are dyed or painted.

Mosaics or dioramas are of a free-style and feature heterogeneous themes, such as popular buildings, representations from worldwide cultural references, landscapes, or rural scenes.

A total of 25 taxa were identified when analyzing the 24 grain creations considered. The most frequently used taxon is *O. sativa* (117%). This high utilization can be attributed to the variety of available colors, the ease of obtaining the grains, and their ease of application. The seed is the most representative part of the plant used in these creations (Figure 5), although crushed grain is sometimes used for background mosaics, for example. Consequently, it is common to find both parts of rice used in the same creation, resulting in a taxon frequency higher than 100%. *Sesamum indicum* (50%) and *Chenopodium quinoa* (37%) are the second and third most frequently used taxa, respectively. Seeds from *C. quinoa* and *Zizania aquatica* (12%) have been relatively recently introduced to the market, and, as a result, they have been used for a relatively short period of time. In contrast, seeds from *Zea mays* or *mongeta de mig dol*, which is a landrace

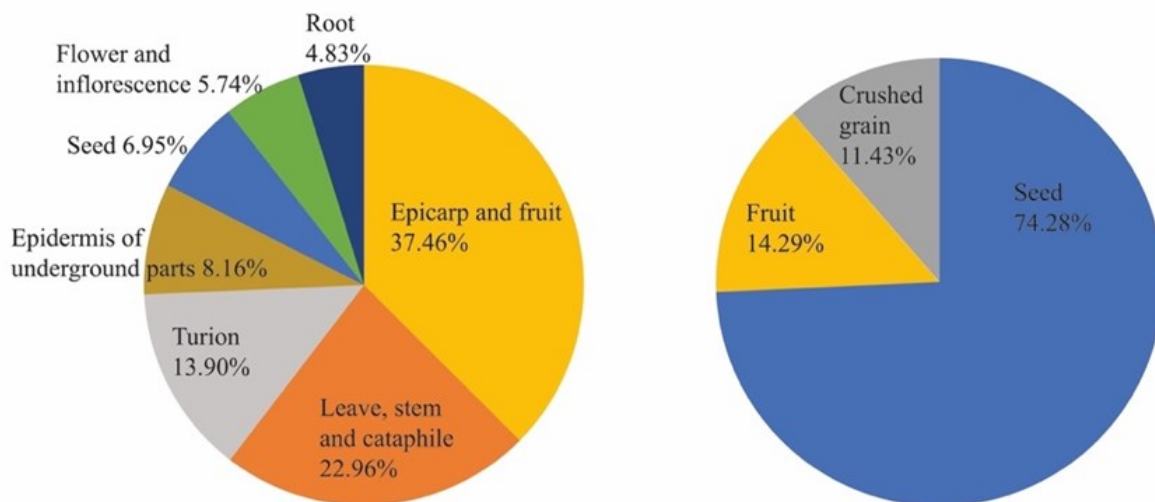


Figure 5 On the left, parts of the plant used for fresh vegetable creations. On the right, parts of the plant used for grain creations. Source: observation of 79 artistic creations.



Figure 6 Two examples of two-dimensional grain creations. On the left, creation made with quinoa, rice, wild rice, sesame and flax; Gavà's fair, 2023. On the right, creation made with rice, quinoa, asparagus, millet, amaranth, wild rice, wheat, red lentil, black bean, and red bean; Gava's fair, 2022.

of *Phaseolus vulgaris* that has already disappeared, are no longer used.

Provenance of Plants

Cultivated plants predominate among those used for artistic purposes (88%), which is not surprising, as the objective is to highlight and value local cultivated products. Remarkably, 58% of the cultivated taxa used in these creations are locally produced. Fresh vegetable creations predominantly utilize local products, whereas seeds for grain creations are not locally produced or self-cultivated. Interviewees explained that today, they not only use vegetables and seeds from their own farmlands, but they also buy some products to make their artistic creations, without distinction of origin.

Relevance of Agricultural Fair and Crop Art Contests

In the studied area, where agricultural activity is heavily threatened (Zazo 2011), both agricultural fairs effectively play a role in revitalizing the territory. When asked about their threats, informants agree that the lack of generational succession and feasibility of small-scale agricultural activities are the most important ones. These fairs enable the promotion of short marketing channels, thereby fostering the viability of peri-urban agricultural activity (Francès-Tudel 2018).



Figure 7 Two-dimensional grain creation. Gavà's fair, 2007. For this creation, leek leaves are used for background; rice, pumpkin, yellow lentil, corn, green mung beans, black beans, and flax seeds are used for the figure.

The asparagus fairs enable the preservation of this crop. As one interviewee states, "in the past, a farmer could have 3000 square meters of asparagus, now they barely have 500, but with those 500, they participate in the fair." Another interviewee echoes this sentiment and affirms that "thanks to the fair, asparagus production continues."

The artistic creations showcase a rich agricultural tradition that serves as a source of pride for the community and exemplifies how food can be appreciated and valued from diverse perspectives,



Figure 8 Example of three-dimensional grain creation. Viladecans' fair, 2019. Chickpeas, ground rice, quinoa, lentils, and red beans are used for this creation.

including art. In our study, the interviewees agree that the exhibition of artistic creations is the distinguishing key of the fair and engenders public interest. It reflects how proud they are to be farmers and of their land and their products. However, they also assert that the production of these artistic works is becoming increasingly difficult due to a dwindling number of farming families, and the younger generations are displaying diminished enthusiasm as well (Figure 9). Also, the use of purchased or other plants not grown by the artist may suggest that the artistic aspect is even more relevant than the pride of exhibiting their own farm products, although this truly may weaken the intended message. In any case, it is important not to overlook that this artistic contest is part of an agricultural fair where lavish baskets of asparagus and other products from their own garden are showcased.

