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UAB Universitat Autònoma
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 **Facultat**
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Faculty of Economics and Business

TITLE: GreenSeed – Sustainable Business Plan

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EXECUTIVE SUMMARY

Nowadays, the world is in a situation of alert to fight climate change, and the problems that surround it, such as drought and the use of irresponsible environmental activities by the population. GreenSeed is born to address and contribute to the solution of these problems. We are a company dedicated to the cultivation and commercialization of vegetable food using the hydroponic system, an innovative technology that stands out for consuming very little water, not depending on the climate, optimizing space and reducing emissions.

GreenSeed is a new limited liability company, strategically located in the Bages region, specifically in Rajadell. The initial team consists of a director, three operators and one agronomist engineer. Our mission is to provide healthy food options, taking care of each stage of the value chain and encouraging a conscious lifestyle that contributes to the well-being of the planet through responsible practices.

After analyzing the market, we have observed that it is a sector with constant growth, where the demand for vegetable products in Catalonia is high, exceeding the current production. In addition, more people are willing to pay a little extra for fresh and sustainable products. The hydroponics market is expected to grow significantly in the coming years.

Regarding competition, we have identified that it is low. GreenSeed differentiates itself by offering two different type products grown with this system, while the competition offers only one type. This advantage places us in a favorable competitive position in the market.

We will use the Nutrient Film Technique to produce lettuces and the Drip System to produce tomatoes, both characterized by its flavor and nutritional value. We offer three types of lettuces: Trocadero, Batavia and Oak Leaf, and three types of tomatoes: Round, Cherry and San Marzano. GreenSeed is committed to offering the highest quality products, promoting a culture of responsibility and sustainability. The prices for each product will be: 1,01€ per unit of Trocadero and Batavia, 1,05€ per unit of Oak Leaf, 2,48€ per kilo of Cherry, 2,13€ per kilo of Round and 2,23€ per kilo of San Marzano.

Our main clients are prestigious distributors, such as Condis, Esclat, Carrefour and Amattler Origen. We have also decided to expand GreenSeed's presence in specialty grocery stores and premium restaurants. Our potential customer is a person living in Catalonia, between 28 and 50 years old and with a medium-high economic level.

Finally, we have estimated that the company will generate an annual revenue of 825.244,44€, assuming annual sales of 85% of the production, with contingency plans for lower sales rates. Moreover, to start the activity, we estimate an initial investment of 329.602,20€

Keywords: Hydroponics, sustainability, technology, lettuce, tomato, products, GreenSeed, quality, local

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List of abbreviations

CapEx→ Capital Expenditure costs

NFT→ Nutrient Film Technique

OpEx→ Operating Expenses costs

1. COMPANY PROFILE

1.1 Business Overview

GreenSeed offers lettuces and tomatoes characterized by their quality and flavor. These products are grown in an innovative technology, that makes our products maintain their own taste and freshness, while promoting sustainability. We are committed at ensuring safety controls throughout the whole production processes as well as offering excellence and achieving customer satisfaction.

1.2 Company History

My ambition for this project arose one day when I accompanied my grandfather to the fruit store at the village. I was shocked to see that they offered fresh lettuce with their live roots, so we decided to buy them to try the product. I was amazed by the intense flavor and quality, and the result was excellent. I had never seen other fruit stores that offer a product like this one, so I became interested in it. That is when I learned about the concept of hydroponic cultivation. After researching, I found that the supply of companies producing this type of lettuce was scarce, especially in Catalonia. So, when I was offered the opportunity to create a sustainable business plan, I believed it was a great opportunity to develop this business idea.

1.3 Mission, Vision, and Values

Mission:

GreenSeed is committed to growing plant-based foods using sustainable methods and advanced technology that allows to achieve the highest quality in the products. Our mission is to provide healthy and local food options, taking care of every stage of our value chain, from the harvest to the consumer's table. We aim to promote a conscious lifestyle and contribute to the well-being of the planet through responsible practices.

Vision:

To be leaders in the production of vegetable foods in Catalonia, distinguished by their quality and positive impact. We envision a future in which our brand is a synonym of freshness, sustainability and environmental commitment. We aspire to create a network of integrated suppliers through the region. We seek to diversify and expand our product line, while achieving environmental responsibility and customer satisfaction.

Values:

GreenSeed's values are:

1. Transparency: we maintain an open and honest communication about the creation of our product.
2. Quality: we are committed to providing high quality products, ensuring customer satisfaction.
3. Sustainability: we prioritize sustainable practices through our value chain, minimizing environmental impact.
4. Innovation: we create our products using hydroponics, an innovative technology.
5. Safety: we implement quality controls to guarantee the health of our products and ensure the well-being of our consumers.

1.4 Legal Structure

The company is developed by a single individualism which implies not being able to opt for certain legal forms that require at least two physical partners.

Among the remaining structures, the company chooses a legal form where the partner's liability is limited to the contributed capital. So, the selected legal form to establish the company GreenSeed is a **Limited Liability Company (SL)**. The reason for choosing this legal form is the advantages it offers compared to other forms accessible to the company.

This legal form is aimed at entrepreneurs and one of its advantages is the rapid constitution of the company due to the greater speeding up of the procedures since there is the option of carrying some of them electronically.

Another advantage favoring our decision is the minimum share capital to be contributed, which is 3.000€, an amount much lower than the required by the autonomous society. It is worth mentioning that there is not a maximum of share capital contributed.

Other advantages to highlight are that the corporate name may be subjective, meaning that it is not necessary that the name of the company coincides with the name of one of the partners. Also, its constitution and management are simplified, tending to have an easier time accessing bank financing. Finally, those limited companies whose profits exceed 40.000€ per year have a lower withholding tax.

1.5 Management

As for our management team, our priority is to ensure operational efficiency and prevent unnecessary personnel expenses, therefore establishing a compact yet effective work team is crucial at this stage of the project. Our work team will consist of an operational staff, including three agricultural workers, and a technical manager, ideally an agronomist or chemical engineer whose function will be to coordinate the team and control the whole supply chain. Additionally, we will have an operations and sales manager responsible for coordinating sales activities.

We aim to prevent an overload of personnel expenses, which we believe is not sustainable at this stage, therefore we have decided to outsource our administration and accounting services, as well as our transportation needs. This decision allows us to allocate resources more efficiently while maintaining financial stability.

In the Operations description section (4.4), there is a more detailed description of the desired profiles, as well as the functions and responsibilities of each team member.

1.6 Location

Having a strategic location is crucial for the success of our project. We aim to find a location strategically positioned in an agricultural environment, accessible to target markets in Catalonia while minimizing installation costs.

The chosen infrastructure will be situated in the Municipal term of Rajadell, with a zip code: 08256 in Barcelona. This location meets our requirements due to its easy access from the C-25 highway, ensuring excellent connectivity with the market and in short travel times. The

infrastructure has an area of 1,980 m², measuring 147 meters in length and 13.5 meters in width. The roof is constructed of sandwich panel type, allowing for the installation of solar panels.

We selected this location for its cost advantage compared to other areas in Catalonia and its accessibility enables us to reach target markets more rapid and efficiently. An advantage of this industrial state is that it has fully operational energy and water suppliers, thereby saving costs. Only the energy capacity and the installation need to be adapted to suit the requirements of our new activity.

In the Operations description section (4.1), provides a detailed description of the location, including images showing the infrastructure.

1.7 Sustainable Objectives

The 17 Sustainable Development Goals are a plan to achieve a better and more suitable future. GreenSeed fulfills these 17 goals, although we will highlight the ones that represent us the most.

We believe that there are two primary goals which we define as the most important since they best represent the company. These are: Sustainable Cities And Communities and Responsible Consumption and Production.



11. Sustainable cities and communities: together with our stakeholders, we are creating a sustainable community where we aim to promote community participation in local projects and develop sustainability initiatives.

12. Responsible consumption and production: Our business intervenes in a responsible way in the consumption and production of our products. All our organic waste will be recycled for the production of green energy, destined for biogas generation plants. In addition, one of our goals as a company is to encourage responsible food consumption among our customers.

There are also three other goals with which we feel represented and which we also consider important, although not to the magnitude as the previous ones. These are: Good Health and Well-Being, Affordable And Clean Energy and Industry, Innovation and Infrastructure.



3. Good health and well-being: With the range of our products we offer, we are committed to a healthier and balanced diet that minimizes the amount of animal protein. Additionally, our production is characterized by the absence of the use of chemical products.

7. Affordable and clean energy: Thanks to the implementation of photovoltaic solar energy systems in our facilities, we aim to maximize energy self-consumption in production processes. All externally required energy must meet renewable requirements, including photovoltaic solar and thermal (green gas from biogas plants).

9. Industry, innovation and infrastructure: Our company implements an innovative technology in the agriculture sector, allowing us to optimize our production processes to the maximum. With our business model, we reuse obsolete facilities to turn them into sustainable production infrastructure. In addition, we will have strategic partnerships with other companies that help us maximize sustainability.

Finally, we consider it important to mention the following goals as they still represent the company but in a more indirect way.



*Figure 1: Sustainable Development Goals
Source: United Nations*

1. No Poverty: In an increasingly urbanized country, we aim to develop a business model that promotes employment and helps create wealth in rural areas.

2. Zero Hunger: We aim to provide solutions to end the global problem of food scarcity among the population. We attempt to do so sustainably, while producing high-quality food.

4. Quality Education: We achieve the fourth sustainability goal by raising awareness in society about healthy consumption and organic foods. Additionally, with our innovative

business model, we aim to influence other companies in the sector towards responsible production.

5. Gender equality: In our company, we aim to ensure gender pay equity, create an environment free of discrimination, promote work/family balance policies, and foster equal opportunities regardless of gender. We provide the possibilities to create jobs in local communities and offer professional and economic opportunities in non-urbanized areas.

6. Clean water and Sanitation: We use technology that allows us to implement water efficiency measures. Water recirculation is an important point in our production process. In addition, we are in contact with specialized waste treatment plants that provide us with purified water through certificates, ensuring it is in perfect condition for use.

8. Decent work and economic growth: In our company, we have established policies that ensure fair wages. We aim to promote opportunities for professional growth and development, and we focus on fostering a collaborative and transparent work environment.

13. Climate Action: The main purpose of the company is that all elements of the value chain focus on reducing emissions, and in this way, favor the fight against climate change.

15. Life on Land: In a world with a heavily industrialized macro culture, our model implements practices that preserve the health of the land, preventing its degradation and loss of biodiversity.

As we mentioned earlier, GreenSeed complies with each of the 17 goals, making it a sustainable company.

2. MARKET RESEARCH¹

Before starting the Market Research, it must be clarified that all information has been extracted from different websites and articles cited on the Bibliography (*Section 7*).

Currently, the traditional agricultural sector is under the challenge of several market conditions, including water scarcity, land exploitation, chemical usage and dependency on climatic conditions. On the other hand, the awareness regarding sustainable practices in the industry among the population is also being gradually raised. Additionally, there is a growing demand for local products of better and higher quality. Thus, these factors create opportunities for GreenSeed to offer sustainable and high-quality products.

The purpose of this market research is to assess the market demand, identify potential opportunities, evaluate the competitiveness and analyze both consumers and available products within the market.

