

# Statistical Analysis of the Crops of the Vallformosa Territory.

## Descriptive Report (Study No.2)

Vallformosa Foundation Chair of Strategic Territorial  
Transformation for Community Welfare

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## TABLE OF CONTENTS

<b>1. ABSTRACT .....</b>	<b>3</b>
<b>2. INTRODUCTION .....</b>	<b>4</b>
2.1. THE VALLFORMOSA TERRITORY .....	4
2.2. ABOUT THE VALLFORMOSA FOUNDATION.....	8
2.3. ON THE VALLFORMOSA FOUNDATION CHAIR OF STRATEGIC TERRITORIAL TRANSFORMATION FOR COMMUNITY WELFARE (UPF-BSM) .....	9
2.4. ABOUT UPF-BARCELONA SCHOOL OF MANAGEMENT .....	9
2.5. WEBSITE OF THE VALLFORMOSA FOUNDATION CHAIR OF STRATEGIC TERRITORIAL TRANSFORMATION FOR COMMUNITY WELFARE .....	10
2.6. ABOUT THE AUTHORS .....	10
<b>3. CONTEXT OF THIS STUDY .....</b>	<b>11</b>
3.1 THE CHAIR'S LINE OF TERRITORIAL RESEARCH .....	11
3.2 RELATIONSHIP OF THIS STUDY WITH THE VALLFORMOSA FOUNDATION'S VALLFORMOSA TERRITORY STRATEGIC TRANSFORMATION PROJECT .....	12
<b>4. WORKING ASSUMPTIONS .....</b>	<b>14</b>
<b>5. AIMS .....</b>	<b>14</b>
<b>6. WORK METHODOLOGY .....</b>	<b>14</b>
<b>7. RESULTS .....</b>	<b>16</b>
7.1. ANALYSIS OF THE SIZE OF THE CULTIVATED TERRITORY .....	16
7.2. ANALYSIS OF CROP TYPES .....	20
7.3. ANALYSIS OF THE SIZE OF THE PLOTS.....	26
7.4. ANALYSIS OF THE OWNERSHIP OF THE PLOTS .....	29
7.5. ANALYSIS OF THE NUMBER OF OWNERS .....	35
<b>8. CONCLUSIONS .....</b>	<b>39</b>
<b>9. DISCUSSION AND LIMITATIONS.....</b>	<b>42</b>
<b>10. ACKNOWLEDGEMENTS .....</b>	<b>43</b>
<b>11. BIBLIOGRAPHY CONSULTED OR REFERENCED .....</b>	<b>44</b>
<b>ANNEX A: LIST OF FIGURES AND TABLES .....</b>	<b>45</b>

## 1. Abstract

The statistical and descriptive analysis of the crops of the Vallformosa Territory that we carry out in this study, as well as their extent and that of the land, in relation to the people (natural or legal) who hold such property, allows us to clearly identify the specific characteristics of the area, differentiating them from those of the region, Alt Penedès, from those of the province of Barcelona and from those of the total in Catalonia.

The employment generated by agriculture in the Vallformosa Territory is up to seven times higher than in nearby areas, despite the fact that there is a tendency towards a significant reduction in the extent of the crops and a decrease in agricultural activities. The agricultural part of the Vallformosa Territory currently consists of monoculture vineyards, in plots of very small size. This distances it, therefore, from the prevalence of crop diversity in the rest of Catalonia. Also noteworthy in the Vallformosa Territory is the inequality in ownership of cultivation plots between men and women. Men own twice as many plots as women do, but, if we take into account size of plot, men have up to four and a half times more hectares of land than women.

Added to the data obtained here, is that which we prepared in our previous research for the Vallformosa Foundation UPF-BSM Chair of Strategic Territorial Transformation for Community Welfare; we saw that the territory under study – Vallformosa – has certain characteristics that make it unique and highly suitable for a comprehensive and sustainable transformation, in terms of its culture, the educational level and the occupations of its inhabitants, and which confer economic progress and well-being, from a change in the relationships that farmers and landowners have had for centuries. The future of the Vallformosa Territory must bestow progress and equity on its population from a position of economic, environmental and social sustainability, which is totally decarbonized and without a carbon footprint.

We will see in our third study the values, desires, degree of life satisfaction, family economic level, roots, love for the land, well-being, hope for the future and the involvement of its people in the construction of a new Vallformosa Territory derived from an integral transformation, and the fairer relationships that come from a highly replicable model of transformation, which can easily be followed.

## 2. Introduction

This study statistically and descriptively analyses the nature of the crops of the Vallformosa Territory and its land. It therefore expands on the previous study, based on the data of the population of the municipalities that make up this mostly agricultural valley of the Alt Penedès, which gives its name to the area: Vallformosa. And it is the people who constitute the essential nucleus to be able to build the great project of territorial transformation and community welfare that Vallformosa Foundation currently plans. This research deals with the interrelation and preparation of data, which allow us to reach conclusions about the specificities that the Vallformosa Territory presents in terms of its demography, training, occupation, per capita income and now, in relation to the nature of the crops, their extent and the type of land. After analysing the evolution in recent years, we are in a position to draw some forward-looking conclusions, taking into account the trends detected. Likewise, this research by the Vallformosa Foundation UPF-BSM Chair of Strategic Territorial Transformation for Community Welfare is of vital importance to support new bases of the Territorial Transformation Project that the Vallformosa Foundation itself has been designing.

### 2.1. The Vallformosa Territory

The so-called Vallformosa Territory is part of the Alt Penedès region, whose capital is Vilafranca. Vallformosa is a valley that extends between the municipalities of Vilafranca del Penedès, Vilobí del Penedès, Sant Martí Sarroca, Pacs del Penedès, Les Cabanyes and Font-rubí. Its backbone is the course of the Riera de Llitrà, and the Riera de Maïans. The epicentre of the valley is the Church of Santa Maria de Vallformosa, located in Vilobí del Penedès. The Vallformosa Territory occupies about 2,000 hectares.

#### 2.1.1. The Vallformosa Territory throughout history

As we have already indicated in our previous study, we believe that the research of the historian Montserrat Villaverde<sup>1</sup> – responsible for assessing the natural and landscape heritage of the valley under the auspices of the Vallformosa Foundation – offers us an essential context to understand the historical and current situation of the area and to plan its transformation. Our historian collected data

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<sup>1</sup> VILLAVERDE, M. (2022) *Vallformosa, estudi històric*. (In editing stage).

from the “Universal Chronicle of the Principality of Catalonia”, written in 1609, by the jurist and humanist Jeroni Pujades, who would not see it printed, since it was published more than two centuries later, in 1829.

Pujades indicates that “in Vallformosa, around the year 941 there was an armed uprising by the local Christian inhabitants against the Muslim soldiers, who had plundered and occupied several places in the region during a military incursion. This uprising took place with the support of a counterattack led by the Bishop of Barcelona, G. Guitara, who had taken a watchtower in the vicinity of Granada.”



When did the Penedès region begin to have a historical presence? Villaverde points out that “in the tenth century, Penedès began to be seen in historical documentation... Thus, more than a thousand years ago it constituted a border area between the dominions of the Christian counties to the north, headed by the county of Barcelona, and the extraordinary caliphate of Al-Andalus to the south, with Tarragona as the most northern city in the entire territory of what is now Catalonia. Back then, the border was not a well-defined line, but a vast space of confused organization and uncertain authority, the scene of occasional quarrels between armed people on both sides.”

But the point we want to make has to do with **the tenth century, when the counts of Barcelona began to encourage the repopulation and organization of the entire environment of the Penedès region, conceived as protection for the county and even the City of Barcelona via a network of castles.**

We see, then, that the Vallformosa Territory acted as a frontier during medieval times. Historically, Vallformosa has been linked to owners and absenteeists who made cereals, forestry, fruit trees, orchards and vineyards profitable. The relationship between landowners and farmers has always been very unequal. Counts and nobility in general settled peasants in the Penedès, establishing the lands in terms of emphyteusis; that is, the property was ceded in exchange for the perpetual provision of a census and the recognition of certain territorial rights. The masía was the key to the return of feudalism. It was a unit of economic, family and productive exploitation. In turn, it fixed the population in a territory, where authority was exercised by a lord, who imposed rents and levies. The great distance between them has survived to this day.

### 2.1.2. The Vallformosa Territory. Future projection

Currently, the Vallformosa Territory is located on the periphery. Vallformosa Foundation's goal is its transformation, so that it is once again central in Catalonia. The president of the Vallformosa Foundation writes in the prologue of “Vallformosa, transforming the territory. El Penedès-Barcelona”<sup>2</sup>:

“For the Foundation, farmers and producers are the first pillar of change and transformation when looking for a horizon of growth and shared progress. Human capital is essential and must be involved in all processes for a transformation based on environmental sustainability – no carbon footprint has recently been added – and on economic, social and cultural prosperity.

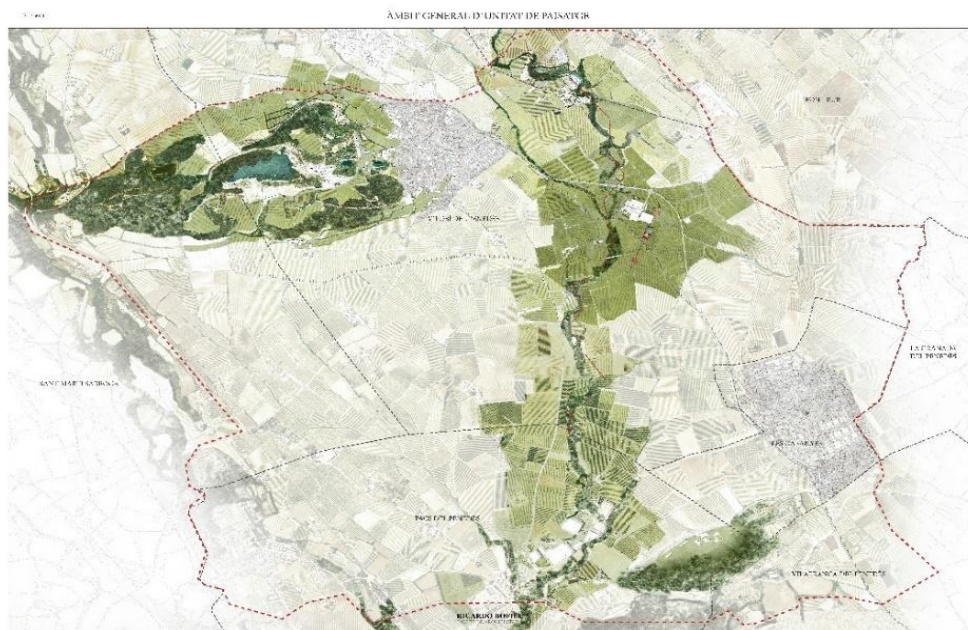


Map of the Alt Penedès region.<sup>3</sup>

<sup>2</sup> VALLFORMOSA FOUNDATION, 2021.

<sup>3</sup> GENERALITAT DE CATALUNYA. DEPARTMENT OF EDUCATION. Edu 365.

The origin of this situation is surely found in the monoculture of the vineyard, with the industrialization of its processes, and also in the action of other industrial activities, mainly the extraction of different geological materials for the construction sector. In the times in which we live, when all social and economic activities are subject to an unprecedented globalization, it is essential to plan a rethink around the management of territories, the activities that are developed in them, and the means and tools necessary to lay the foundations for the future today, where the challenge is sustainability.”



### General environment of the landscape unit of the Vallformosa Territory<sup>4</sup>

Vallformosa Foundation wants to propose a basis for a paradigm shift in the analysis and study of procedures and actions for land management. It has the direct participation of all the people involved associative entities and institutions of the broadest competence. Likewise, it has academic and scientific collaboration and support, absolutely necessary to coordinate the rigour of the actions and the excellence of the results.”

<sup>4</sup> VALLFORMAOSA FOUNDATION, 2021.