Conclusions

This study reveals the overall persistence of the folk

use of plants as an expression of local identity. There is significant concern regarding the rapid erosion of ethnobotanical and traditional ecological knowledge in industrialized contexts (Benyei et al. 2020; Reyes-García et al. 2014). Therefore, preserving any significant activity related to these traditional activities is of utmost importance. Culture plays a critical role in addressing social, economic, and identity-related issues, particularly in the case of vernacular art manifestations, such as crop art, which is accessible and popular (Simpson 2012). This study reflects that, besides being an activity capable of fostering community cohesion, it can contribute to the promotion of agricultural fairs in the BLAP. This involves showcasing their products, agrobiodiversity, and ecological knowledge.

Moreover, vegetal artistic creations play a vital role in preserving the tradition and cultivation of asparagus and other vegetables. A greater concern for generational turnover and for the use of local species

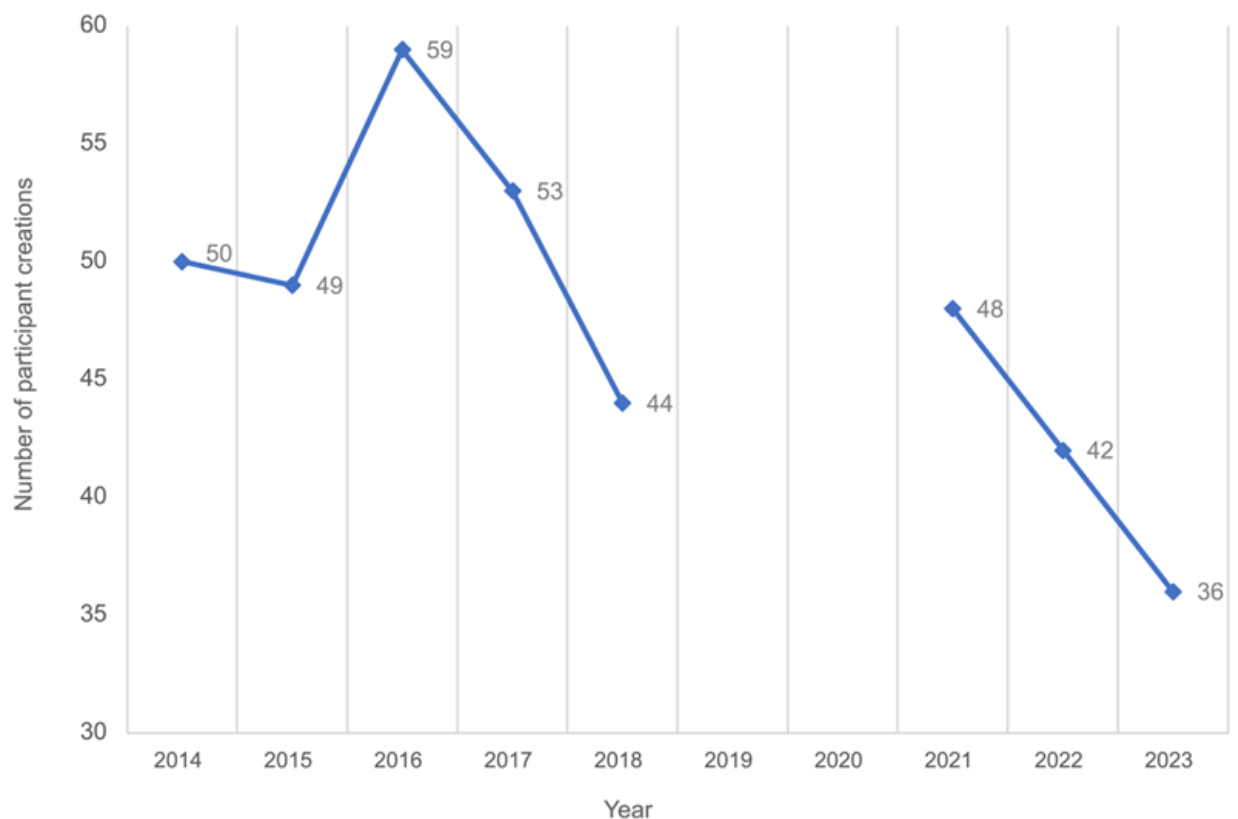


Figure 9 Number of artistic creations participating in Gavà’s contest between the years 2014-2023. In 2019 and 2020, the fair did not take place due to the COVID-19 pandemic. Source: <https://elllobregat.com>; <https://elbruguersdigital.cat>.

and varieties by the organizers would reinforce this aspect. In any case, this traditional artistic activity serves as a valuable means to highlight and celebrate the diversity of crops and promote the territory's cultural identity, its social networks, and its economy.

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Declarations

Permissions: The images have been generously provided by various authors without any compensation. All authors and individual participants agreed to participate and read the final version of the manuscript.

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Conflicts of Interest: None declared.

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