¹ Own writing, translation ChatGPT

2.1 Industry Analysis

2.1.1 Introduction to Agricultural Industry

2.1.1.1 Description of Agriculture

The agricultural sector holds significant relevance nowadays.

Agriculture consists in a set of economic activities focused on the cultivation of the land for food production. Its objectives include ensuring food security, increase production and generate employment opportunities.

Conventional agriculture is the farming method that has dominated the food industry for the past decades. This method is based on the use of chemical products, such as fertilizers and pesticides, to manage pests and weeds, with the aim of maximizing crop yield and guarantee and abundant harvest.

2.1.1.2 Benefits and Drawbacks of conventional agriculture

This type of agriculture offers many benefits. One of its most significant ones is its role in enabling the production of large quantities and ensuring food security.

It also plays an important role in increasing the economy's income and thanks to our Mediterranean diet, the products that this method generates, such as vegetables, are very abundant in our country which also enrich citizen's lives with nutritional diversity.

It is important to understand that, despite its role in ensuring food security and meeting food needs, it also has some disadvantages. One of the biggest ones is the negative impact that it has on the environment and human health. The excessive use of chemical products can become a threat to soil and water pollution, affecting water quality.

Another concerning aspect is how the use of these chemical can risk human health. According to *Agricultura Wiki*, this exposure to pesticides can increase the risk of respiratory problems, cancers and neurological disorders.

Additionally, the trend towards larger agricultural corporations and the expansion of industrial farming practices has led to the overexploitation of natural land. According to an article called, *Sustainable Agricultural Practices Adoption*, in order to increase the yield to meet the demand of an expanding population, more land, fertilizers and pesticides are being used. This caused soil degradation, deforestation, the extinction of biodiversity, pollution issues...

Furthermore, it is also related to the disruptions due to the COVID-19. The pandemic caused a supply shortage leading to a general increase in prices, and thus an increase in inflation. According to *Statista*, in 2023, inflation in Spain was recorded at 3.49%.

Lastly, the impact of climate change is reducing crop yields since the lack of water and the warmer temperatures are making it harder for crops to grow.

These concerns raise the need to further explore other more sustainable alternatives in the agricultural sector. Therefore, a new type of agriculture to combat this situation emerged, known as Sustainable Agriculture.

2.1.2 Sustainable Agriculture

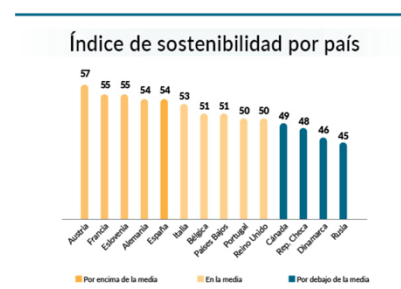
2.1.2.1 What is sustainable agriculture

Sustainable agriculture is a farming approach characterized by its dedication in ensuring safe production for consumption, achieved through the efficient use of resources and the adoption of environmentally friendly practices.

Its key features include minimizing the reliance on machinery and chemical products, and instead, prioritize responsible and efficient use of natural resources to reduce the consumption of water and fertilizers. Furthermore, sustainable agriculture aims to conserve crop biodiversity and natural ecosystems by promoting the establishment of protected areas and the adoption of farming practices that respect local fauna and flora.

Overall, the objective is to reduce human impact on the environment while simultaneously enhance economic and social conditions.

In fact, the *Consumer and User Organization* (OCU) conducted a study in 2022 in which Spain ranked as the fifth country with the highest sustainability index. This implies that the Spanish country has been making significant progress in implementing sustainable practices.



Graph 1: Sustainability Index by Country
Source: Organización de Consumidores y Usuarios (OCU)

2.1.2.2 Consumer's perspective on sustainable agriculture

In 2020, the multinational firm Corteva has put together a report called “*Sustainability in the Food Industry: a Challenge for Everyone*”. This report aims to understand consumers, their needs and the ongoing trends in buying sustainably produced food.

Some conclusions from this study reveal that 72% of the respondents are aware of sustainably produced foods, however, the majority (79.1%) admitted being inadequately informed about these types of practices. Consequently, over 75% expressed desire for more information regarding the processes involved in enabling this type of agriculture.

Regarding purchasing habits, 51% of consumers claim to have consumed more sustainably produced products, while 49% have maintained their usual buying trends. The main reasons stated by the consumers for their purchasing decisions include: 39% because of insufficient labeling, 26% facing difficulty in finding these products, 15% considering price, 20% perceiving no taste improvement, and 2% expressing concerns about food safety.

Furthermore, the results suggest that the lack of awareness regarding these produced foods is partly attributed to barriers such as the accessibility to such products and the limited or confusing information about the processes involved in sustainable agriculture. This is significant as it highlights that over 80% of participants would increase their purchasing habits if sustainability labeling were clearer.

Overall, approximately one-third of respondents express interest in receiving further information on sustainable agricultural practices, indicating consumer willingness to adapt their consumption habits towards a sustainable future.

In conclusion, Corteva's report highlights the growing consumer awareness of sustainably produced foods and the desire for more information and accessible options. This aligns with the findings of the 2021 article "*Consumer perception of sustainable practices in dairy production*" which suggests that consumers are more likely to accept processing technology innovations as long as they preserve the intrinsic qualities of the product. Furthermore, the article "*Consumer acceptance of novel food technologies*" indicates that consumers tend to embrace such innovations to address the challenges related to climate change, population growth and disruptions in the food chain.

Therefore, despite potential gaps, there is a clear trend towards greater consciousness and a willingness to adopt them over time.

In addition, IPSOS, a leading global market research company, conducted a study in collaboration with the chemical company Yara Iberian on consumer behavior regarding the purchase of sustainable foods in 2022. The survey involved a total of 12.000 consumers across various European countries, including 1.000 participants from Spain.

Focusing on the Spanish country, according to the study, 65% of Spaniards consider the climate impact to be an important factor when purchasing food. Furthermore, 53% of Spanish consumers are willing to pay more for food produced from green sources. However, a significant majority of individuals find it challenging to identify climate-friendly foods, with 83% expressing a desire for carbon footprint information to be visible on food labels.

Interestingly, the research also reveals that 29% of Spaniards already make sustainable choices when it comes to their purchasing habits. This indicates a growing awareness and willingness among consumers to prioritize these options.

Overall, the study highlights the increasing importance of sustainability in consumer decision-making processes, suggests a potential shift towards more eco-conscious consumption habits among Spanish consumers and also points out the rising demand for fresh and healthy foods among environmentally conscious consumers.

At the end, sustainable agriculture has emerged as a way to provide an efficient utilization of natural resources and the need to ensure food security. As seen, there is a slow but growing concern for the negative impacts on the environment, which is leading to a shift in consumer preferences demanding more environmentally friendly farming practices. In this context, hydroponics emerges as an innovative and efficient technology with the capacity to provide solutions for these environmental challenges.

2.1.3 Hydroponics in sustainable agriculture

2.1.3.1 Description, advantages and disadvantages of hydroponics

“It is a cultivation technique that allows the growth and development of plants without soil. A set of nutritional salts dissolved in water make up the solution through which plants obtain everything necessary for their normal growth and development.” (‘El INTA fomenta la hidroponía como alternativa para producir verduras y hortalizas’, Riesgos AQP.)

Hydroponics plays a fundamental role since it emerges as a solution to combat climate change, environmental deterioration and the overexploitation of the soil. It also enables a more rational and efficient use of water, which is crucial due to the water scarcity we currently face. This way of cultivation has been a method proving to be more profitable and easier to control, therefore serving as a tool to fight hunger and enhance food security.

The research firm, Hydroponic Systems International, has highlighted some reasons why the hydroponic market is increasingly profitable. Firstly, certain hydroponic techniques allow the use of more growing areas, resulting in profitability increases by 50%. Moreover, hydroponic farming allows cultivation at any time of the year due to its independence in soil or environmental constraints, thus providing a consistent production regardless of seasonal variations.

Furthermore, hydroponics offers a significant water savings, with an estimated reduction of around 80% compared to traditional methods. This saving contributes to sustainability and also implies a reduction in operating costs. Additionally, the adoption of the hydroponic system leads to a lower use of agrochemicals and disinfection products, increasing cost-efficiency and sustainability.

Hydroponics also opens new possibilities of cultivation by enabling growth of certain vegetables in unsuitable locations and the proximity of this type of farms to urban areas reduces the carbon footprint associated with transportation, thus reducing environmental impacts and lowering associated costs.

Lastly, another important benefit of this innovative technique is the fact that the incidence of diseases is significantly lower compared to the soil-based farming methods. This reduces the risk of crop loss and minimizes the need for pest control measures, contributing to a high profitability.

Although the hydroponic system offers many advantages, there are also some factors to take into account. Firstly, the fact that the initial investment is high. Although there are some costs that can be minimized, such as the possibility of using the technology in unused or old warehouses, its installation and technology implies higher costs than the traditional methods. Also, it requires constant control and monitoring of the system and it's not suitable for growing all types of plants.

2.1.3.2 Hydroponic techniques

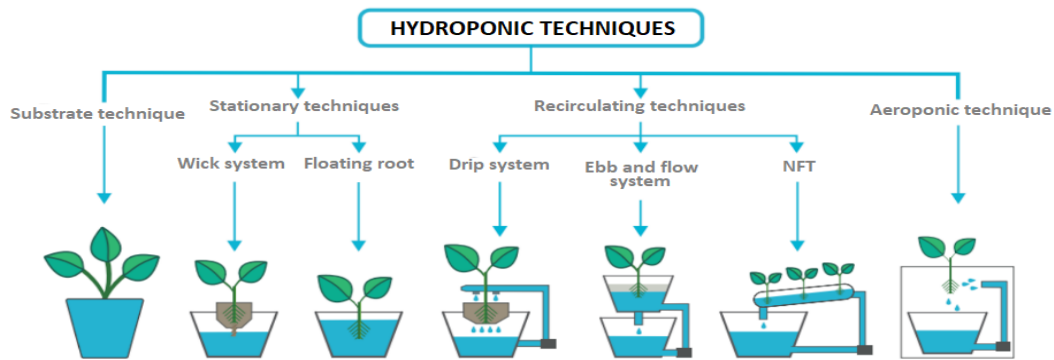


Figure 2: Hydroponic Techniques
Source: Instituto Mexicano de Tecnología de Agua

1. Substrate hydroponic technique: is a system where the root zone is physically supported by media. Uses a substrate of organic, such as peat or rice hulls, or inorganic, such as sand or gravel, origin as means of support for the plants that allows the expansion of the bulb, tuber or root.

Advantages:

- Has the lowest cost
- It allows for a good root oxygenation if the substrate is of quality
- Heavier crops that require staking can be produced.

Disadvantages:

- Prior disinfection of the substrate and after finishing the crop cycle is required
- Some substrates might have the presence of pathogens
- Requires a greater monitoring and washing than other techniques

2. Stationary techniques

- a. Wick system: is a system where the plants are supported in baskets filled with an inert substrate, such as coconut fiber, which receives the nutrient solution from the tank through a wick.