The territorial transformation project promoted by Vallformosa Foundation is comprehensive and is part of the SDGs of the United Nations Agenda<sup>5</sup>. Specifically and especially, objectives 5 (gender equality), 8 (decent work and economic growth), 9 (industry, innovation and infrastructure), 10 (reduction of inequalities), 11 (sustainable cities and communities) and 12 (responsible consumption and production).



## 2.2. About the Vallformosa Foundation

The Vallformosa Foundation was established in June 2020. It aims to **promote global initiatives** to develop and improve, both on an economic, social, environmental and cultural scale, the territory that occupies the valley where the wineries and facilities of the Vallformosa company are located, as well as the Hermitage of Santa María de Vallformosa, so as to **preserve the landscape units** that make it up free of **environmental aggression**.

It also **promotes the research and development of the primary sector** and, in particular, of **the cultivation and production of organic vineyards**, as well as other products linked to the Vallformosa Territory. It is also aimed at **promoting and disseminating knowledge of the territory and organic production**, as a basis for **sustainable development**. And it enhances **the legacy of material and intangible heritage linked to the land and people**, integrating the small producers of the sector.

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<sup>5</sup>THE UNITED NATIONS, 2015.



Its president, Josep Graells, says “that the values of the Vallformosa Foundation constitute a unique model, whose backbone is the feeling of belonging to a sustainable territory”.

### 2.3. On the Vallformosa Foundation Chair of Strategic Territorial Transformation for Community Welfare (UPF-BSM)

A few months ago, in this same academic year in which this study and the previous one come out, UPF Barcelona School of Management (UPF-BSM) and the Vallformosa Foundation signed a collaboration agreement to promote the Chair of Strategic Territorial Transformation for Community Welfare, with the aim of defining **a new model of the most just, equitable, inclusive and sustainable relationship between people, companies and territory.**

The Chair aims to incorporate the feeling of belonging and, in turn, economic and social prosperity in the future for the younger generations of the Vallformosa Territory located in the region of Alt Penedès. It addresses key issues, such as **the social and personal identity of the territory, the depopulation and repopulation of agricultural areas, transformation, innovation, entrepreneurship and social impact**, among other points.

Based on the creation and transfer of knowledge, with the academic rigour that characterizes UPF-BSM research, and in harmony with the values of the Vallformosa Foundation, the Chair acts as **a social dynamizer and generator of fame and prestige** in the Vallformosa Territory.

### 2.4. About UPF-Barcelona School of Management

UPF Barcelona School of Management (UPF-BSM) is the business school of the Pompeu Fabra University, **the best public university in Spain**, according to the *Times Higher Education* 2022 ranking. UPF-BSM is an institution doubly accredited by AMBA and EQUIS, two of the three most prestigious academic recognitions in the higher education sector. **It ranks among the best business schools in the world.** The school is firmly committed to **academic quality and the development of research**, as focal points for social transformation, and bases this on values such as rigour and ethics, which allow it to **generate knowledge and economic impact**, thanks to an active, personalized and interdisciplinary learning model. It also has a network of more than 500 collaborating companies and a community of more than 25,000 *alumni* worldwide.

## 2.5. Website of the Vallformosa Foundation Chair of Strategic Territorial Transformation for Community Welfare

<https://www.bsm.upf.edu/ca/catedra-transformacio-territorial-benestar-comunitari>

## 2.6. About the authors

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### **3. Context of this study**

#### **3.1 The Chair's Line of Territorial Research**

The Vallformosa Foundation Chair of Strategic Territorial Transformation for Community Welfare, at the UPF Barcelona School of Management prepared, prior to this, a first descriptive study based on official data from the National Institute of Statistics, IDESCAT (Institute of Statistics of Catalonia) and the Tax Agency on the population living in the municipalities where the so-called Vallformosa Territory is located<sup>6</sup>.

These are the towns of Vilafranca del Penedès, Font-rubí, Vilobí del Penedès, Les Cabanyes, Sant Martí Sarroca and Pacs del Penedès. The evolution of the number of people residing in the Vallformosa Territory over the last thirty years was analysed, as well as their age, gender, origin, educational level, work activity and per capita income. The data was compared, especially that of the small municipalities with the city of Vilafranca del Penedès, with that of the province of Barcelona, the region of Alt Penedès and with the global data for Catalonia.

The results of the study concluded that:

- The population of the Vallformosa Territory is being rejuvenated,
- It acts as a pole of attraction for people who previously lived in other parts of the province of Barcelona,
- The educational level of the population of the territory is lower than the average for the province,
- The greatest weight of the work activity is dedicated to construction and
- The activity in the primary sector (agriculture and livestock, especially) of the people who reside in the small municipalities is seven times the average of Vilafranca del Penedès, the province of Barcelona and the figures for Catalonia as a whole.

Therefore, in light of the data provided by the previous study, we believe that the next step in the research line of the Vallformosa Foundation Chair of Strategic Territorial Transformation for

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<sup>6</sup> CÓPPULO, S. AND PEREIRA, J., 2023

Community Welfare should be aimed at analysing in detail the crops of the localities that constitute the territory. The data we obtain on crop varieties, the extent of the plots and their ownership can be very useful in predicting their prospective evolution and to be able to consequently plan strategic territorial transformation lines aimed at progress, and economic, social and environmental sustainability of the territory, with zero carbon footprint. In this way, progress will be made towards two clear objectives of the Vallformosa Foundation Strategic Plan:

- A) The promotion of research and development in the primary sector and, in particular, the cultivation and production of organic vineyards, as well as other products linked to the territory and
- B) The promotion and dissemination of knowledge concerning the Vallformosa Territory, as a basis for sustainable and decarbonized development.

### **3.2 Relationship of this study with the Vallformosa Foundation's Vallformosa Territory Strategic Transformation Project**

Both the previous study and this one are joined by a line of continuity related to the Strategic Transformation Project of the Vallformosa Territory promoted by the Vallformosa Foundation. In the words of its president, Josep Graells<sup>7</sup>, it is the most important project in southern Europe in terms of the relationship between people in agricultural areas.

The project of the Strategic Transformation Plan of the Vallformosa Territory starts from the patrimonial, cultural and social wealth that defines it, after verifying that it has not been taken into account for generations when relaunching.

The Vallformosa Foundation is immersed therefore, as stated by its CEO, Josep M. Pelegrí,<sup>8</sup> in the need to profoundly change its structures, especially in the agricultural sector. It is precisely in this area, where the central point of transformation must be placed. And so the primary sector represents the

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<sup>7</sup> Statements made by the president of the Vallformosa Foundation, Josep Graells, at the signing ceremony of the constitution of the Vallformosa Foundation Chair in Strategic Territorial Transformation for Community Welfare. UPF Barcelona School of Management, 29 November 2022.

<sup>8</sup> PELEGRÍ, J.M., 2022.

focus and the key opportunity for transformation, based on sustainability, decarbonization, culture, heritage and rurality.

Ultimately, it is about generating a positive impact on the progress and well-being of the population with the aim of creating a more competitive economy in the territory. Technology, research and innovation will be increased. In addition, the project will involve an ecological and digital transformation and will decarbonize the territory. Thus, the Vallformosa Territory will become a land of opportunities, especially for women and young people. With a more competitive and “social” economy, a greater attraction of talent will also be achieved. More employment will be created, that is more stable and of a higher quality. People will want to settle and reside in the territory, because it will offer more opportunities for the future. Ultimately, the strategic project pursues greater well-being for all people and superior economic prosperity.

The transformation contained in the Strategic Transformation Plan proposes a new governance in all sectors, based on territorial, economic, social, agricultural and technological sustainability. Taking into account that the Vallformosa Territory has great potential for transformation, it wishes to be a model for other territorial transformation projects to follow.

Finally, it should be noted that the transformation plan proposes a greater approach in all regards, between the Vallformosa Territory and the capital of Catalonia, Barcelona, configuring itself as a new centrality.

## **4. Working assumptions**

There are significant differences between the characteristics of the Vallformosa Territory in terms of its agriculture and the rest of the agricultural regions of Catalonia, as well as the rest of the Alt Penedès and Catalonia, which allow structural problems and opportunities for developing the territory to be identified.

## **5. Aims**

General aims:

- 1) Characterize the Vallformosa Territory and its agricultural fabric in relation to that of the Alt Penedès region, the province of Barcelona and Catalonia,

By carrying out a detailed analysis of:

- a) The size of the cultivated area,
- b) The type of crops,
- c) The size of the plots and
- d) The ownership of the plots.

## **6. Work Methodology**

Four main sources of information have been used for this study.

- 1) The first source is made up of the database of the crop map of Catalonia using the DUN. The DUN is the single agrarian declaration, which allows the different plots (agricultural estates) into which the territory is divided to be identified. This data source is freely accessible and can be found at: <https://analisi.transparenciacatalunya.cat/Medi-Rural-Pesca/Mapa-de-cultius-de-Catalunya-amb-origen-DUN/yh94-j2n9>. The information available in this database includes records from 2016 to 2022.

- 2) The second source of information comes from the database of the map of agricultural holdings in Catalonia. This data source is freely accessible and can be found at:  
<https://analisi.transparenciacatalunya.cat/Medi-Rural-Pesca/Mapa-d-explotacions-agr-coles-DUN-de-Catalunya/iqpi-zasj>.

These sources, despite proceeding from the Department of Climate Action, Food and Rural Agenda, of the Generalitat de Catalunya, differ significantly. Although the first focuses on crops and their land registry division, the second database uses agricultural and livestock activities, grouping different plots with different land registry identification in units, as identified in terms of their performance.

- 3) The third source of information is the publication *L'Alt Penedès, una comarca dynamics als confins metropolitans* published by Caixa Catalunya and published in 1991. This work by several authors contains statistics from the 80s, from the Alt Penedès region and, therefore, from the Vallformosa Territory<sup>9</sup>.
- 4) Finally, as a fourth source of information, aggregated land registry property data from the Ministry of Finance and Public Function of the Government of Spain has been used. This information consists of the number of plots and the number of different owners of those plots for each of the municipalities integrated into the Vallformosa Territory.  
<https://www.sedecatastro.gob.es/>

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<sup>9</sup> CASASSAS, MENDIZÁBAL, ARIBAS, BERTRAN, CUXART, 1991..



## 7. Results

The descriptive analysis of the crops of the Vallformosa Territory is divided into five separate sections focused on the study of different characteristics, based on the available data sources.

First of all, the percentage of land destined for crops in the Vallformosa Territory is analysed and compared with the proportion cultivated in the region, in the province of Barcelona and in Catalonia as a whole. Not only is the current situation studied (year 2020), but also analysed is the evolution of the cultivated area in recent years and compared with the same data from 1989; that is, the evolution over the last 30 years. This analysis corresponds to the content of Section 7.1. of this study.

Next, the distribution of crops is considered, with special attention to the presence of vineyards. On the one hand, we identify the general framework of Catalonia, where vineyards represent one of the main crops – although it is not the greatest in terms of the extent of plantations – and this is compared with the Vallformosa Territory, observing a pattern typical of vineyard monoculture. This tendency towards monoculture is compared with different geographical areas within Catalonia, based on the unique character of the Vallformosa Territory and the Alt Penedès region in terms of crop diversity. Then finally, the area destined to vineyards in the Vallformosa Territory is analysed from a temporal perspective. The data shows that the trend towards monoculture has worsened in recent years. The presentation of these results will be the focus of Section 7.2. of this document.

The third point focuses on the study of the number of plots and their extent, in the Vallformosa Territory, in the province of Barcelona and overall in Catalonia. As in the previous sections, this analysis is in two parts: a comparison with respect to the environment, and another, temporal, in which the historical evolution is analysed. These analyses form the content of Section 7.3.

The fourth point analyses the agricultural holdings of the Vallformosa Territory and its land, using the gender and age of the owners. The results are detailed in Section 7.4. of this document.