Advantages:

- It is easy to manage
- Saves water
- Low initial investment compared to other techniques

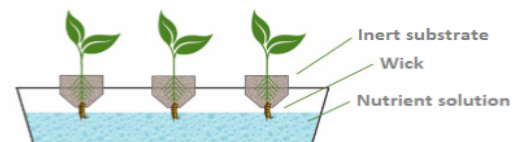


Figure 3: Wick technique
Source: Instituto Mexicano de Tecnología de Agua

Disadvantages:

- There might be fungal proliferation on the wick
- Few plant species can be produced
- Not practical for large-scale operations

- b. Floating root technique: Opaque pools are used with a styrofoam sheet floating on top, where plants are placed with roots directly submerged in the nutrient solution. Oxygenation is automated using a blowing pump and a timer to control when air is added.

Advantages:

- Use of recycled water
- Low initial investment

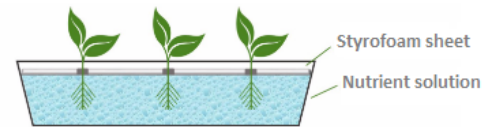


Figure 4: Floating root technique

Source: Instituto Mexicano de Tecnología de Agua

Disadvantages:

- Limited to a cultivation of small and short-cycle plants
- Dependence on a pump aeration
- Not practical for large-scale operations
- Proper maintenance and constant control

3. Recirculating techniques

- a. Drip systems: Plants are placed in bags or cultivation channels filled with inert substrate, into which a tubing is inserted to deliver the nutrient solution through drip irrigation. This technique has two variants: a recovery system where the nutrient solution is recycled or a non-recovery system which requires precise drip cycles to avoid excessive fertilizer loss.

Advantages:

- Simple and low-cost construction
- Variety of plant options
- Versatility for small and large areas
- If irrigation is interrupted due to power failure, the moisture remains

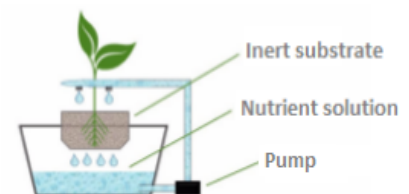


Figure 5: Drip Technique

Source: Instituto Mexicano de Tecnología de Agua

Disadvantages:

- There is a risk of pipe blockages
- The absorption of the plant nutrient is slower, resulting in a lower system performance.
- Requires high-precision cycle timers for solution delivery

- b. Ebb and flow systems: this system employs a pump connected to a timer to temporarily flood the cultivation tray with nutrient solution and then drain it back into the reservoir. The duration between flooding and draining depends on the size and type of crop, greenhouse temperature and the substrate water retention capacity.

Advantages:

- Avoids the waste of water
- Easy to construct
- The system can be automated
- Recycle the nutrient solution

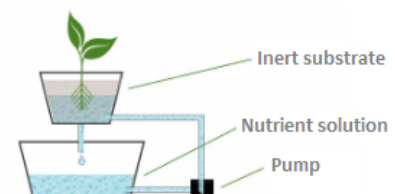


Figure 6: Ebb and Flow Technique

Source: Instituto Mexicano de Tecnología de Agua

Disadvantages:

- Highly vulnerable to pump or timer failures, which can interrupt watering cycles and thus, causing a root drying.
 - Depends on a pump and electricity
 - Requires constant control and monitoring
- c. Nutrient Film Technique system (NFT): Is a recirculating hydroponic system which consists of a series of PVC pipes or cultivation channels with openings where plants are placed in baskets with a supporting medium. Inside the channels, the nutrient solution flows to irrigate the roots, which is pumped from the storage tank. The cultivation channels should not exceed 6 meters in length to avoid oxygen loss and are placed on benches arranged in parallel with a slope so that water runs along the length of the cultivation tray before draining into the reservoir below.

Advantages:

- Easy to build and keep
- Easy adaptation to different spaces
- Reduced need for aeration of the nutrient solution in the reservoir, thanks to constant circulation.
- Significant water saving
- Accelerates the harvest time, as the ease of nutrient solution absorption and minimal energy devoted to it enhances plant development.
- Can be adapted for use in Vertical Farming

Disadvantages:

- Higher investment than other techniques
- It is susceptible to interruptions in the flow of nutrient solution
- Requires a proper pH monitoring because it fluctuates a lot

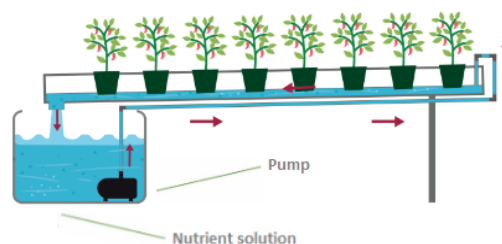


Figure 7: Nutrient Film Technique
Source: Instituto Mexicano de Tecnología de Agua

4. Aeroponic technique: the roots grow suspended in the air within an enclosure that prevents the passage of the light. The nutrient solution is supplied through controlled misting via timers.

Advantages:

- Roots can be exposed to extra oxygen, allowing for a faster growth
- Is a water-efficient system
- Ability to cultivate large quantities of food in small spaces.

Disadvantages:

- High initial investment

- The nutrient concentration of the water must be kept within precise parameters
- The roots dry out quickly if the misting cycles are interrupted
- The sprayers need regular cleaning to prevent them from getting blocked.
- Dependence on electrical power to pump the water

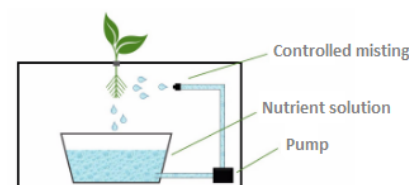


Figure 8: Aeroponic Technique
Source: Instituto Mexicano de Tecnología de Agua

2.1.3.3 Analysis of each technique

We conducted an analysis of each hydroponic system to determine the optimal choice for our project. The analysis assessed different factors, including the initial budget, water usage, productivity, scalability, plant varieties, maintenance expenses, system simplicity and production monitoring capabilities. Each system was evaluated on a scale of Low, Medium or High, with advantages indicated in green, neutral aspects in yellow and disadvantages in red.

	Wick System	Floating Root System	Drip System	Ebb and Flow System	NFT System	Aeroponic System
Initial Budget	Low	Low	Low	Medium	Medium	High
Water utilization	High	Medium	Medium	Medium	Medium	High
Productivity	Medium	Medium	Medium	Medium	High	High
Scalability	Medium	High	Medium	Medium	High	High
Variety of plants	Low	Low	Medium	Medium	Medium	Medium
Maintenance Expenses	Low	Medium	Low	Medium	Medium	High
Simplicity	High	High	High	High	High	Low
Controllability	Medium	High	High	Medium	High	Low

Table 1: Hydroponic techniques Analysis
Source: Own

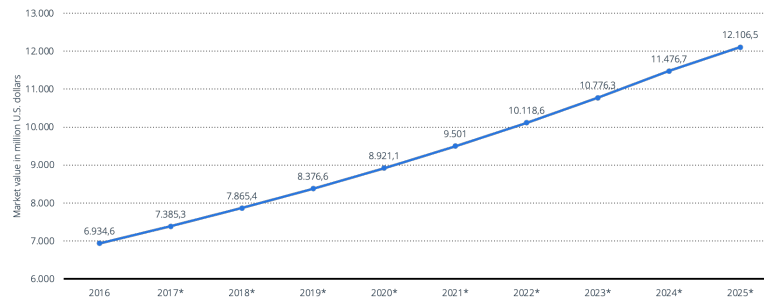
After analyzing each technique and having advice from different technical experts, we have reached the conclusion of using the **Nutrient Film Technique (NFT) System** and the **Drip System**. The choice of the techniques used depends on the product. In our case we will cultivate lettuce and tomatoes, so refer to the product analysis of Section 2.2.4.

Firstly, for the cultivation of lettuce the only techniques we can use are the Wick System, the NFT system and Aeroponic System. We can see that for the Wick system the main disadvantage is its limitation in plant variety and the lower controllability compared to the NFT System. Additionally, we quickly dismissed using the Aeroponic System due to its high initial costs and maintenance expenses, its system complexity and the limited production controllability it offers. Therefore, we conclude that the NFT System is the most suitable technique for lettuce cultivation.

Secondly, for the cultivation of tomatoes, our options include the Ebb and Flow System, the Drip system and Floating Root System. We disregarded the Floating root system due to its limited plant variety compared to the other two techniques. Between the Drip System and the Ebb and Flow system, we opted for the Drip system. This decision was based on its lower initial budget, high controllability and lower maintenance expenses. Additionally, the choice to use this technique was reinforced by recommendations of two experts: Matías Gonzalez, an agricultural engineer specialized in hydroponics, and Samuel Martínez, a technician from Novagric. Both experts endorsed the Drip System as the optimal technique for tomato cultivation.

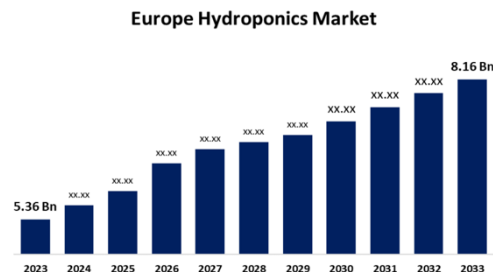
2.1.3.4 Perspectives and future opportunities in the industry

Statista forecasted the market value of hydroponics worldwide from 2016 to 2025, in million US dollars. According to the source, the global hydroponics market was valued at \$6.9 billion in 2016, and it is forecasted to grow to about \$12 billion by 2025.



Graph 2: Forecasted market value of hydroponics worldwide from 2016 to 2025
Source: Statista

In a recent report by the research and consulting firm *Spherical Insights*, the hydroponics market in Europe was valued at \$5.36 billion in 2023, with projections indicating a growth trajectory. From 2023 to 2033, the market is expected to expand at a Compound Annual Growth Rate (CAGR) of 4.29%. The data suggests that by 2033, the market size is forecasted to reach \$8.16 billion.



Graph 3: Europe Hydroponics Market
Source: Spherical Insights

As the article states, the rapid expansion of the hydroponics market in Europe can be attributed to several factors. Firstly, there is a growing demand for the production of fresh products throughout the year, which is expected to drive market growth. Additionally, advances in farming technologies and increased investment in research and development (R&D) are projected to raise the demand for hydroponics in Europe.

Moreover, the increasing consumer preference for organic food products in Europe is accelerating the adoption of hydroponic farming methods.

Lastly, the article also mentions that this rapid expansion is also driven by factors such as the rising urbanization, the challenges posed by limited arable land availability and the growing demand for food security measures.

As a result, this growing demand and the awareness of sustainability by consumers is expected to significantly contribute to the expansion of the hydroponic market in Europe. Is it

important to note that the R&D efforts are leading to the development of more plant varieties suitable for hydroponic cultivation, further enhancing the demand for this method in the European market.

So, the hydroponic market is experiencing rapid expansion and exploring different growth opportunities. In fact, organizations such as the National Aeronautics and Space Administration (NASA) is evaluating the possibility of using this innovative system to provide food to astronauts in space.

According to the company, through the development of controlled environment agriculture (CEA), researchers have found ways to maximize crop yields while minimizing resource consumption such as water and energy. As the world faces the challenge of feeding a growing population, using hydroponics and vertical farming methods offer promising solutions to meet future demands, particularly in urban environments.



*Figure 9: The interior of the Biomass Production Chamber at Kennedy
Source: NASA*

2.2 Market Analysis

Before diving into specific details regarding the whole market analysis, it is crucial to state the important conclusions we have reached.

Firstly, we have decided to offer tomatoes due to their high demand. They are the most consumed vegetable in Catalonia, featuring a fast production cycle and a potential profitability. Additionally, lettuce emerged as a viable option given its status as the one of the most consumed vegetable in the region during all year. Cultivating lettuce hydroponically enhances its quality by adding freshness.

As for the competition, we have seen that it is not particularly intensive. In fact, there is only one hydroponic tomato producer in Catalonia and only a few of lettuce. This provides us with an advantageous position in the market.

Finally, we have also reached the conclusion that the market size is in constant growth. The demand of vegetables in Catalonia is stable and growing and the consumption of these vegetables exceeds the production, indicating a potential supply shortage in the market.

In 2022 the volume of vegetable production in Catalonia was significantly lower than in other autonomous communities, suggesting an area of opportunity to increase local production.

2.2.1 Competitors Analysis

We categorized the competitors that we have analyzed into two groups: local competitors, who operate within Catalonia, and national competitors, who are present in Spain but do not operate specifically in Catalonia.

According to the study mentioned before by the firm *Corteva*, some of the reasons why people are not prompt to change their purchasing habits into more sustainable products is because the information is not well indicated on the products labels, they are not easy to find, the price is one of their main concerns... Moreover, in an interview with Marc, a person in charge of the purchases at the vegetable store L'Egarenca, mentioned that there are no sustainable suppliers within the Vallès region. Therefore, we have analyzed our competitors and evaluated whether they fulfill these gaps on a scale of 0-5, where 5 indicates full fulfillment and 0 indicates no fulfillment.

Our analysis took into account various factors: Firstly, we evaluated the distance of these companies, rating from 1 (very far) to 5 (nearby). Secondly, we considered the distribution of their products, ranging from 1 (very difficult to find) to 5 (easy to find). Thirdly, we assessed the information provided on their packaging about the cultivation of the products, scoring from 1 (very poor) to 5 (plenty of information). Additionally, we examined whether these companies offer similar products to ours, rating 1 (no) to 5 (yes). Finally, we considered the pricing, however, since companies offer varied products such as aromatic plants or sprouts, prices were determined based on their offerings.

	FOR TOMATOES		FOR LETTUCE				
	Local Competitor	National Competitor	Local Competitors			National Competitors	
	Can Puixic	Bonnysa	Groots	Green In Blue	FarmBrots	Néboda	Gota Viva
Distance	5	2	5	5	5	1	2
Distribution	3	3	5	3	1	2	3
Information	1	1	3,5	1	4	4	1
Products	4	2	3	5	1	4	5
Price	1 kg cherry: 8,30€ 1 tomato pink: 2,98€ 1 tomato dark: 3,20€	Grated tomato 1kg: 6,70€	1 bag of aromatic plants: 3,60€	1 lettuce: 2€	1 mix of sprouts of 150g: 12€	1 bag of lettuce: 2,40€	1 lettuce: 1,99€

Table 2: Competitors Analysis
Source: Own

From this data, we can conclude that this is an emerging market where each producer creates their products and offers different prices.

Currently, there are two companies in Spain specialized in hydroponically cultivated tomatoes, however we will only take into account our local competitor: Can Puixic which is located in Barcelona. While they offer 3 types of tomatoes, the level of competition is not intense as they are the only local company offering these products. Also, their products are quite challenging to locate as well as the information provided in their labellings.

For the case of lettuce, among companies offering lettuce similarly to us, Green in Blue and Gota Viva stand out. However, we believe we have a competitive advantage over these two companies. For instance, Green in Blue's packaging lacks detailed information and primarily sells in restaurants and in a limited number of specialty stores. And Gota Viva does not operate in Catalonia, they are located in Cantabria and distribute their products only there. Moreover, their packaging information is very poor and their products are not very easy to find for final consumers.

Therefore, we perceive this situation as an opportunity due to the limited competitors in the tomato segment and the competitive advantage we hold over our lettuce competitors.

2.2.2 Target Market

Our company, dedicated to the production and distribution of agricultural products through hydroponic methods, positions itself as an innovative solution to meet the needs of a growing market committed to sustainability.

While our company operates in the B2B sector, our focus is aimed at the end consumer, whose ideal profile is characterized by those persons with a deep commitment to responsible consumption practices and a concern for environmental impact. We target those individuals who value food quality and prefer fresh products, cultivated locally and sustainably without pesticides or herbicides.

This ideal consumer not only seeks to meet their nutritional needs but is also motivated by a consumption ethic that prioritizes environmental care and support for those practices.

To better understand our clients, we need to identify which market segment we want to purchase our products.

Description of the target audience:

1. Final Consumer (B2C)
 - Demographics:
 - Age: 28-50 years old
 - Gender: both genders with a slightly higher inclination towards women
 - Income: Medium to high income
 - Education: university or higher education
 - Nationality: Residents in Catalonia
 - Occupation: employed individuals with flexible schedules and not a time-consuming job.
 - Geographics:
 - Location: In urban areas of Catalonia, such as Barcelona and its surroundings (50 km radius of Barcelona)
 - Language: Spanish, Catalan and English
 - Climate: Mediterranean climate.
 - Lifestyle:
 - Interests: interested in sustainability, eating healthy, cooking, personal well-being, doing sports...
 - Values: environmental concern, values food quality and transparency in production.

- Leisure activities: enjoy outdoor activities, visit and buy in local markets, participate in community events related to sustainability.
- Shopping: prefer organic, local and sustainable products. Willing to pay an extra amount of money for fresh and high quality food.
- Behavior:
 - Concern for the environment, desire to support sustainable agriculture, search for fresh and healthy food and interest in experimenting in new cultivation methods, such as hydroponics.
 - Conscious consumers who research before buying, seek information on the origin and production methods of food and prefer brands that share and contribute to sustainability values.

2. Business to Business (B2C)

- a. Upscale restaurants
- b. Premium Supermarkets
- c. Specialty Grocery stores

View *Section 3.1.3* to have a detailed information of the characteristics of each wholesaler.

2.2.2.1 Buyer Persona

In order to understand our potential customers better, we have created a buyer persona.

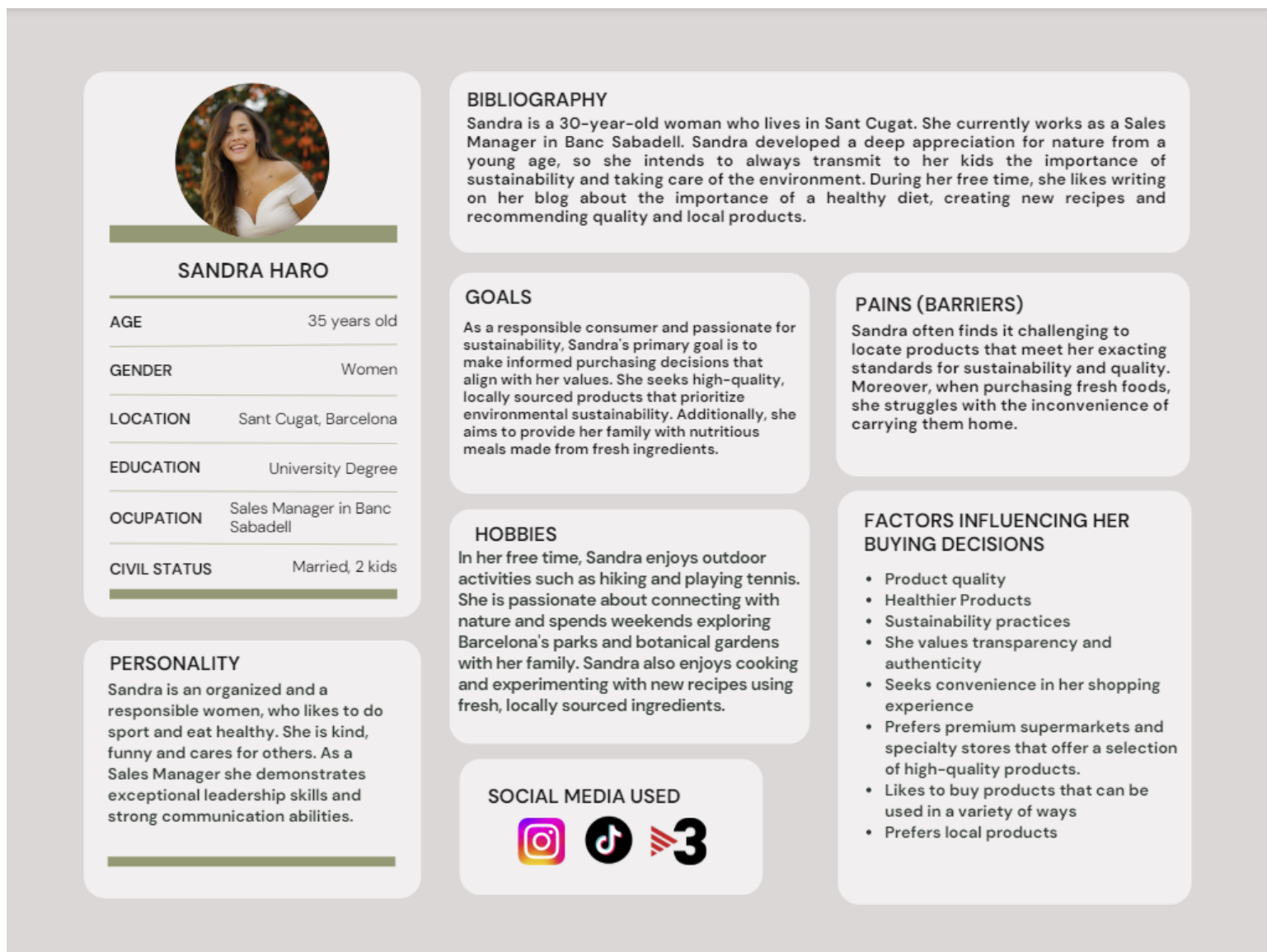


Figure 10: Creation of a Buyer Persona
Source: Own

2.2.3 Market analysis

Regarding the data presented by *Statista*, Spain stands out as one of the European leaders in agricultural production, with a total production value in 2022 of 63.172 billion euros (ANNEX 8.1), showing a general upward trend despite occasional fluctuations, such as the 25,35% decrease in 2019.

In terms of agricultural production volume, vegetables occupy an important position, being the most produced crop in 2021 with 16 million tons (ANNEX 8.2). However, in 2022, the volume of vegetable production in Catalonia was significantly lower than in other autonomous communities, with only 201,667 metric tons (ANNEX 8.3), suggesting an area of opportunity to improve and increase local production.