Finally, the fifth point looks at the differences between farms, cultivated plots and their ownership. The results are shown in Section 7.5.

### 7.1. Analysis of the size of the cultivated territory

Based on the information collected in the crop map of Catalonia using the DUN, we can identify the percentage of total territory cultivated in the Alt Penedès region, in each of the six municipalities that make up the Vallformosa Territory (Les Cabanyes, Font-rubí, Pacs del Penedès, Sant Martí Sarroca,

Vilafranca del Penedès and Vilobí del Penedès) and in the provinces of Barcelona, Girona, Lleida and Tarragona.

Figure 1 collects this data in a bar graph, in which each bar corresponds to one of the indicated geographical units. The height is the total percentage of the territory that is destined for crops, according to the database. In order to categorize the territories, three different colours are used: (1) dark grey for the Alt Penedès region, (2) red for the municipalities of the Vallformosa Territory and (3) light grey for the four provinces.

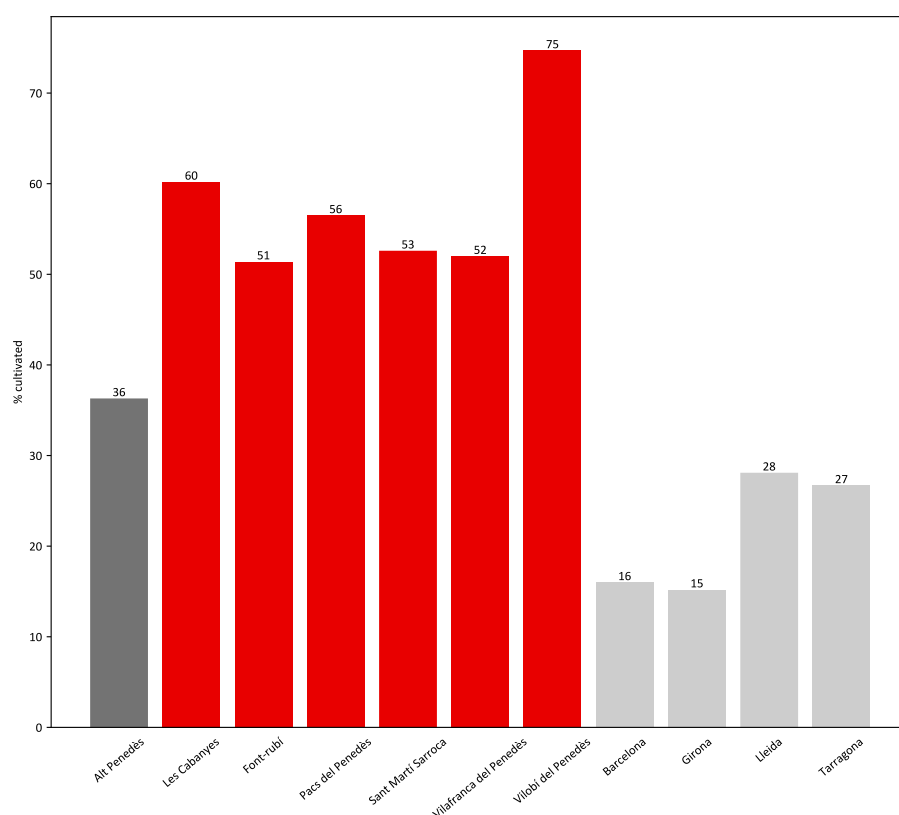


Figure 1. Percentage of land of the geographical unit used as cultivated territory in the Alt Penedès region, municipalities of the Vallformosa Territory and the provinces of Catalonia. The ordinate axis indicates the percentage of the total territory destined for cultivation for each of the geographical units.

As can be seen in Figure 1, **the extent of crops in the municipalities of the Vallformosa Territory is significantly higher than that of the region, being between fifteen and thirty-nine points higher. The difference increases if compared with any of the provinces of Catalonia, even with those that could**

**be considered of greater potential for agricultural holdings, destined for extensive crops,** which require greater area, as would be the case with cereal cultivation.

This value, which comes from the data available for the year 2020, shows the weighting of crops in the territory, a phenomenon that has not changed significantly in recent years, as can be seen in Figure 2.

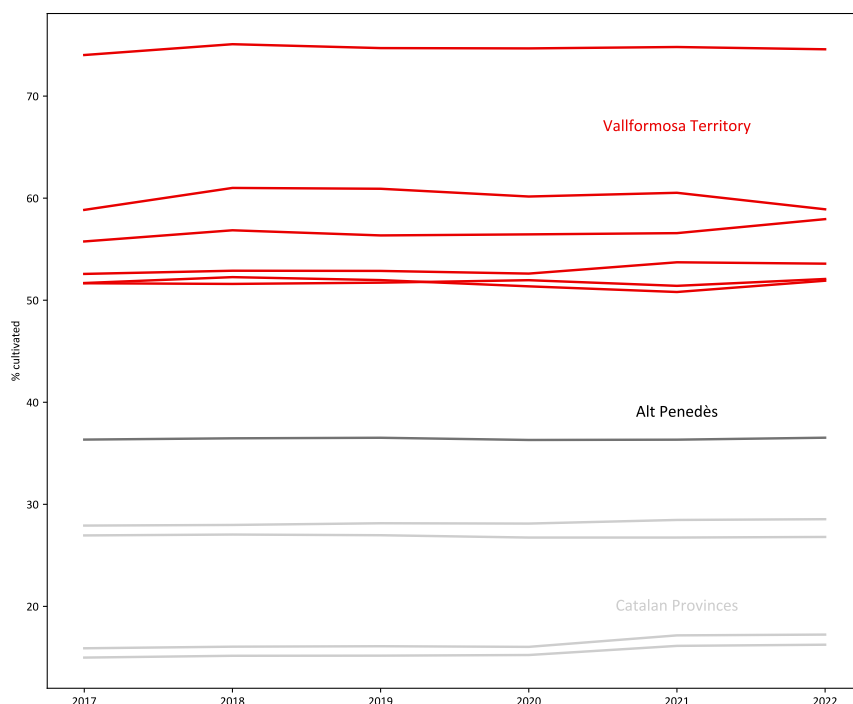


Figure 2. Evolution of the extent of the geographical units of cultivated territory between 2017 and 2022. For the region of Alt Penedès, dark grey line, the municipalities that make up the Vallformosa territory, red lines, and the provinces of Catalonia, light grey lines, the percentage of land destined to crops is shown in each year.

Figure 2 shows the percentage of cultivated area in the same geographical units between the years 2017 and 2022. As in Figure 1, the data of the Alt Penedès region is represented in dark grey; the municipalities that make up the Vallformosa Territory in red, and the four provinces of Catalonia in light grey. In all cases we can see that, although there are small variations, the values remain stable, with **the percentage of area destined for cultivation much higher in all the municipalities that form the Vallformosa Territory in relation to the rest of Catalonia.**

If we focus our attention on the Vallformosa Territory, considering the data available for the year 1989 that appears in the publication *L'Alt Penedès. Una comarca dinàmica als confins metropolitans*<sup>10</sup>, Figure 3 compares the percentage destined to crops in the aforementioned year and in 2020. This comparison uses different sources of information, since the 1989 data comes from the aforementioned publication, while the 2020 data is from the database of the crop map of Catalonia using the DUN, so part of the variation in the results may be due to differences between the sources.

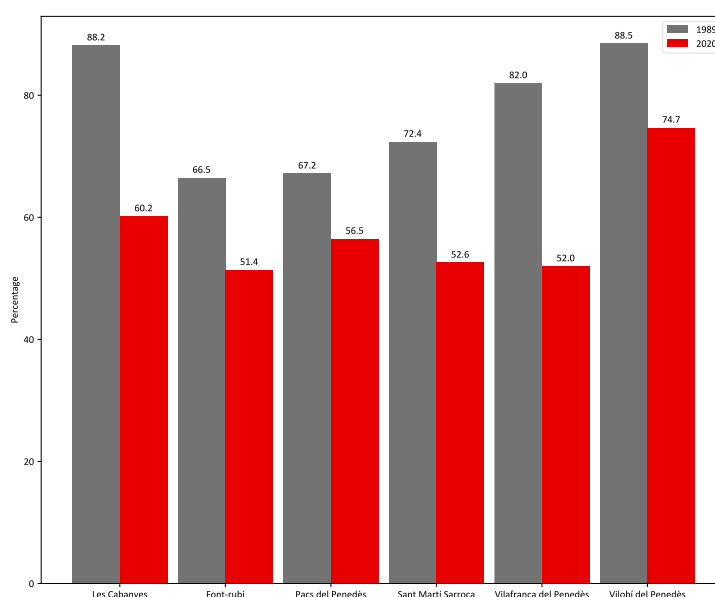


Figure 3. Percentage of territory destined for crops in the municipalities of the Vallformosa Territory in 1989 and 2020. For each of the six municipalities of the Vallformosa Territory, the percentage of the total territory destined for crops in 1989 is indicated, dark grey column, and in 2020, red column.

In any case, **there is a reduction in the percentage cultivated in all the municipalities of the Vallformosa Territory, which shows a relative downward trend in agricultural activities.** One of the possible causes of this trend will be analysed in greater detail in Section 7.2. since we want to investigate the likelihood that it is due to a change in the distribution of crops within the territory.

The data in Figure 3 shows **a significant reduction in the area under cultivation between 1989 and 2020.** The smallest difference is almost ten points for Pacs del Penedès and thirty points for Vilafranca

<sup>10</sup> CASASSAS, MENDIZÁBAL, ARRIBAS, BERTRAN, CUXART, 1991.

del Penedès. Although these differences may be partially caused by the origin of the two sources of information, in any case, **they do show a clear reduction in the area cultivated in the Vallformosa Territory, as a consequence of the abandonment of crops other than those of vineyards.** We will analyse it in detail in Section 7.2. with this being one of the possible causes considered in the next section.

## 7.2. Analysis of crop types

Although the analysis in Section 7.1. shows that, on the one hand, **the Vallformosa Territory has more agriculture in relation to the rest of Catalonia** and, on the other hand, that **there is a reduction in its extent when compared to 1989**, it is also true that it does not detail concise information on the composition of crops within the territory under study.

In order to contextualize this reality within the environment of Catalonia, Figure 4 shows the division of crops in the autonomous community. The graph shows the distribution in which **cereals represent the most important crop**, with **40.29% of the total cultivated area** being dedicated to its planting and harvesting.

Note that the rest of the crops are allocated a smaller area, although there is a good number of them, which contribute significantly to the total area cultivated. An ABC analysis<sup>11</sup> of the crops of Catalonia by extent would show category A, the most important in terms of cultivated area, made up of cereals, category B made up of up to six crops, including fallow which is not strictly a crop despite the fact that the available database classifies it as such due to its importance in agriculture, and up to eight other crop groups in category C.

On the other hand, it should be added that the ABC categorization carried out is subjective, but this and any other that we carried out, would lead us to conclude the same thing; that is, that **Catalonia has a quite diverse agriculture in terms of crops grown, with a predominance of cereals, followed by several other crops that are important** and multiple additional crops with a lower presence in the total.

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<sup>11</sup> ABC analysis is a classic tool for categorizing different units. This technique is frequently used in the area of operations management and divides a set of elements into three categories consisting of a category with few elements, but which are of great importance (category A), a category, (category B), with a greater number of elements of medium importance and a last category, (category C), with a large number of elements of low importance. A more detailed explanation of this analysis can be found in Chase, Aquilano and Jacobs (2009) Operations Management, 12th edition, Chapter 17.