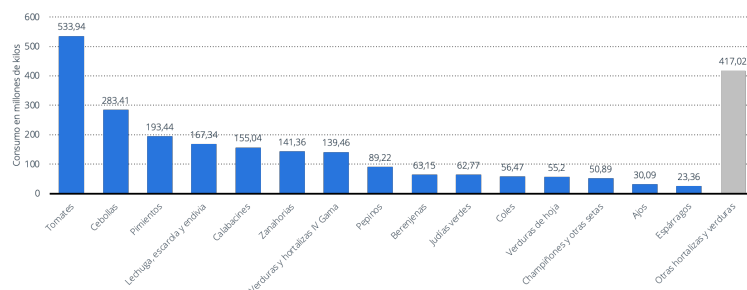
Despite the decrease in national production (ANNEX 8.4), Spain maintains a positive trade balance in the sector, with exports valued at over 8 billion dollars, exceeding imports which do not reach 1.8 billion dollars. (ANNEX 8.5). This underscores Spain's significant potential as a producer and its capacity to become self-sufficient. With the surplus, it has the ability to generate income by exporting these products.

2.2.4 Product Analysis

Focusing on the product selection, we have explored the most consumed vegetables in Spain, which are tomato, onion, pepper, and lettuce.

Our goal with this study is to identify opportunities in the market, as well as to determine which products are most suitable for our company and the best ones for adopting sustainable agricultural practices.

According to the *Statista* data for the year 2022, tomatoes lead the ranking as the most consumed vegetable in Spain, with a total of 534 million kg. Onions and peppers ranked second and third respectively, with a total consumption of 283 and 193 million kg. Finally, lettuce was the fourth most consumed vegetable.



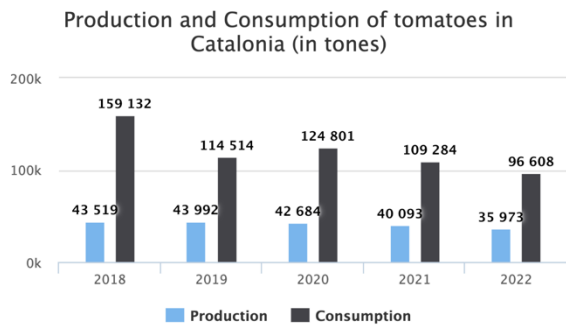
Graph 4: Volume of fresh vegetables consumed in Spanish households in 2022, by product
Source: Statista

Moreover, following data from *Generalitat de Catalunya*, an analysis of the production and consumption of each vegetable in Catalonia from 2018 to 2022 reveals a consistent trend. Consumption consistently exceeds production for all four vegetables. Also, consumption has steadily increased over this year, except for 2020 due to COVID-19 crisis.

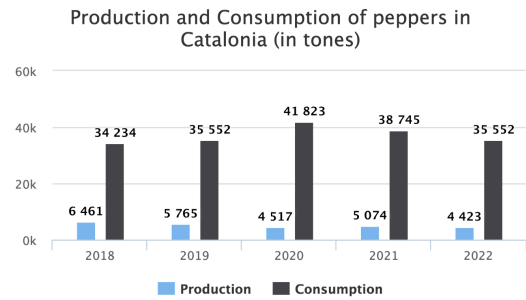
The fact that consumption consistently outpaces production, presents both challenges and opportunities for the company. On one hand, it highlights the strong demand for these vegetables in Catalonia, indicating a promising market for our products. However, the imbalance between consumption and production also means a potential supply shortage and the need to increase our production capacity to meet the demand.

For the company, this imbalance can be leveraged into opportunities for growth and expansion. The capacity of hydroponics to increase production more efficiently and controlled compared to other traditional methods means that the company would be in an advantageous position to address this situation.

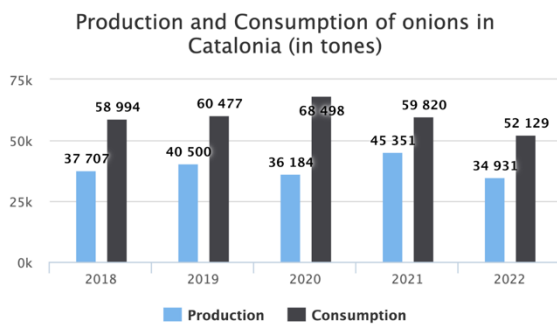
By being able to exploit the advantages of this technology, the company can meet the market demand more efficiently and cost-effectively.



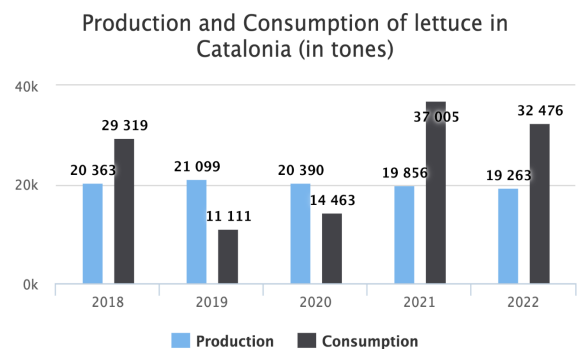
Graph 5: Production and consumption of tomatoes in Catalonia
Source: Generalitat de Catalunya



Graph 6: Production and consumption of peppers in Catalonia
Source: Generalitat de Catalunya



Graph 7: Production and consumption of onions in Catalonia
Source: Generalitat de Catalunya



Graph 8: Production and consumption of lettuce in Catalonia
Source: Generalitat de Catalunya

Another key factor we have based the product analysis on is the viability and profitability of the different crops.

Tomatoes represent an attractive option due to their high demand and potential profitability. According to *Mercabarna*, their selling price is 1.02€ per unit, offering a favorable return. Additionally, in Catalonia, there is only one company specifically dedicated to tomato cultivation using hydroponics, therefore competition is minimal. This scarce competition allows us to establish ourselves as pioneers in this field and become leaders in hydroponic tomato cultivation. Lastly, the price of seeds for cultivation is 499€ for 5000 seeds.

On the other hand, analyzing onions we have seen that it is a crop that can also be an attractive option. Its selling price is 0.78€ and its growing period takes around 30 to 40 days which could be an opportunity to generate income more quickly compared to tomatoes. Moreover, there are no companies specialized in onion cultivation with hydroponics. The price of seeds for cultivation is 550€ for 5000 seeds.

Considering peppers, their selling price is 1.75€ per unit and have a growing period of 60-70 days. Although the duration of the growing cycle is moderate, peppers offer a substantial return. Like tomatoes and onions, there are no competitors in Catalonia dedicated to pepper cultivation using hydroponics. The price of 5000 seeds is 510€.

Finally, in the case of lettuce, they are the most suitable vegetable for hydroponic cultivation, since its freshness and quality result in being more appealing for consumers. Although their selling price is lower, their growing time is faster than the other products. In addition, their production costs are lower than the peppers and onions.

In addition to those factors, these products hold a significant culinary value, serving as essential ingredients in a variety of dishes. Their versatility in the kitchen makes them indispensable in Mediterranean cuisine. Furthermore, their suitability for sustainable technology aligns with the focus on environmental responsibility. As consumers increasingly express intent to transition to environmentally sustainable diets for health reasons, the cultivation of these nutrient-rich vegetables through hydroponics makes it a viable solution. Lastly, since individuals are prioritizing health-conscious choices, these products offer vital nutrients for a balanced diet. Knowing that individual health and taste preference influence food choices, the cultivation of these vegetables ensures that they will be highly accepted by consumers.

In conclusion, we have decided to offer **tomatoes** and **lettuce** due to several key factors. First, they are the most consumed vegetables in Catalonia, with consistently high demand. Furthermore, tomatoes and lettuce offer favorable returns with relatively shorter germination periods, providing opportunities for quicker income generation. Additionally, cultivating onions could imply a little more initial investment and the absence of competitors of tomatoes and lettuce further enhances the potential profitability of these vegetables. Also, it is important to note that these two vegetables are essential ingredients in Mediterranean cuisine, ensuring a consistent demand and high culinary value.

2.3 Swot Analysis

Strengths

- Differentiation and innovation in a traditional market: When competing in the traditional market, our differentiation through sustainable production can influence the final consumer's decision.
- Environmental sustainability: By utilizing hydroponics, water usage is significantly reduced, and the need for pesticides and herbicides is eliminated, resulting in minimal environmental impact and substantial cost reduction.
- Controlled production: Having a systematized production allows for optimizing plant growth, potentially leading to more abundant and higher-quality harvests compared to traditional markets.
- Increased resource efficiency: By not relying on soil, we can better utilize cultivation space and increase plant density per square meter, thereby boosting productivity.
- Cultivation capacity throughout the year: Hydroponics enables climate and growth conditions control, ensuring consistent product cultivation regardless of the season and weather.
- Reduced risks of pests and diseases: By avoiding soil, exposure to common diseases and pests is reduced, which can decrease crop losses and the need for chemical products.

- Minimization of energy costs: The fact of having photovoltaic installations in all our production facilities, mitigates the high energy costs associated with hydroponics, and fluctuations in energy prices have no substantial effect on us.
- Responsible waste treatment: Our collaboration with biogas plants for waste treatment demonstrates a commitment to sustainability and environmental responsibility. This practice can enhance brand perception and company reputation among consumers and stakeholders, potentially resulting in increased customer loyalty and a competitive advantage in the market.

Weaknesses

- High initial costs: the installation of a hydroponic system requires a significant initial investment in equipment and technology, being a barrier to entry due to our limited economic capacity.
- Competing in an established and mature market: our competition lies with the traditional market where there are already large companies with a strong presence in the market and that have brand recognition, as well as established customers.
- Reputation: being a new company with little influence in the market, it may take time to establish a solid reputation among consumers and gain their trust in the quality and sustainability of our products.
- Requirement for specialized knowledge: managing a successful hydroponic system requires a deep understanding of the technology and principles of hydroponic cultivation.
- Vulnerability to system failure: any failure in the water or power supply system could have a significant impact on plant health, requiring backup systems and constant monitoring.

Opportunities

- Growing demand for sustainable products: with climate change becoming part of our daily lives, there is a growing awareness in society about the importance of consuming sustainably produced foods, which can lead to higher demand for these products.
- Awareness of a healthier diet: the fact that our products are vegetables presents an opportunity given the ongoing trend in society towards consuming a healthier diet.
- Global drought: given the current global issue of drought, companies with minimal and controlled water consumption will be highly considered by the public.
- Agriculture as the main water polluter in the world: According to the Food and Agriculture Organization of the United Nations, agriculture has become the primary source of water pollution in many countries, with Spain being particularly concerned. This may lead to favorable policies for companies that promote responsible water consumption. (ANNEX 8.6)
- Favorable policies for the sector: with the recent movement by farmers at the national and regional levels, the government may implement favorable policies for the sector, making its entry more attractive.
- Subsidies for being a sustainable business: due to the awareness at the European level about climate change, organizations such as the ONU and its “Agenda 2030 project” promote increasing support for undertaking sustainable and environmentally beneficial projects, providing a significant budget for subsidies for this type of initiatives.

- Development of new varieties: Hydroponic technology gives us the opportunity to experiment with new product varieties that may have unique and attractive characteristics for consumers.
- Expansion of the local market: Fresh and high-quality products can find a solid market locally. Additionally, Catalan consumers tend to prefer locally sourced products.

Threats

- Inflation: an increase in price can influence the demand for our products due to the existence of other cheap substitutes such as those from traditional cultivation.
- Negative consumer perception: some consumers may have concerns about the quality or safety of hydroponic products compared to traditional cultivation methods.
- Competition from large producers: when competing with the traditional market, we face large producers who use conventional cultivation methods and may have economies of scale allowing them to offer lower prices.
- Bureaucracy: the complexity and rigidity of administrative procedures and government regulations represent a problem in the agricultural sector. Compliance with legal requirements and obtaining licenses and permits can result in additional costs, operational delays, and a greater administrative complexity. Regulatory uncertainty and changes in government policies can create volatility and make long-term strategic planning more difficult.
- Restrictions: the existence of specific restrictions implies limited freedom for the company. For example, we cannot label our product as organic simply because it is produced using hydroponic cultivation.
- Technological innovation: being an innovative technology, new and more optimal technologies may appear over time and a hydroponic investment may become obsolete in the near future.

2.4 Value Proposition

For people who value sustainability, quality and local products, GreenSeed offers tomatoes and lettuces cultivated in a different, more sustainable and technological method, known as hydroponics. This method avoids the use of soil, consumes less water, does not depend on climate, optimizes the space and reduces emissions.

Unlike our competitors, GreenSeed offers both tomatoes and lettuces which are known for their quality, its freshness, and specially the sustainability behind it. Our products are cultivated using solar photovoltaic panels, with the aim of preventing polluting emissions and maximizing energy self-consumption in the production processes. Moreover, our products are shipped using electric and refrigerated vans to maintain its freshness. It is important to note that with the amount of organic waste generated, we will give it at a free cost to a biogas plant, an installation through which organic material is decomposed and converted into green fuel that is then used to procure renewable energy.

Moreover, one of the reasons why consumers find it challenging to buy these products is because they do not have sufficient information and don't trust this system. Therefore, GreenSeed commits to provide all this information with total transparency in the packaging of our products. Additionally, our packaging is made of a recyclable cardboard material which further enhances sustainability.

Finally, our products also stand out for the convenience in its packaging since our system makes it easier for consumers to pick up and transport the product from the point of sale to home without damaging it. With this, we want to ensure an even smoother experience for our customers.

Therefore, GreenSeed is dedicated to taking care of the environment while ensuring quality, transparency and freshness to our local products. We arise as the best option to solve consumer's challenges and offer them convenience in their buying process.

3. MARKETING

In this section we will detail our product, the price strategy that will be implemented, we will also determine the way in which we will reach our customers and how we will distribute our products. The marketing objectives of the firm will also be explained.

3.1 Marketing Mix

3.1.1 Product

Our company stands out for offering lettuce and tomatoes grown with hydroponic technology, a method that ensures the freshness, quality and sustainability of our products. Each lettuce and tomato we grow is characterized by its flavor and nutritional value. We use innovative cultivation techniques and quality controls at all stages to guarantee the maximum safety of the products.

Regarding product variety, we offer three types of lettuce: Trocadero lettuce (*Figure 11*), Oak leaf lettuce (*Figure 12*) and Batavia lettuce (*Figure 13*). These types of lettuce are characterized by their tender leaves and flavor, and they are visually attractive, which enhances both freshness and quality.



Figure 11: Trocadero lettuce
Source: De la Masia



Figure 12: Oak Leaf Lettuce
Source: Cal Fruitós



Figure 13: Batavia lettuce
Source: Gustavo Ferrada

As for tomatoes, we will also offer three types: Round tomatoes (*Figure 14*), which are very freshy and visually appealing, Cherry tomatoes (*Figure 15*), which are highly demanded with a wide variety of options for plating, and San Marzano tomatoes (*Figure 16*), as they are the most used tomatoes by restaurants, especially for making tomato sauce.



Figure 14: Round tomato
Source: Fruva



Figure 15: Cherry tomato
Source: Lapalma



Figure 16: San Marzano tomato
Source: Agroponiente

Our products will have two main certifications: Security Assurance Certification, Product Quality And Performance Certification and Sustainably Assurance Certification. We will also label our products as GMO-free since our seeds and nutrients do not contain or are not derived from GMOs. The company Société Générale de Surveillance (SGS) offers a “GMO Free” certificate that guarantees that the product has been verified as GMO-free throughout the entire production process.

3.1.1.1 Logo Design

Marc Vilaplana, a creative art director and owner of Integra Comunicació, has designed for us a provisional logo. We wanted a logo that reflected our commitment to sustainability. The design includes a simple and memorable symbol: a “g” in white and green background, symbolizing growth and nature. The lowercase typography, with “green” in bold, highlights our focus on sustainability. The slogan “sustainable agriculture” clarifies our purpose of promoting sustainable agricultural practices.



Figure 17: Logo design
Source: Marc Vilaplana

3.1.1.2 Packaging Design

We will use innovative and sustainable packaging that protects the products during transportation while being environmentally friendly. Therefore, our packaging will be made of recyclable cardboard material. Additionally, we want to incorporate a brief and detailed explanation of the advantages of hydroponics, and the importance of consuming products grown with this method. Moreover, we want highlight that the products are local and free from the use of chemical products. Additionally, there will be a QR code available that redirects customers to our website where they will find this information in a more extensive way, as well as, nutritional recipes and articles that will be published about the good impact that the company has on the environment, consumers lifestyle... and strategic partners that we make. Marc Vilaplana has also designed our packaging for both tomatoes and lettuces.

Packaging for the lettuces:

The main focus of the design of the packaging is to facilitate consumers when it comes to grocery shopping. We hear complaints about the inconvenience of transporting lettuce at home, so we wanted to provide a practical solution.

Our company sells the lettuces in individual packs with their roots (see Figure 15). When the lettuces are harvested, their roots are not cut, but transferred directly from the crop to the container, so that they remain alive, without any loss of properties, maintaining their freshness and flavor. Therefore, we have designed a packaging system in which the roots are kept in the compartment (see Figure 16), so that consumers do not have to worry about them.

Each individual packaging has handles (see Figure 16) for easy carrying and has small holes in the bottom of the base to prevent water accumulation (is not seen in the Figure).

Our lettuces will be offered to the distributor in large boxes of 12 units (see Figure 18). This box will have some holes that will make a compartment to leave each individual packaging of lettuces. With these holes, we will get the water that leaks from the base of the individual packaging to accumulate in the large box, preventing the consumer from having to carry water from the roots.

In ANNEX 8.7 you will find in detail what the text from the individual packaging (Figure 16 and 17) says.



Figure 18: Example of a harvested hydroponic lettuce
Source: Mercatfrutal



Figure 19: Individual packaging for the lettuces
Design: Marc Vilaplana



Figure 20: Individual packaging for the lettuces from a perspective of the other side
Design: Marc Vilaplana

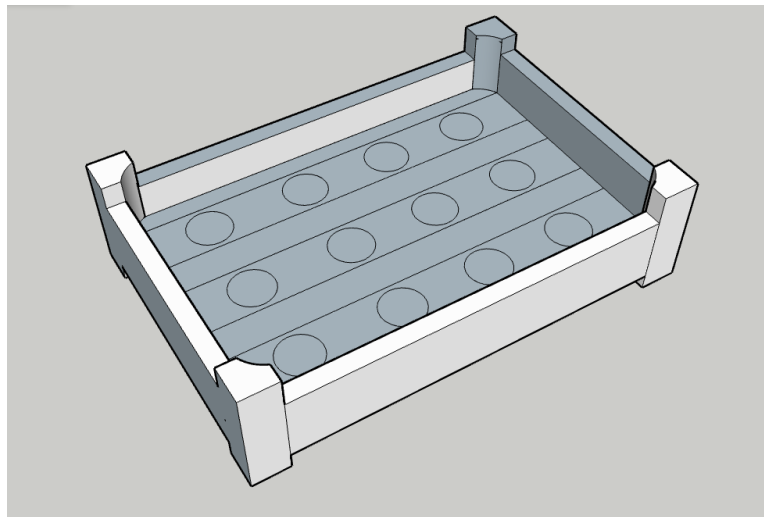


Figure 21: Large box given to distributors
Design: Own

Packaging for the tomatoes:

For the packaging of tomatoes, we will use a large normal box to transport the tomatoes. Marc Vilaplana has also designed an individual packaging for the tomatoes, where we estimated that they will fit 400 grams of cherry, 800 grams of round and 500 grams of San Marzano tomato.

See ANNEX 8.7 for the text of the packaging.

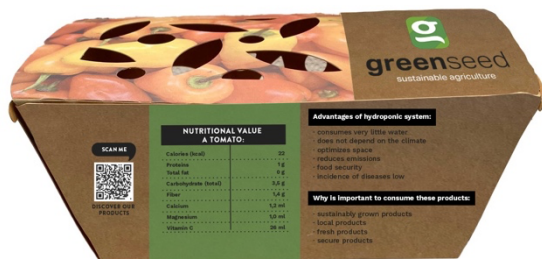


Figure 22: Individual packaging for tomatoes
Design: Marc Vilaplana



Figure 23: Individual packaging for tomatoes
Design: Marc Vilaplana

3.1.2 Price

Due to our positioning in the market as a quality company, we believe that our selling price must reflect a premium image for the product, while remaining competitive in the market. To identify our price strategy, we have differentiated a strategy for each product.

For lettuces, which do not have as much added value, and we are aware that the margin is lower, we have designed a strategy based on costs.

For both Trocadero and Batavia lettuce, we have set the price of each by adding a 30% net margin to the unit production cost.

As for the Oak leaf lettuce, we have seen that its market price is slightly higher than the one for Trocadero and Batavia, so we have decided to add a 35% net margin to the unit production cost.

	Trocadero	Batavia	Oak Leaf
Unit cost	0,79 €	0,79 €	0,78 €
Net margin	0,24 €	0,24 €	0,27 €
Selling price	1,02 €	1,02 €	1,06 €

*Table 3: Selling price for each type of lettuce
Source: Own*

For tomatoes, which we know are a product with a higher added value than lettuce, we have opted to apply a strategy based on comparisons of the market price.

We have taken into account the final consumer market prices of our direct competitor, Can Puixic, and the distributor Casa Ametller. With their prices, we have calculated an average and divided it by 2.5. From our production to the final consumer, there will be three stages: from production to the distributor's operations center, from the operation center to the retailer, and from the retailer to the final consumer. Since the operations center to the retailer is the same company that sells to the final consumer, we have considered these two stages as 1.5. With this average divided by 2.5, we have compared it with the wholesale price of the company Agromarket and have made an evaluation of 60% of the divided average and 40% of the Agromarket's price.

This is the strategy that has been used to find the selling prices for both cherry and round tomatoes.

	Cherry	Round
Can Puixic (€/kg)	8,30 €	7,50 €
Ametller price (€/kg)	7,38 €	5,37 €
Market price to final consumer	3,14 €	2,57 €
Agromarket price (€/kg)	1,50 €	1,47 €
Selling price (€/kg)	2,48 €	2,13 €

*Table 4: Selling price for each type of tomato
Source: Own*

For the San Marzano variety, there isn't as much market price information available. We believe that due to the low supply in Spain and its high demand, especially in the restaurant sector, we can increase its added value compared to the round tomatoes. Therefore, we have set a selling price of **2,23€**

It is important to mention that we are currently in an emerging market where rules could change and prices could vary, therefore this price strategy is established as a short term which will be adjusted over time.