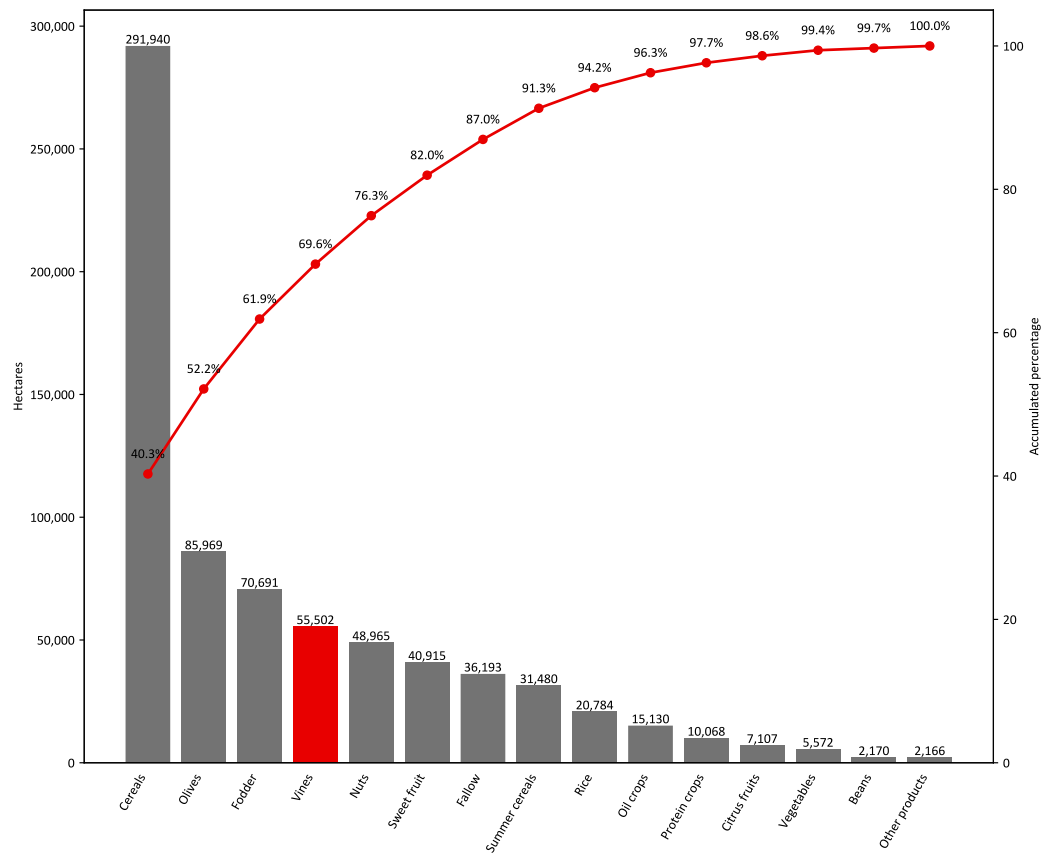


Figure 4. Distribution of different crops in Catalonia. For each of the crop categories collected in the database, ordered from largest to smallest cultivated area. The bars show the number of hectares destined for the planting of each crop in Catalonia. The bar associated with the vines is in red, showing that it is the fourth crop in terms of cultivated area in Catalonia. Superimposed on the cultivated hectares information, as a red line, is the accumulated percentage for the territory by the most widespread crops. This information makes it possible to identify that 69.56% of the total cultivated territory (the value of the red line associated with vineyards) is destined to the cultivation of *Cereals, Olives, Forage and Vineyard*, the four main crops by extent in Catalonia.

If we replicate the same analysis focusing on the set of municipalities of the Vallformosa Territory, we get a very different distribution: see Figure 5.

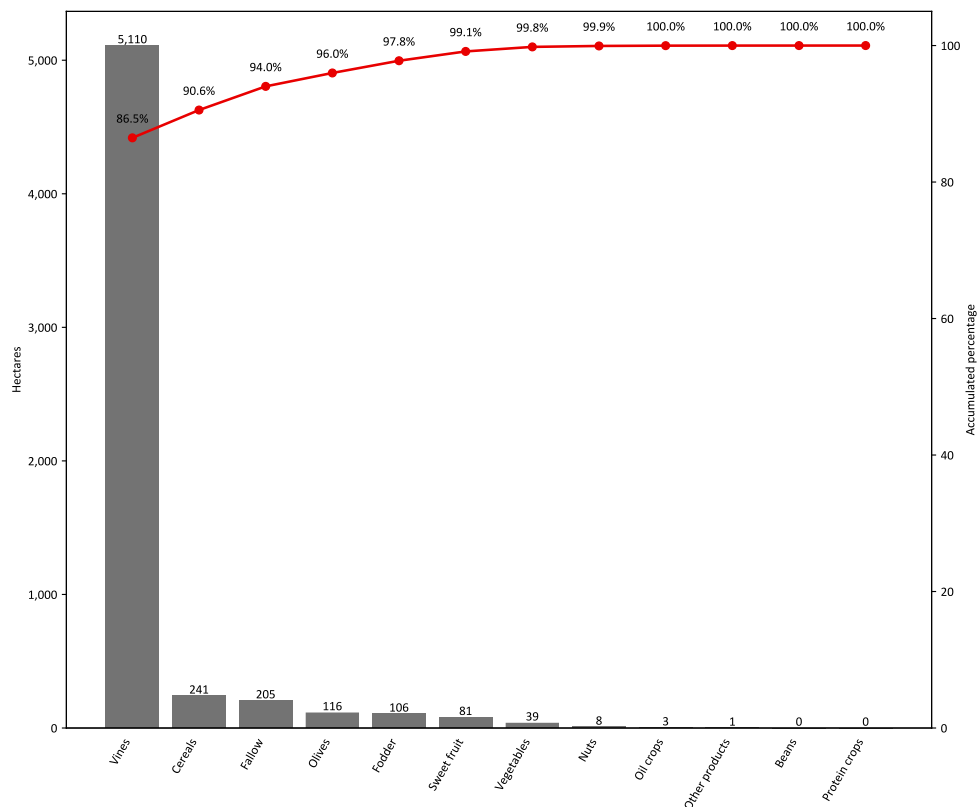


Figure 5. Distribution of different crops in the municipalities of the Vallformosa Territory. For each of the crop categories collected in the database and present in the territory, ordered from largest to smallest cultivated area. The bars show the number of hectares destined for the planting of each crop in the set of municipalities. Superimposed on the cultivated hectares information, as a red line, is the accumulated percentage for the territory cultivated. This information makes it possible to identify that 86.48% of the total cultivated territory (the value of the red line associated with vineyards) is destined for the cultivation of vineyards.

Figure 5 shows **the weighting of vineyards in the crops of the Vallformosa Territory. Vineyards occupy more than 20 times the number of hectares than the second crop, cereals.** There are five crops for which 100 or more hectares are used, and only seven crops in total for which 10 or more hectares are used. Interestingly, we find two crops to which use less than 0.5 hectares, legumes and proteinaceous crops that, when rounded, appear in the figure as 0 hectares.

The data shown in Figure 5 show a distribution of crops that we would associate with **vineyard monoculture**, with the problems that this entails, as indicated by specialist studies.<sup>12</sup>

<sup>12</sup> BULLOCK, D.G., 2008.



This relationship could be caused by the specialization of crops in different geographical areas, which would indicate that the results shown in Figure 4 are due to the aggregation of very different geographical areas and not to varied crops in Catalonia.

To verify if this hypothesis is correct, the curve of accumulated crops of the Vallformosa Territory (the red curve that we saw in Figure 5) is compared with the curves corresponding to other geographical areas.

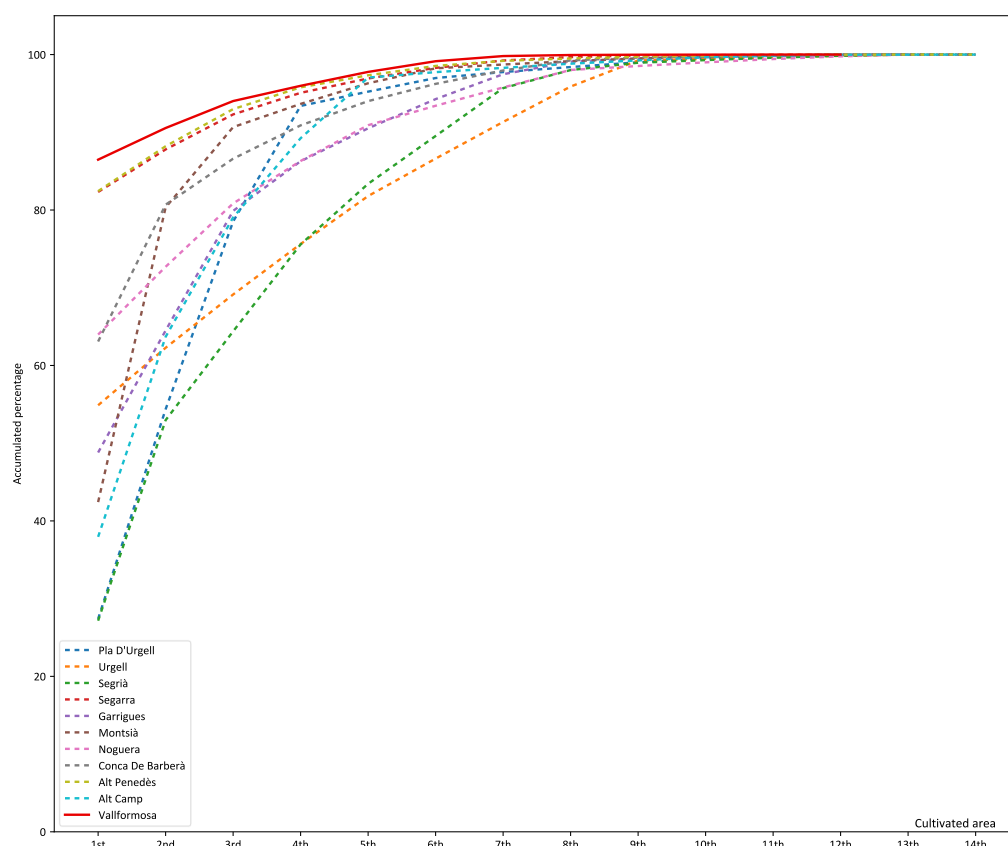


Figure 6. Aggregate distribution of majority crops in the Vallformosa Territory and the ten regions with the greatest surface dedicated to agriculture in percentage terms. For each of the geographical areas, the cumulative percentage of the cultivated area destined for majority crops is shown (for example, the values associated with the abscissa "30" would indicate the cumulative percentage destined for the three crops with the largest implantation).

Figure 6 shows this comparison for the ten regions of Catalonia with the highest percentage of land dedicated to cultivation; that is Pla d'Urgell, Urgell, Segrià, Segarra, les Garrigues, Montsià, Noguera, Conca de Barberà, Alt Penedès (the region where the Vallformosa Territory is) and Alt Camp. For each region, the aggregate curve is shown, considering as the first crop the one that is the majority for that region; the second crop, the second majority for that region, and so on.

We observe that the Vallformosa Territory, the continuous line shown in Figure 6, is the one that behaves in an extreme way, seeing that in some cases **it is necessary to accumulate up to six or seven different crops to reach a degree of cultivation equal to that of vineyards in the Vallformosa Territory**. It should be noted that the region most similar to the territory due to the predominance of a crop is the Alt Penedès, possibly due to the weight of the Vallformosa Territory in its interior.

To further investigate the possibility that this predominance of a crop is not a unique feature of the Vallformosa Territory, we will explore whether or not this phenomenon is due to vineyards. To do this, the same curve is compared with that of all the regions in which vineyards are the predominant crop (that is, with all the regions of Catalonia in which the majority crop is determined and the regions in which vineyards are identified as the crop with the highest percentage).