3.1.3 Place

The distribution of the company's products is organized strategically to ensure that the products reach consumers efficiently, maintaining the standards of quality and freshness that characterize us. For this reason, GreenSeed will offer its products through a selective

distribution, meaning that instead of distributing the products to large chain retailers, the products will be available in 3 main locations: premium supermarkets, specialty grocery stores and upscale restaurants. In these places, our products will be found in the fresh section, especially in the vegetables area.

Also, our products will be distributed using electric and refrigerated vans, aligning with the company's values and commitment to sustainability.

To determine our ideal wholesaler, we have described the characteristics of each type of distributor:

1. Premium supermarkets

- Industry: Premium supermarket
- Sales: around €600M sales.
- Number of employees: between 5.000-10.000 employees
- Organizational Culture: embrace a culture of quality, sustainability and consumer satisfaction.
- Location: located in Catalonia, with a concentration on medium and high income areas.
- Examples: Condis, Esclat, Carrefour and Ametller Origen

Supermarkets are a key component of our distribution strategy. Our presence in the market is carried out through alliances with prestigious chains such as Condis, Esclat, Carrefour and Ametller Origen and in this way, we ensure that our products maintain the expected freshness and quality.

Distributing our products through these premium supermarkets implies reaching customers with high purchasing power and who have a lot of consumer traffic. This can ensure us a large-scale sales level.

2. Specialty grocery stores

- Industry: specialized grocery stores
- Sales: around €10M sales
- Employees: between 2.000-5.000 employees
- Organizational culture: grocery stores focused on offering fresh, high-quality and local products.
- Location: located in big cities in Catalonia
- Examples: Terrassa Fruits, Ca l'Helena, Gotès, Frooty...

Moreover, to reach consumers looking for fresh and high-quality products, we have decided to distribute the products to specialized stores.

An example would be Terassa Fruits. Through establishing strategic partnerships with these types of stores, our products will be available to customers seeking local and high-quality products.

3. Luxury restaurants

- Industry: Restaurant sector
- Sales: around €10M sales
- Employees: between 70-140 employees

- Organizational culture: Upmarket restaurants focused on offering high-quality and local products.
- Location: located in the main cities of Catalonia
- Examples: Via Veneto, Disfrutar, Hermanos Torres, Mont Bar

Finally, we have also decided to distribute our products to upscale restaurants and thus, reach consumers looking for an exclusive gastronomic experience. We believe that restaurants are a good distribution channel as they need a lot of fresh and quality food rotation. Moreover, restaurant customers are potential consumers of our product, making it also a way to promote our brand.

3.1.4 Promotion

We will promote GreenSeed using Owned media, Paid media and Earned media.

Owned Media:

We will promote our company using owned media which is a great way to build awareness and engage with customers in Barcelona. We will create a well-designed website to display the products that GreenSeed offers, the advantages of using innovative techniques and the cultivation information for both lettuce and tomatoes. In this way, it will reflect the importance for the company to show customers transparency about the whole production process.

Also, we will publish a yearly report on our website to keep our customers notified of the company's strengths, such as the use of our footprint, CO2 emissions, renewable energy... and also explain potential partnerships we make, such as collaborating with premium restaurants.

Moreover, due to the huge impact that social media is having nowadays, we will create a TikTok and Instagram account: @GreenSeed, through which we will share engaging content, such as videos of how the products are being cultivated, showing the process controls that the vegetables goes through, publishing more information of the importance of buying these products.

Paid Media:

Firstly, we will enhance brand visibility through promoting GreenSeed on television, specifically in the TV3 channel.

TV3 is a public television channel in Catalonia that broadcasts throughout the Catalan territory and in other Catalan-speaking territories such as Andorra, the Balearic Islands and the Valencian country. Additionally, it is the most watched channel in Catalonia, leading in viewership for the past 13 consecutive years with an average market share of 13.58%

They have a socio-economic program with a duration between 3 and 5 minutes that aims to discover various examples of innovation and entrepreneurship. This program is called "Valor Afegit" and is broadcast from Monday to Wednesday as the final part of the "Telenotícies Vespre" (Evening News). The "Telenotícies Vespre" program is the leader channel of TV3 and is broadcast every day of the week in prime time between 8:30 pm and 9:00 pm, reaching an average of 500.000 daily viewers. Therefore, we believe it is ideal for promoting our company, as these numbers favor great visibility to introduce the company. Additionally, thanks to the "Valor Afegit" program and its inclination to promote innovative start-ups, GreenSeed will be

able to catch the interest of potential clients. Participating in this program has no cost for the company.

Secondly, we will also promote the company through distributors. Since we are a start-up, we will provide them with the images and text, and they take care of the rest. This includes photos of the finished product, the packaging, production lines, the brand kit and descriptions. Once the firm starts growing and starts generating sales, we will further professionalize our approach and invest more in this aspect. Therefore, at this stage of the business, this promotion will incur no costs for the company.

Finally, we believe that trade fairs are a good way to promote our company, since due to the characteristics of our products, we are convinced that direct exposure to the customer significantly enhances its value. Additionally, the most important national Food Fair is held in Barcelona. By its name, "Alimentària", not only all types of food are exhibited, but they also focus on emerging technologies in the food sector, such as hydroponics. The fair receives 100.000 visitors and it has more than 3.000 exhibiting companies.

Going to the "Alimentària" fair has a cost of= 3.327,5€

- Registration fees: 975€ + 10% IVA= 1072,5€
- Floor fee (1 street): 205€/m² *10m² + 10% IVA= 2050€ + 205€



Figure 24: Alimentaria Fair
Source: Alimentaria Exhibitions

Earned media:

Regarding the earned media, we will use our social media accounts to gather positive comments and reviews. With the philosophy that GreenSeed wants to convey, the best promotion is word of mouth at the local level, and in this way, attracts more customers. Additionally, the fair is a good way to increase our direct engagement with customers.

3.2 Marketing Objectives²

Objective: Establish business relationships with at least 15 luxury restaurants, specialty grocery stores and premium supermarkets in the Catalan market by the end of the next semester.

² Own writing, Translation ChatGPT

- Specific: Establish business relationships with 15 luxury restaurants, specialty grocery stores and premium supermarkets.
- Measurable: Achieve commercial partnerships with at least 15 establishments.
- Achievable: Identify and contact restaurants, specialty stores and supermarkets interested in high-quality products grown with hydroponic technology.
- Relevant: Expand the presence and distribution of our products in the Catalan market through strategic partnerships.
- Time - bound: By the end of the next semester.

Objective: Establish a customer loyalty program by the end of next quarter, with the aim of building a base of loyal customers and increasing customer retention by 20% during the next fiscal year.

- Specific: Establish a customer loyalty program
- Measurable: Achieve a 20% increase in customer retention
- Achievable: Design an attractive loyalty program focused on the anticipated needs and preferences of the customers.
- Relevant: Customer retention is essential for generating sales and building a solid base of loyal customers.
- Time - bound: By the end of the next quarter, with continuous implementation during the next fiscal year.

Objective: Increase the visibility of the company in the Catalan market through participation in local events and the creation of content on social media, with the aim of increasing brand awareness by achieving 150.000 total impressions on the internet by the end of the next semester.

- Specific: Increase brand awareness in the Catalan market.
- Measurable: Achieve 150.000 impressions on the internet.
- Achievable: Participate in local events and create regular content on social media to increase visibility.
- Relevant: Increase the visibility of the brand is essential to attract potential customers and build a customer base in the Catalan market.
- Time - bound: By the end of the next semester.

4. OPERATIONS

We have identified that the market is moving towards a tendency where every time there is more demand for sustainable and km0 products, more pressure over price and therefore costs and a supply that takes a long time to adapt. For that reason, we spotted a potential market to operate. Now, we will outline what we need to have in place in order to fulfill orders and meet customer expectations once the sale is made, so we will conduct an analysis of all operations needed.

4.1 Location

The idea is to create a network of hydroponic crop producer partners, also known as an integrated producer system. We interviewed Jose Beltran, an agricultural farmer in the livestock sector, which helped us understand how this system works, the advantage and

disadvantages it has and why it would work for our firm. Therefore, all data regarding this integrated system has been extracted from the interview (see *ANNEX 8.8*).

This system has been used in other industrialized agricultural production environments and has ideal characteristics that allow us to comply with the strategy we propose: it provides flexibility, scalability and economic sustainability.

Producer integration has been used for years in the livestock production sectors, especially in the poultry and pig sectors. The system consists of the parent company (integrator) who owns and provides the animal breeds, food, veterinary technical support... For their part, the integrated producer partner provides the facilities (building and internal technical equipment), labor, energy, and water consumed. The economic compensation for the producer is established based on production, taking into account the final number of animals raised. On the other hand, the parent company can increase its production capacity without the need for large investments in structure, resources, personnel... The system is regulated with long-term contractual agreements that detail the obligations and commitments of both parties. These agreements have minimal contractual differences between producers since the same conditions are normally negotiated for integrated farmers. In addition, there are continuous technical advisory services provided by the integrating company and the production processes are closely monitored to always ensure quality and efficiency.

We believe that this model could be interesting for farmers as it would give them an opportunity to remodel their activity towards a more attractive sector in which there would be the possibility of obtaining a higher economic margin. Also, the need for producer intervention is lower than the one of the livestock sector, where the work is more demanding and continuous, while in hydroponics, the level of attention and dedication is considerably lower since the environmental conditions and nutrients are controlled.

However, developing a network of producer partners based on the integration model also presents a series of challenges, especially regarding defining and implementing the initial production and management system that all partners will have to follow, as well as identifying entrepreneurs who have the capacity to integrate into the system and find it attractive. For this reason, GreenSeed proposes to establish an initial representative production center, managed directly from the corporate headquarters, which serves as a model to define and test, in a real production environment, all the processes and technologies applied by the company. It is a very similar approach to the one established by franchised systems in sectors such as fashion or catering, where a "Master Franchise or Flagship" business implementation is created to define all the business processes.

Therefore, we have determined to establish a "master" facility operated directly by the company. The facility will be sized on an industrial scale to allow for a production volume that makes the start of the activity viable. That is, that enables us to produce a volume of final product that ensures the commercial and economic sustainability of the business. To this end, we have identified a facility that meets the previous requirements we have defined.

The proposed location to establish the operational center is in the Valles region. This location is an excellent option for locating the operational center since it is located within a 50 km radius of the entire Metropolitan area of Barcelona, which concentrates the majority of the potential clients. Additionally, the region of Valles is the most central point among the four regions of

Barcelona, which facilitates access and logistics to reach the sales points quickly. Another advantage is that the price per square meter is more affordable compared to the capital, allowing us to maximize our financial resources. The presence of densely populated cities with medium/high economic levels offers a conducive environment for the sale and consumption of our products.

Finally, the location of Valles also facilitates the distribution of products since it is well connected with the rest of Catalonia and very close to what we will define as our most important production facility, in the Bages region.

We will place the installation in an area where there are already locations and warehouses like the ones we need and that are strategically located to access the target market with limited travel. In the next section, we will explain in detail this location and the characteristics of the installation.

4.1.1 Industrial State Proposal

4.1.1.1 Location

Municipal term of Rajadell– Zip Code 08256 (Barcelona).