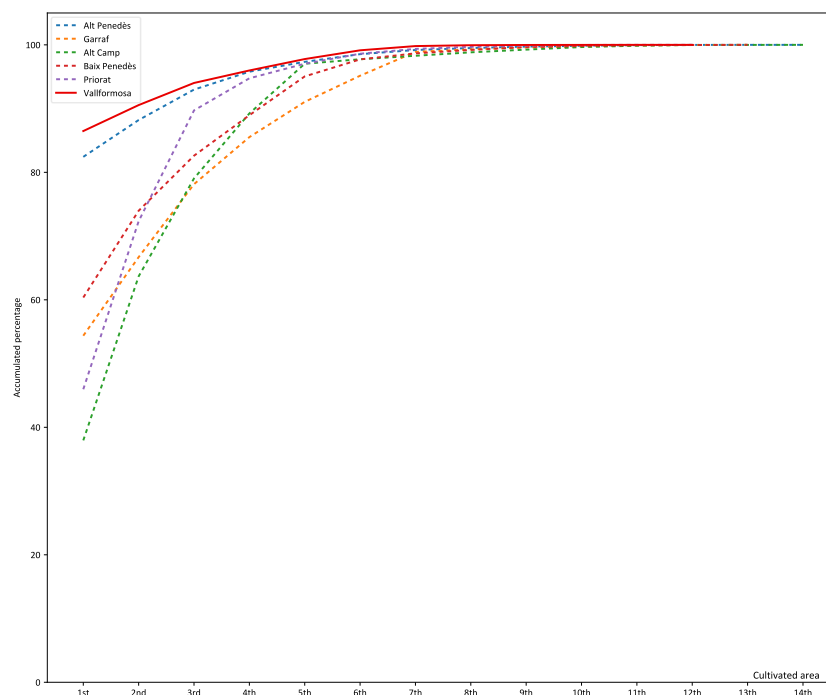


Figure 7. Aggregate distribution of majority crops in the Vallformosa Territory and the regions where vineyards are the predominant crop.

Again, the data shown in Figure 7 indicates **that monoculture cultivation in the Vallformosa Territory is significantly higher than in the rest of the geographical areas of Catalonia, even when the majority crops are vines**.

Due to the known limitations and problems associated with monoculture, this leads us to highlight this fact as worrying.

Comparing from a temporal dimension, Figure 8 shows the percentage of cultivated area dedicated to vineyards in each of the municipalities that make up the Vallformosa Territory in the years 1989 and 2020.

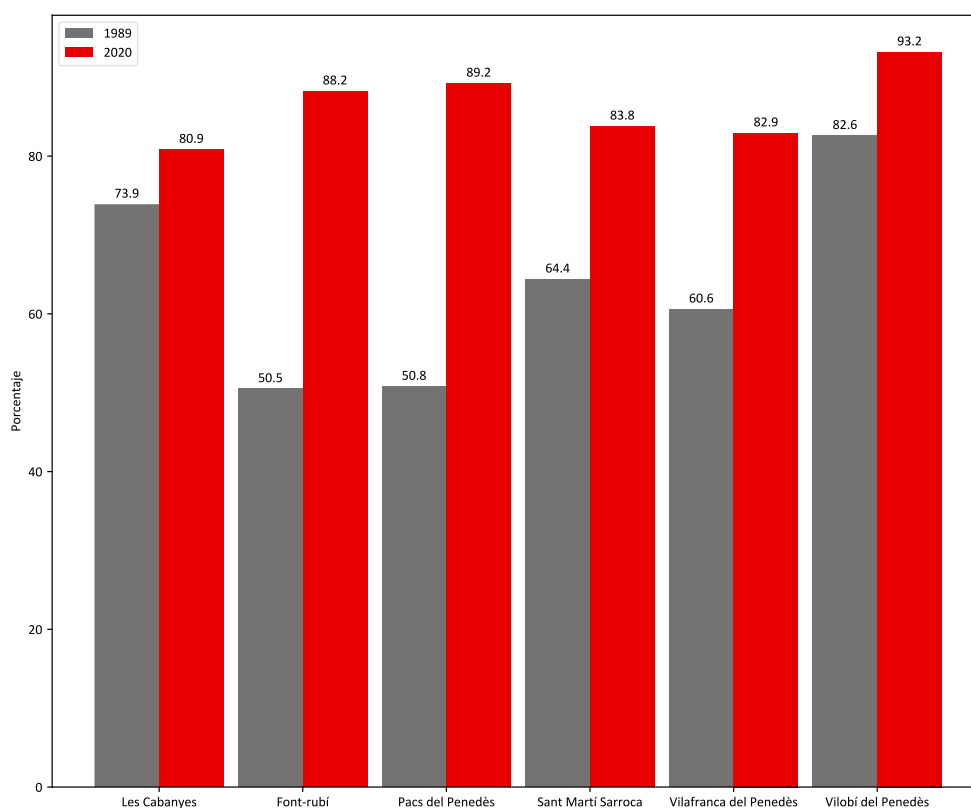


Figure 8. Percentage of the cultivated territory destined to vines in the Vallformosa Territory in the years 1989 and 2020. For each municipality, the percentage of cultivated territory destined vines is shown.

Figure 8 shows significant percentage increases in vineyard cultivation. We observe, therefore, that **the territory, which already had a tradition quite oriented towards its main crop, vines, has gradually increased its proportional weight until it can be considered a *de facto* monoculture.**

If we combine the values shown in Figure 8 with those shown in Figure 3 (which showed a reduction in the total area dedicated to crops), we can surmise that this reduction in space is due to **a decrease in the other crops**, while vineyards have remained stable over time. This is reasonable based on the special characteristics of vine cultivation and specifically the particular legislations that regulate it,

since they prevent its growth, but in turn do not encourage diversification, or the maintenance of alternative crops or the coexistence of vines with other crops.

Finally, it should be noted that, although the database used has records for crop plots intended for mixed use (several crops), it also shows that this practice is non-existent within the Vallformosa Territory; that is, **there are no plots that show the coexistence of vines with another crop, further reinforcing the conclusion that the territory suffers from a *de facto* monoculture**, as we have indicated above.

### 7.3. Analysis of the size of the plots

We now proceed to analyse how the crops are distributed among the different plots that make up the Vallformosa Territory, the object of this study. The database of the crop map of Catalonia has information regarding the division of the Vallformosa Territory into different units. These units, which we will call plots, show the territorial divisions from a point of view of their property for tax purposes.

Figure 9 shows the percentage of plots grouped according to the number of hectares they have in the Vallformosa Territory, the province of Barcelona and Catalonia as a whole. The plots are grouped according to their size up to 0.1 hectares; between 0.1 and 0.5 hectares; between 0.5 and 1 hectare; between 1 and 2 hectares; between 2 and 5 hectares; between 5 and 10 hectares; or more than 10 hectares.

The results show **dissimilar proportions of plots between Catalonia, the province of Barcelona and the Vallformosa Territory**. They also show a large proportion of plots of very small sizes, and in all cases, around 50% of the plots do not come to 0.5 hectares.

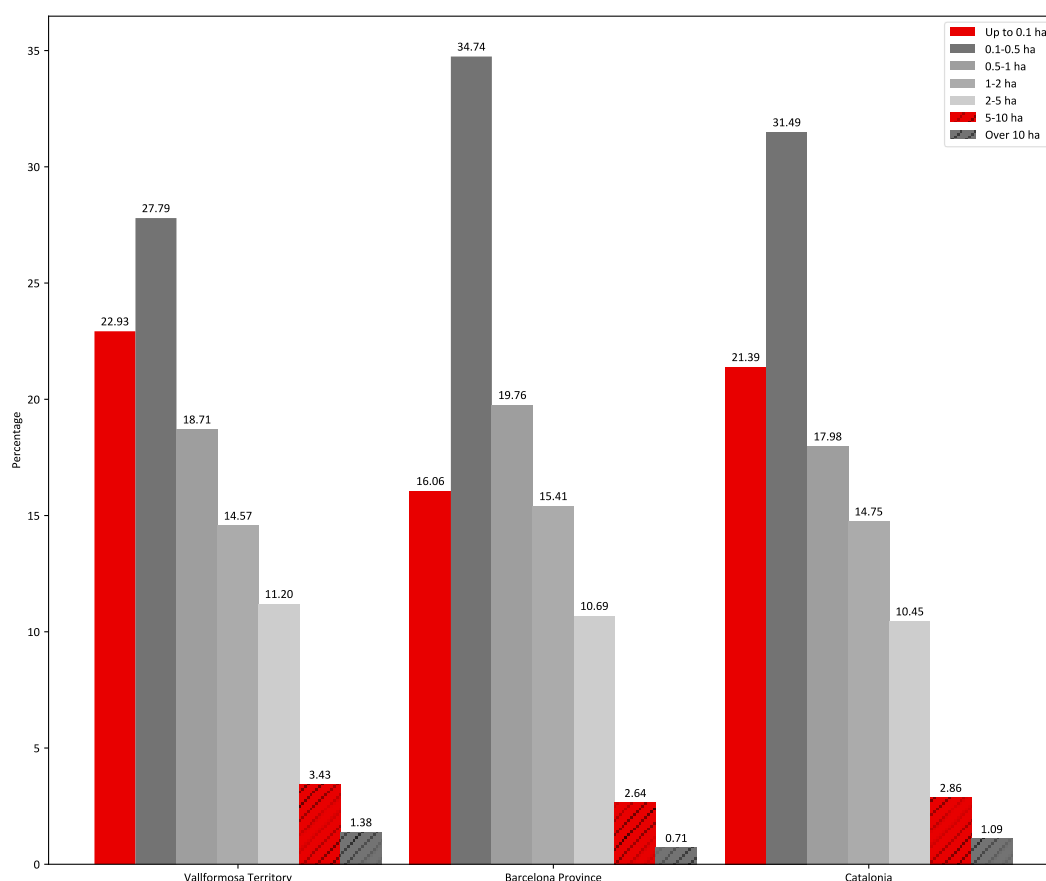


Figure 9. Percentage of the number of plots according to their size in the Vallformosa Territory, the province of Barcelona and in Catalonia as a whole. For each geographical area, each bar represents the percentage of the number of plots falling within the indicated size.

Note that the division of the number of plots by size does not represent a proportion of the overall extent, or their participation within the same territory. Figure 10 shows the same information, but now considering the percentage of cultivated land falling within each of the property sizes.

Looking at Figures 9 and 10 together, we observe that, despite the fact that approximately **50% of plots have a size of no more than 0.5 hectares**, the sum of their sizes does not represent even **10% of the total cultivated territory**.

In the same way, although the number of **plots that we could consider larger** – those with five hectares or more – is small, (less than 5% in all cases), if we consider their area, it must be said **that they represent an important part of the total cultivated area**.

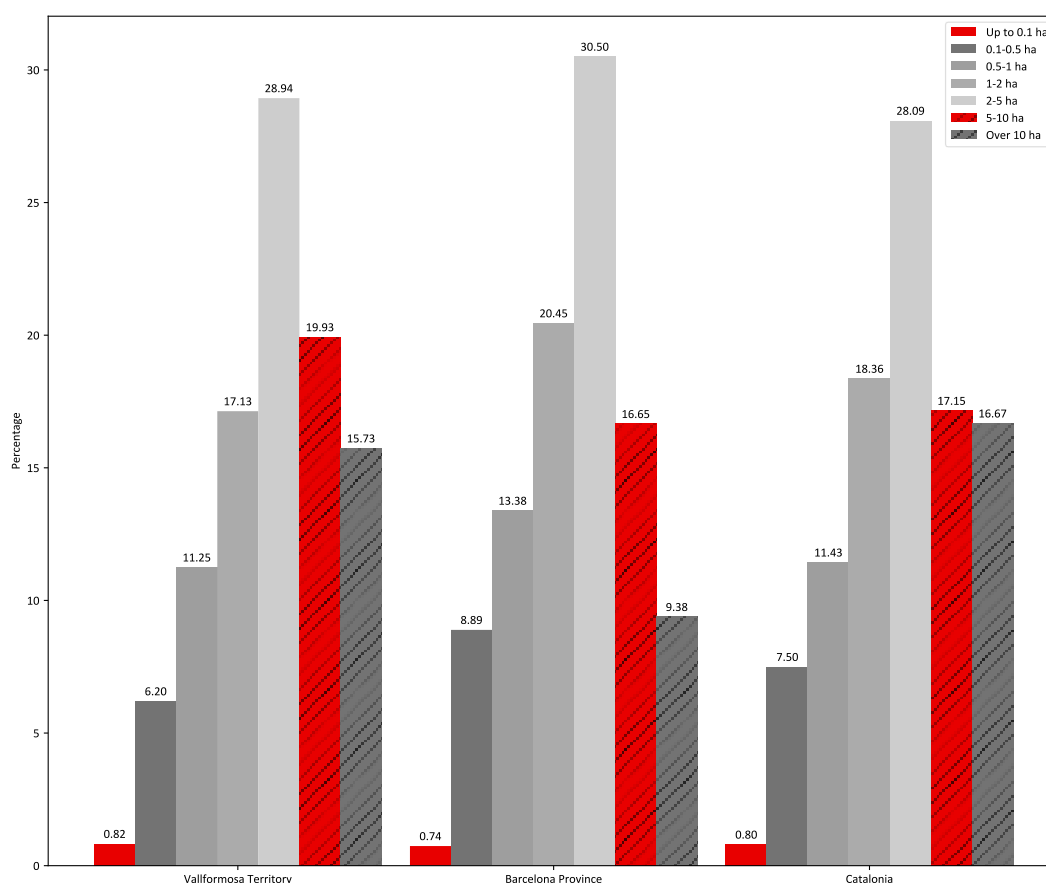


Figure 10. Percentage of the cultivated territory associated with plots grouped according to their size in the Vallformosa Territory, province of Barcelona and in Catalonia as a whole. For each geographical area, each bar represents the percentage of the cultivated area associated with plots falling within the indicated size.

Such a difference is important, since only plots with a sufficient size can be automated and can be provided with better solutions, due to the limitations associated with economies of scale, which significantly influences their economic viability and their long-term survival.

In conclusion, we can consider **that the level of fragmentation of the territory in terms of the size of the plots is an endemic problem throughout Catalonia and not only in the Vallformosa Territory, which hinders innovation processes and the possibilities of making a living from agriculture.** These difficulties refer to obtaining cultivable sizes, which generate enough mass to be economically sustainable.

#### 7.4. Analysis of the ownership of the plots

Among the databases that we use for the present analysis of the Vallformosa Territory, we note that the one referring to the type of crops does not contain information associated with the owners of the plots, although the database of agricultural holdings does contain information about their ownership. Specifically, this source contains three pieces of information associated with ownership.

The first refers to the nature of the ownership; and thus distinguishes between a legal person and a natural person. In the latter case, it also details gender. The second piece of information is the year of birth of the natural person or the foundation of the legal person, owning the plot. The third corresponds to the municipality in which the owner's residence is located.

The database of agricultural holdings partially differs from that of agricultural plots for various reasons. In addition to the information indicated, this database has two characteristics that differentiate it from the plot database.

- 1) First of all, it must be borne in mind that an agricultural holding can – and usually does – represent several plots.
- 2) Second, an agricultural holding not only gives agricultural information, but also includes holdings associated with livestock farming. In the case of owners resident in the Vallformosa Territory, livestock or animal husbandry activity is in the minority, representing only 36 holdings out of a total of 2,373. In addition, their extent is small, compared to that of crops, so we can ignore their importance in the general picture of the present study.

In this analysis, we will focus our attention on the information associated with the type of property, considering the differences that there are with other territorial groupings and also avoiding comparing crop information, which was already analysed in previous sections. We will take into account, therefore, those plots whose owners have their residences located in the Vallformosa Territory, considering the study of the inhabitants of the territory to be more important than the location of the activity itself.

Figure 11 shows the first of these analyses, detailing the percentage of holdings according to the ownership, whether a legal or natural person (male or female), for Catalonia, Barcelona, Alt Penedès and the Vallformosa Territory, with columns in red, dark grey, light grey and black, respectively.

We note that the values in Figure 11 show a fairly homogeneous distribution in terms of ownership of land in all geographical groupings, **with a ratio of 2 men to 1 woman. This ratio indicates significant gender differences and inequalities** in agricultural holding ownership. **Gender inequality is even**



**greater when property is considered** not in number of plots, but **by size**. Figure 12 shows this information under the same groupings and categories as Figure 10, but indicating the percentage of hectares that are grouped in each of the categories.

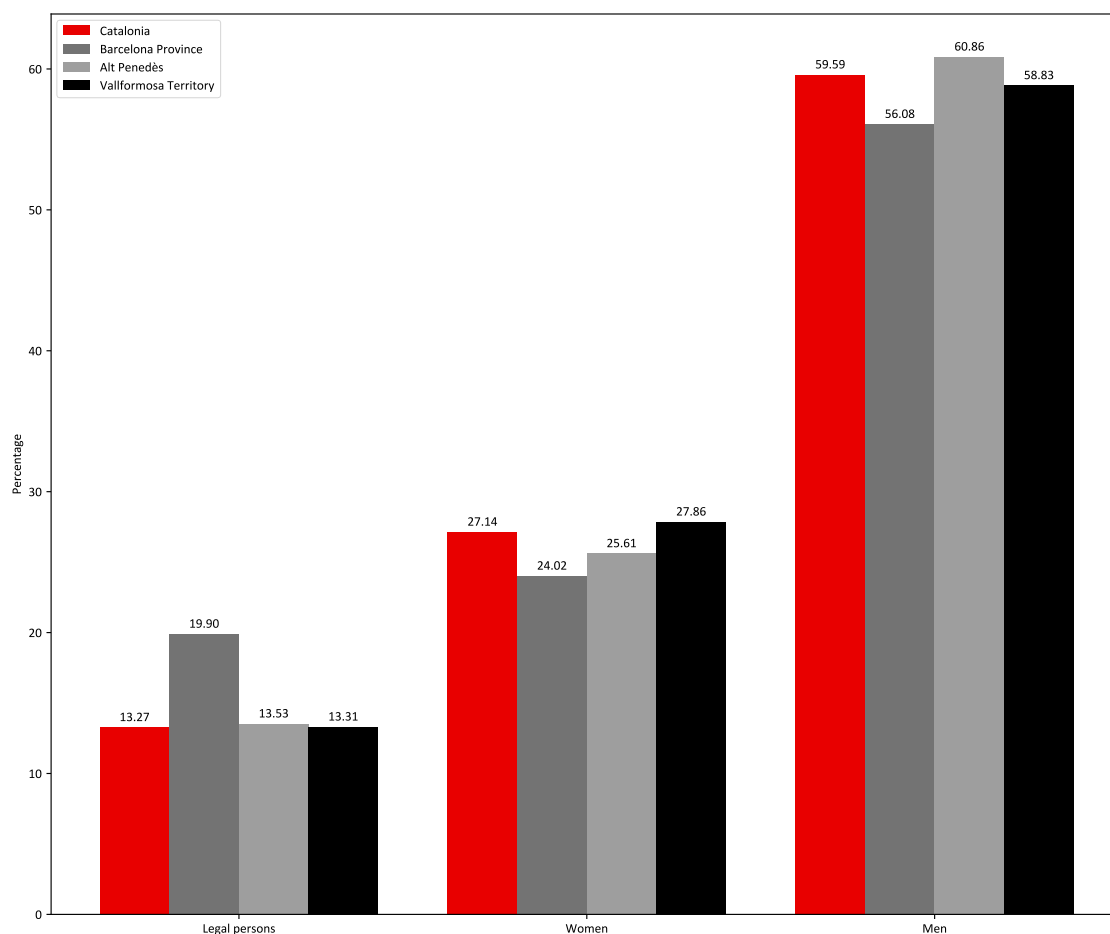


Figure 11. Percentage of plots, whose ownership corresponds to legal persons and natural persons (male or female) resident in the territory, the region of Alt Penedès, the province of Barcelona and Catalonia. For each geographic area, each bar represents the percentage of plots that fall in that ownership.

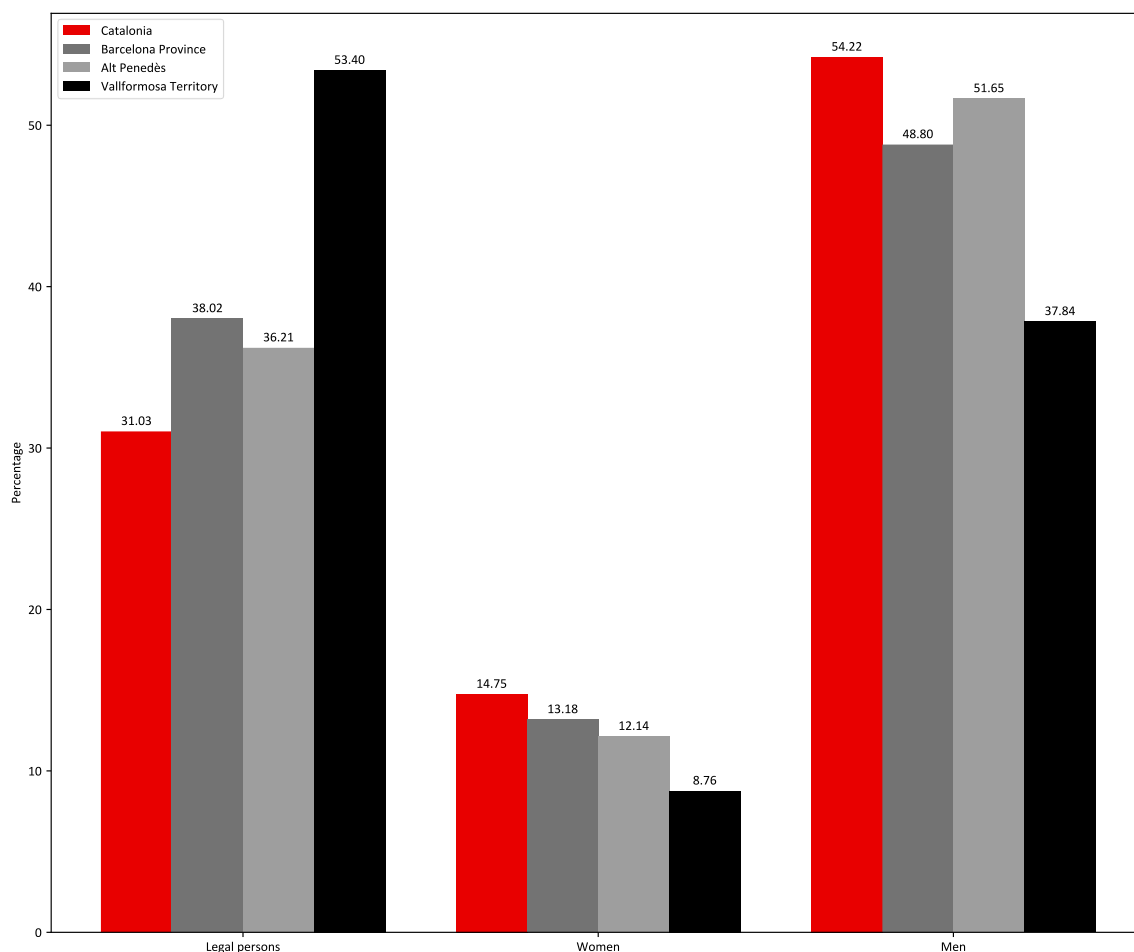


Figure 12. Percentage of the total hectares dedicated to agricultural holdings owned by a legal person, male resident or female resident in the Vallformosa Territory, the Alt Penedès region, the province of Barcelona and Catalonia. For each geographic area, each bar represents the percentage of plots that fall in that ownership.

The results in Figure 12 show two important points. As we have stated, the **mentioned gender inequality is higher when we consider the size of the plots**. In the case of the **Vallformosa Territory**, although the ratio was 2 to 1 for the number of holdings, when we consider **their size**, the ratio is **4.5 to 1**.

- 1) This gender gap in terms of land ownership is not exclusive to the Vallformosa Territory, but is present in all the territorial groupings analysed. In any case, **the difference is greater in the Vallformosa Territory**, given that the percentage of land associated with agricultural holdings owned by women is significantly lower than that of the rest of the territorial groups considered. Obviously, this data also shows us that the proportion of men's property size with respect to women's property size is much higher than that of the rest of the analysed geographical groupings.

- 2) The **number of hectares owned by a legal entity is significantly higher in the case of the Vallformosa Territory than in the rest of the geographical groupings analysed, being more than twenty points higher than the average for Catalonia.** Considering the results of the previous study<sup>13</sup>, which we developed within the framework of the Vallformosa Foundation Chair of Strategic Territorial Transformation for Community Welfare at UPF-BSM, and in which it was seen that the mass of workers in the primary sector was seven times higher in the Vallformosa Territory compared to the rest of the province of Barcelona, **we can attribute this difference to greater professionalization in the territory, which highlights its importance within the economic fabric.**

Given that legal entities fall outside the analysis that we can perform concerning gender and age of owners, and that we have no arguments to consider that the distribution of sex and age of the owners of the entities grouped as legal entities contain substantial differences to the distribution that we have for natural persons, we will then specify our analyses by sex and age, taking into account exclusively the data for which we have such information; that is, we will focus our analysis on the holdings associated with natural persons, and we will extrapolate this analysis to the entire territory.

First, then, we will analyse the distribution of land according to the age of the owners, located in the Vallformosa Territory, in the Alt Penedès region and in Catalonia as a whole. Figure 13 shows, for each age group (up to 20 years old, from 21 to 30 years, from 31 to 40 years, from 41 to 50 years, from 51 to 60 years, from 61 to 70 years and over 70 years old), the percentage of the total extent assigned to owners in the indicated age range. The age groups were created considering age as the difference between the year 2023 and the year of birth indicated in the database.

As can be seen in Figure 13, the differences between the territories are not very significant, except for the data that **shows a greater concentration of ownership in the segment between 50 and 60 years old in the Vallformosa Territory compared to Catalonia.** This difference stems mainly from the fact that there is less ownership in the group of 20 to 30 years old and in the group of more than 70 years old.

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<sup>13</sup> CÓPPULO, PEREIRA, 2023.

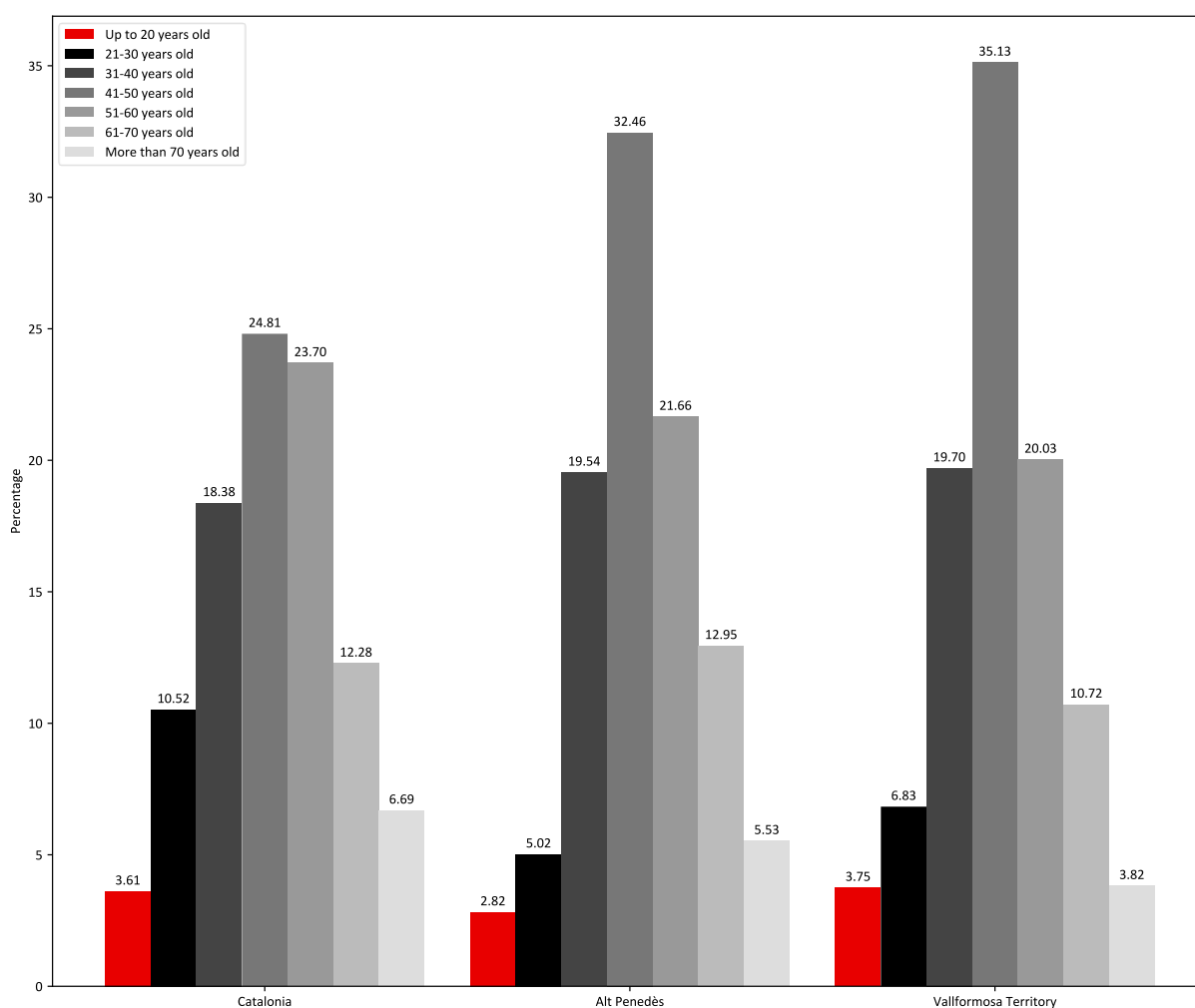


Figure 13. Percentage of the total hectares dedicated to agricultural holdings of owners in the Vallformosa Territory, the Alt Penedès region, the province of Barcelona and Catalonia, grouped by ages (up to 20 years old, from 21 to 30 years, from 31 to 40 years, from 41 to 50 years, from 51 to 60 years, from 61 to 70 years and more than 70 years old). For each geographical area, each bar represents the percentage of the total hectares of holdings with ownership attributed to natural persons, with the age of the owner within the indicated age range.

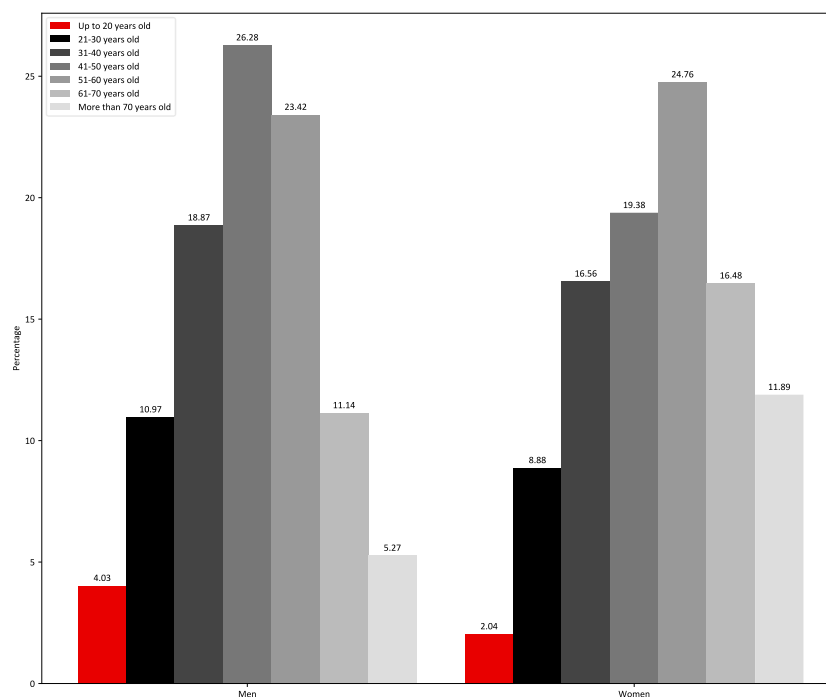


Figure 14. Percentage of the total hectares dedicated to agricultural holdings in Catalonia grouped by sex of the owner, male or female, and age group (up to 20 years old, from 21 to 30 years, from 31 to 40 years, from 41 to 50 years, from 51 to 60 years, from 61 to 70 years and more than 70 years old). For each sex, each bar represents the percentage of the total hectares of holdings with ownership attributed to natural persons.

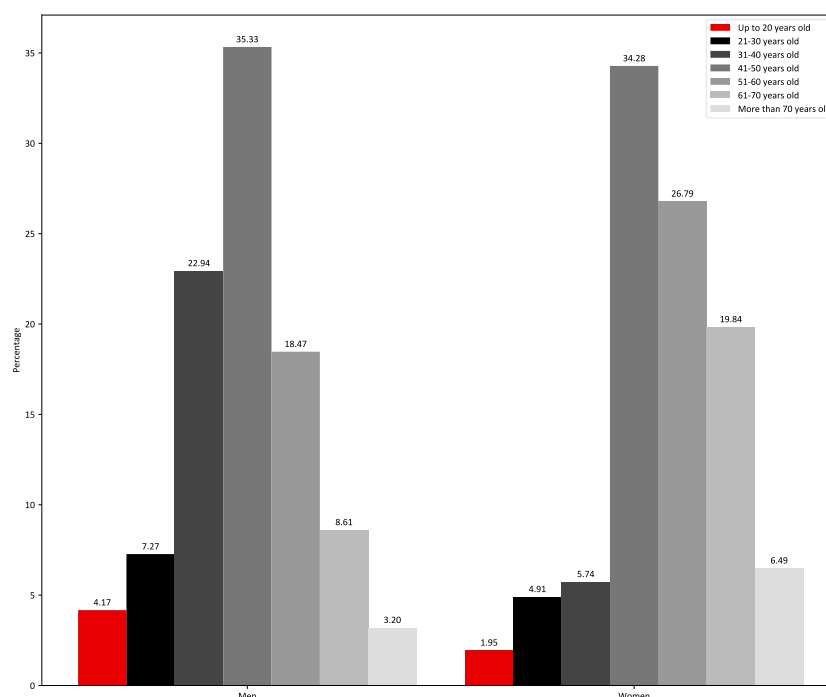


Figure 15. Percentage of the total hectares dedicated to agricultural holdings of owners in the Vallformosa Territory grouped by sex of the owner, male or female, and age group (up to 20 years old, from 21 to 30 years, from 31 to 40 years, from 41 to 50 years, from 51 to 60 years, from 61 to 70 years and more than 70 years old). For each sex, each bar represents the percentage of the total hectares of holdings with ownership attributed to natural persons.

If we now analyse the distribution by age and sex for Catalonia and for the Vallformosa Territory (see Figure 14 and Figure 15 respectively), we find that the distribution of ownership by age indicates that **the owners who are male are in general younger than those who are female**. When comparing the age distribution of male owners between Catalonia, Figure 14, and the Vallformosa Territory, Figure 15, we see that, in general, **the owners in the Vallformosa Territory aggregate to a greater extent within the groups of 31 to 40 years old and 41 to 50 years old, with fewer young people or older people**. The same trend can be seen in the case of women, **but due to the greater age, on average, of female owners, the central groups of 41 to 50 and 51 to 60 years old are those that show greater proportions in the Vallformosa Territory, compared to the whole of Catalonia**.

Given that the groups associated with the people with the greatest presence in the Vallformosa Territory are those with a more appropriate age to work the land, the values found once again highlight the importance and **significant role of the primary sector in the territory**. In addition, **significant differences in the distribution of ownership between men and women, as well as in its level of gender distribution, show the need to consider gender equity issues within the territory**.

## 7.5. Analysis of the number of owners

The data provided above shows different facets of the same reality. From that data, we can see differences between the division of land from a point of view of use for crops or their ownership. In this section, we analyse this data and compare it with the information provided by the land registry.

The information provided consists of two pieces of data for each municipality of the Vallformosa Territory:

- (1) The number of rural plots located in that municipality and
- (2) The number of distinct owners of said plots for each municipality.

Note the differences between the information collected by the land registry and that shown above. First, the information on agricultural holdings indicates properties associated with residents in the municipalities, which may be outside the geographical area of the Vallformosa Territory, while the land registry information provides information on plots in the Vallformosa Territory whose owners may be outside that area.

Second, agricultural holding or crop map information refers to areas currently used for cultivation and/or breeding of animals, whereas ownership of a property does not necessarily imply that it is being exploited.

Third, the concept of rural plot does not imply an exclusive use for the realization of economic activities and may have other linked concepts such as a residential use.

Despite these differences, the land registry information allows us to identify patterns and associations in terms of the average number of differentiated plots that an owner may have in an area, which could give an indicator of the fragmentation of properties in the territory. The following table shows the information provided by the land registry.

Municipality	Number of plots	Number of owners
<b>Les Cabanyes</b>	80	38
<b>Font-rubí</b>	2170	647
<b>Pacs del Penedès</b>	560	208
<b>Sant Martí Sarroca</b>	3396	767
<b>Vilobí del Penedès</b>	832	326
<b>Vilafranca del Penedès</b>	1898	790

Table I. Municipalities, plots and owners. Source: Electronic Office of the Land Registry.

The table shows a large number of agricultural plots in relatively small areas. This phenomenon is most evident in municipalities such as Font-rubí or Sant Martí Sarroca, municipalities with land areas of 3703 and 3531 hectares respectively and with 2170 and 3396 plots respectively, indicating a very small average size per plot.



From the same table it can also be seen that the average number of plots per owner ranges from 2.1 plots in the case of Les Cabanyes to 4.43 in the case of Sant Martí Sarroca, with an average in all the municipalities of **3.22 plots per owner**.

It is important to note that the owners are counted individually by municipality and, since they are neighbouring towns, it is more than likely that the same owner has plots in different municipalities and is counted as a different owner in each of them.

This last possibility makes us give an even greater significance to the segmentation of the property and to its division into small plots, which hinder their efficient exploitation.

Another factor to take into account is the differences between the data available in the land registry and the plots registered in the crop database of the Generalitat de Catalunya. The following table shows these differences by indicating the number of plots recorded in the register and in the crop database.

<b>Municipality</b>	<b>Number of plots</b>	<b>Number of crops</b>
<b>Les Cabanyes</b>	80	86
<b>Font-rubí</b>	2170	2153
<b>Pacs del Penedès</b>	560	384
<b>Sant Martí Sarroca</b>	3396	2436
<b>Vilobí del Penedès</b>	832	620
<b>Vilafranca del Penedès</b>	1898	879

Table II. Municipalities, plots and crops. Source: Prepared by the authors from the Electronic Office of the Land Registry and the Crop Database of the Generalitat.

The differences between the two sources may be due to different factors. Among them we wish to highlight the following:

- 1) The land registry registers plots for rural use, which would include rural housing;
- 2) The land registry registers rural plots not necessarily currently used for cultivation and;
- 3) The same plot in the land registry may have been divided into parts and have different crops on it according to the crop database.

Since there are more plots in the land registry than in the crop database, we believe that the first two reasons are the ones that best explain these differences. Specifically, we are inclined to think that the second (unused plots) better justifies the observed differences, also explaining the phenomenon of a reduction in the cultivated percentage observed and discussed in Section 7.1 of this document. These differences would also increase the need to reorganize and/or modify some of the current practices associated with cultivation, providing a competitive advantage to the agricultural sector.

## 8. Conclusions

- 1) The extent intended for crops in the municipalities of the Vallformosa Territory is significantly higher than that of the Alt Penedès region (between fifteen and thirty-nine points higher) and even more so in relation to any other of the provinces of Catalonia.
- 2) By area, the Vallformosa Territory has a greater amount of agriculture in relation to the rest of Catalonia. Nevertheless,
- 3) There is a clear trend towards a significant reduction in the area under cultivation between 1989 and 2020 in the Vallformosa Territory, which corresponds to a decrease in agricultural activities and a decrease in crops other than vines.
- 4) Catalonia has a diverse agriculture in terms of crops grown, with a prevalence of cereals.
- 5) In the Vallformosa Territory, the weighting of vines in its crops makes up more than 20 times the number of hectares than the second crop, cereals. Therefore, we can state that...
- 6) Vines constitute a monoculture in the Vallformosa Territory with a tendency to grow proportionally due to the gradual disappearance of other complementary crops.
- 7) The monoculture in the Vallformosa Territory is significantly greater than in the other geographical areas of Catalonia, even when the main crop in them is also vines.
- 8) There are no vineyard plots that coexist with another crop in the Vallformosa Territory.
- 9) Some 50% of plots in the Vallformosa territory have a size of no more than 0.5 hectares, but the sum of their sizes does not represent even 10% of the total cultivated territory (7.02% exactly).
- 10) This phenomenon is common both in the Vallformosa Territory and in the whole of Catalonia.
- 11) Larger plots (of 5 ha. or more) represent a significant part of the total cultivated areas. With slight differences between the Vallformosa and Catalonia territories, approximately 4% of the plots represent 35% of the total extent of the crops.
- 12) The level of fragmentation of the territory in terms of the extent of the plots represents an endemic problem throughout Catalonia and is not only present in the Vallformosa Territory.
- 13) There is a great inequality in the ownership of crops according to sex. Specifically,
- 14) Twice as many men own plots as women, both in the Vallformosa Territory, and in the region of Alt Penedès, the province of Barcelona and Catalonia as a whole.
- 15) Gender inequality is higher when we consider the extent of cultivated plots.
- 16) In the Vallformosa Territory, the extent of cultivated plots according to the sex of the owners is 4.5 (men) to 1 (women).
- 17) The ownership of crops by legal entities is twenty points higher in the Vallformosa Territory in relation to the average of Catalonia.

- 18) The weight of workers in the primary sector is seven times more in the Vallformosa Territory than in the rest of the province of Barcelona (a conclusion that we already saw in our previous study).
- 19) There is a greater concentration of ownership in the segment of people who are between 50 and 60 years old in the Vallformosa Territory than globally throughout Catalonia.
- 20) **Both in the Vallformosa Territory and throughout Catalonia, the men who own cultivated plots are somewhat younger than the women.**

Finally, therefore, we conclude in a generic way that our working hypothesis is clearly demonstrated:

- **In terms of agriculture, the Vallformosa Territory when compared to the other agricultural regions of Catalonia shows significant differences, as is the case when comparing Alt Penedès and Catalonia, and which may lead to structural difficulties and development opportunities in the near future.**

This fact is added to those that we already concluded in our previous study:

- **The territory has grown significantly attracting people that resided in other municipalities of the province of Barcelona.**
- **The per capita income of the Vallformosa Territory is significantly lower than that of the province of Barcelona.**

This leads us to the next...

## GENERAL CONCLUSION

The Vallformosa Territory has specific characteristics, which may cause structural problems in the near future which in turn may become opportunities for development.

The specificities of the territory, therefore, allow it to undertake a strategic transformation, in terms of training and knowledge, as well as economic, social and environmental sustainability, free of carbon footprint; so that it constitutes a model which can be reproduced, based on new forms of more equitable relations, aimed at prosperity, as well as personal and community well-being.

## 9. Discussion and limitations

In our previous study we analysed in great detail both the characteristics of the population of the Vallformosa Territory and its demographic evolution, and saw that agricultural activity was more than seven times that which occurs in relation to Vilafranca, the province of Barcelona and throughout Catalonia. We have now studied the type of crops and their ownership, relating the data again to their environment, with regards to the region, the province of Barcelona and all Catalonia.

Today we know that monoculture vineyards are related to a lower per capita income of the inhabitants of the area and that it does not augur a very promising future. Therefore, a comprehensive and sustainable transformation project (by the Vallformosa Foundation) can be designed from all points of view and areas: educational, cultural, economic, social, environmental and carbon footprint-free.

Now, to continue with more information and knowledge, we need to know what these people think about their lives, their level of economic and emotional well-being, their work, how they value their territory, what feelings of belonging leads them to stay in it, what they think about their roots and what expectations they have and would want for their children and for the future in the Vallformosa area.

If the comprehensive transformation of the Vallformosa Territory starts from a change in the relationships between people, farmers with land and with property, it is to them that we believe we must listen. Consequently, we are already planning our third study, based on a quantitative survey among the suppliers in vineyards in Vallformosa and several qualitative interviews with complementary professional profiles, which we will title: **“People and the Vallformosa Territory. Perception of value(s) in the present and the future.”** We will thus advance the generation and transfer of knowledge, which is our *raison d'être*.

## 10. Acknowledgements

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## **Annex A: List of figures and tables**

Figure 1. Percentage of land of the geographical unit used as cultivated territory in the Alt Penedès region, municipalities of the Vallformosa Territory and the provinces of Catalonia.

Figure 2. Evolution of the extent of the geographical units of cultivated territory, 2017 - 2022.

Figure 3. Percentage of territory destined for crops in the municipalities of the Vallformosa Territory in 1989 and 2020.

Figure 4. Distribution of different crops in Catalonia.

Figure 5. Distribution of different crops in the municipalities of the Vallformosa Territory.

Figure 6. Aggregate distribution of majority crops in the Vallformosa Territory and the ten regions with the greatest surface dedicated to agriculture in percentage terms.

Figure 7. Aggregate distribution of majority crops in the Vallformosa Territory and the regions where vineyards are the predominant crop.

Figure 8. Percentage of the cultivated territory destined to vines in the Vallformosa Territory in the years 1989 and 2020.

Figure 9. Percentage of the number of plots according to their size in the Vallformosa Territory, the province of Barcelona and in Catalonia as a whole.

Figure 10. Percentage of the cultivated territory associated with plots grouped according to their size in the Vallformosa Territory, province of Barcelona and in Catalonia as a whole.

Figure 11. Percentage of plots, whose ownership corresponds to legal and natural persons (male or female) resident in the territory, the region of Alt Penedès, the province of Barcelona and Catalonia.

Figure 12. Percentage of the total hectares dedicated to agricultural holdings owned by a legal person, male resident or female resident in the Vallformosa Territory, the Alt Penedès region, the province of Barcelona and Catalonia.

Figure 13. Percentage of the total hectares dedicated to agricultural holdings of owners in the Vallformosa Territory, the Alt Penedès region, the province of Barcelona and Catalonia, grouped by ages (up to 20 years old, 21-30, 31-40, 41 - 50, 51 - 60, 61-70 and more than 70 years old).

Figure 14. Percentage of the total hectares dedicated to agricultural holdings in Catalonia grouped by sex of the owner, male or female, and age group (up to 20 years old, from 21 to 30 years, from 31 to 40 years, from 41 to 50 years, from 51 to 60 years, from 61 to 70 years and more than 70 years old).

Figure 15. Percentage of the total hectares dedicated to agricultural holdings of owners in the Vallformosa Territory grouped by sex of the owner, male or female, and age group (up to 20 years old, from 21 to 30 years, from 31 to 40 years, from 41 to 50 years, from 51 to 60 years, from 61 to 70 years and more than 70 years old).

Table I. Municipalities, plots and owners. Source: Electronic Office of the Land Registry.

Table II. Table II. Municipalities, plots and crops. Source: Prepared by the authors from the Electronic Office of the Land Registry and the Crop Database of the Generalitat.