Easy access from the C-25 highway (Transversal Axis) which allow us to be well connected with the market, with short journeys:

- Barcelona – Metropolitan Area - Mercabarna: 68 km. – 52 minutes journey.
- Terrassa – Sabadell. Mercavallès wholesale market area: 52 km. 43 minutes journey.
- Girona. Mercagirona wholesale market area. 122 km. 1 hour and 13 minutes journey.
- Manresa: 8,8 Km. Important as a target market and as a possible area for hiring professional staff for operations.
- Igualada: 30 km. 24 minutes journey.
- Vic: 55 km. 38 minutes journey.

The location has been selected for its strategic position in an agricultural activity environment, for its ease of communication and access to target markets, and for the economic opportunity cost of the infrastructure.

4.1.1.2 Industrial State Characteristics

The main characteristics is that it is an industrial state qualified for agricultural livestock use. This qualification simplifies any management of legalization of permits and authorizations to start the hydroponic cultivation activity, since the activity is compatible with the qualification of the activity assigned to it. Currently, it is occupied by a poultry farm.

It has an area of 1,980 m², has a clear-span construction, without pillars measuring 147 meters in length and 13.5 meters in width. It is suitable for facilitating hydroponic cultivation installations and carrying out operational tasks.

Regarding the height of the state, it has a double-sided roof with an approximate slope of 8%. The lateral areas have a height of 3.5 meters, and in the center of the warehouse, there is a height of 4 meters. The roof is made of sandwich panel type, which technically enables the installation of a photovoltaic roof, sized to produce the electricity that will be needed for the cultivation activity.

The state has adequate dimensions to reserve a space at the head, separate from the cultivation area, to serve as a handling and logistics center for preparing orders and shipments to customers. At the same time, the warehouse allows for the separation of activities into different modules to make crops more flexible depending on the needs of the market.

Lastly, the orientation of the warehouse consists of a double-sloped roof, with a double orientation northeast and southwest, which facilitates the optimization of a photovoltaic energy production. The industrial state has fully operational energy and water suppliers; only the energy capacity and the installation need to be adapted to the needs of the new activity.

See ANNEX 8.9 for a descriptive and graphic representation of cadastral data of the property.

4.1.1.3 Economic justification of the location

The real estate market for large commercial properties, such as industrial states, in Catalonia is highly competitive in terms of pricing, as there is significant demand. The price to be paid for these types of warehouses, whether in the form of leasing or ownership, is directly related to the location and proximity to the Barcelona Metropolitan area. Thus, we find a range of prices summarized in the following table:

ZONE	Price / month / m2	Price / year/ 2000 m2
Metropolitan Area of Barcelona. Zone: Franca - Mercabarna	9 €	216.000 €
Metropolitan 1st Ring Area: Hospitalet, Cornellà, St. Adrià.	7 €	168.000 €
Metropolitan 2nd Ring Area: Vallès, Molins R. Castellbisbal.	6 €	144.000 €
Metropolitan 3rd Ring Area: Martorell, Igualada, Manresa.	4 €	96.000 €
4rth Ring Area;– “Agricultural building”	1,4 €	33.600 €

*Table 5: Comparison of prices by zones
Source: Cimalsa*

As you can see, the cost difference between the rest of the areas and the one that has been chosen would make the project economically unviable. It is true that logistics costs may increase slightly in the area of the 4rth ring, but the cost difference and the strategic location to access different markets makes the choice more attractive.

4.1.2 Industrial State view



Figure 25: Overview of the selected warehouse
Source: Google Maps

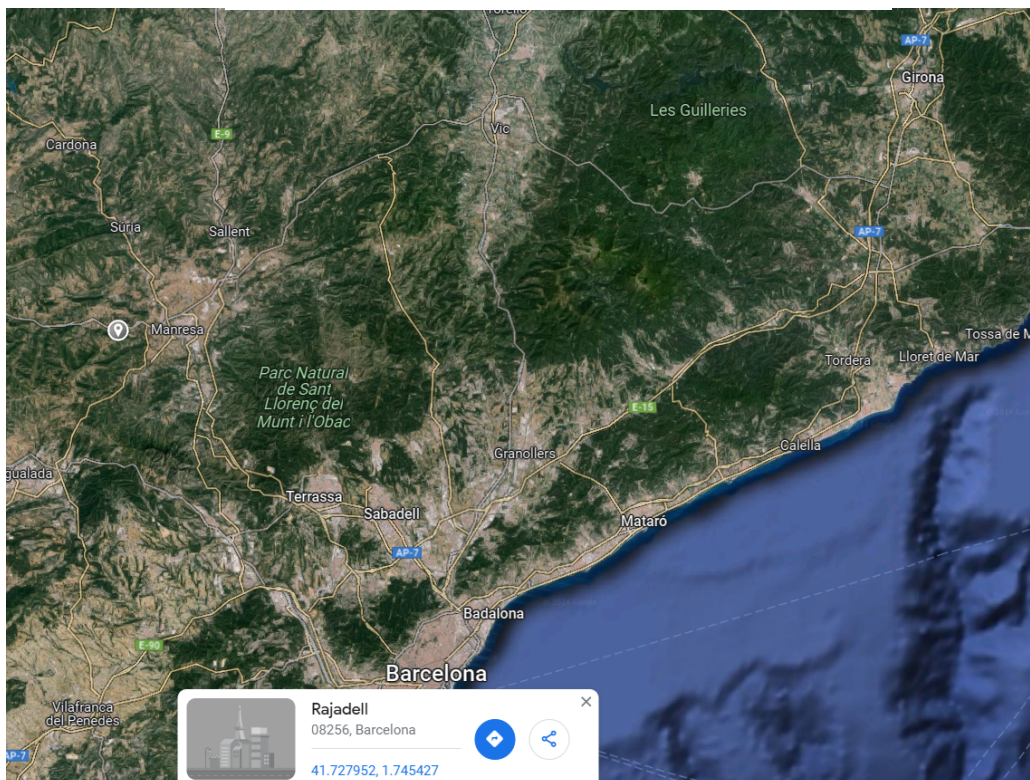


Figure 26: Location on the general map of the area
Source: Google Maps

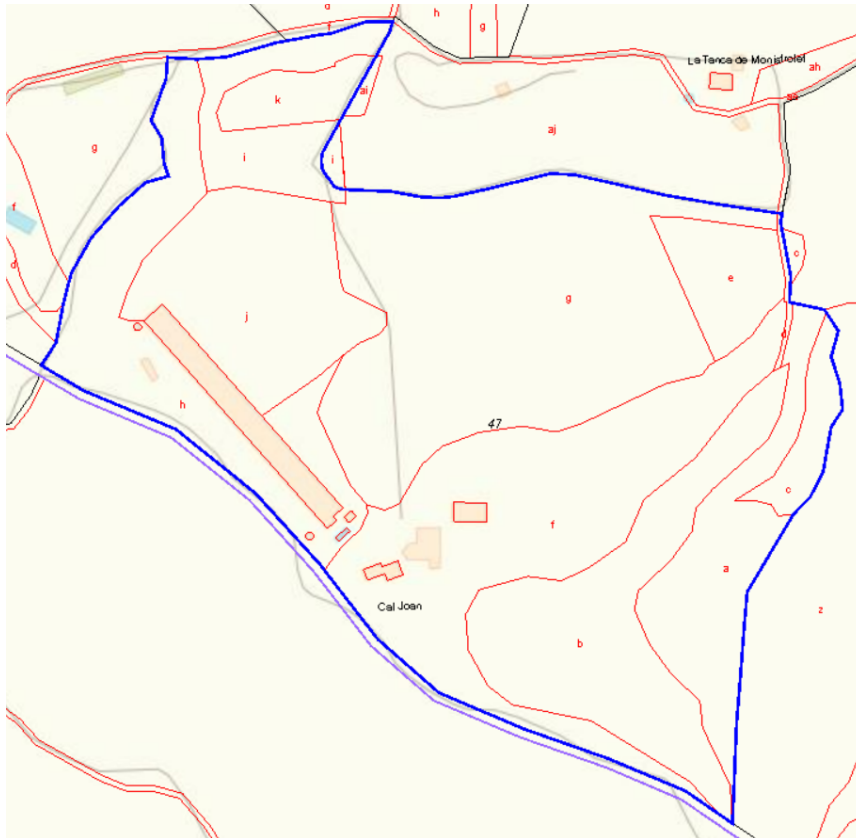


Figure 27: Warehouse layout
Source: Cadastre

4.2 Initial Inventory

Inventory for NFT and Drip System

1. **Substrate:** is the inert material that contains no chemicals. It provides support to the plant, retains water and aerates the roots. With tomatoes, we will use coconut fiber substrate. The cultivation of lettuce does not use substrate.



Figure 28: Coconut fiber substrate
Source: Petco

2. **Nutrient solution:** it is a mixture of dissolved nutrients in water used to “feed” plants grown in a hydroponic system.



Figure 29: Nutrient solution
Source: Mercado libre

3. Cultivation Channels



Figure 30: Drip system cultivation channels (for tomatoes)
Source: Prodinco



Figure 31: NFT cultivation channels (for lettuces)
Source: h2hydroponics

4. Raw Materials (seeds)

5. **Reservoir:** its function is to reserve water and ensure its availability for irrigation supply, as well as to store it when irrigating in turns.



Figure 32: Reservoir
Source: hydroponic systems

6. **Irrigation head:** is the enclosure where the systems are installed that allow the water to reach the irrigation emitters under the conditions required. It consists of a pumping system, filtration equipment, fertilizer injection equipment, and control equipment.



Figure 33: Irrigation Head
Source: Novagric

7. **Collection pipe:** is responsible for collecting the nutrient solution at the end of the cultivation channels and carrying it to the collection tank by gravity. It is usually made of PVC and must have a sufficient slope to ensure drainage.



Figure 34: Collection pipe for NFT System
Source: h2hydroponics

8. **Irrigation Emitters:** these are responsible for supplying water to the plants (drippers)



Figure 35: Irrigation Emitters for the Drip System
Source: Artisun Technology

9. **Irrigation Pumps:** consists of one or several pumps that provide the water flow at the pressure required by the irrigation system.
 - a. **Electric Pumps:** they operate using a single-phase or three-phase electric motor, depending on the power of the electric motor.
 - b. **Submersible Pumps:** they are used in irrigation reservoirs to eliminate suction problems when the suction height is high.
 - c. **Horizontal Pumps:** they are used to supply high flow rates and low pressures.



Figure 36: Irrigation Pumps
Source: Novagric

10. Installation of Frequency Variators: the objective is the gradual starting and stopping of the pump to avoid high overpressures at the beginning of irrigation. That is, if a sector does not need 100% of its potential, the pump will increase its power until it reaches the percentage needed to meet the requirements of that sector.



Figure 37: Frequency Variators
Source: HidroWorld

11. Staking: network of laces and wires secured by hooks to the cultivation bar. It ensures the vertical growth of the plant, prevents its contact with the ground, promotes the aeration and lightning of the plant and facilitates irrigation and harvesting.



Figure 38: Staking
Source: Coinsa

12. Irrigation Pipes:

- a. Primary Pipe
- b. Secondary Pipe
- c. Tertiary Pipe

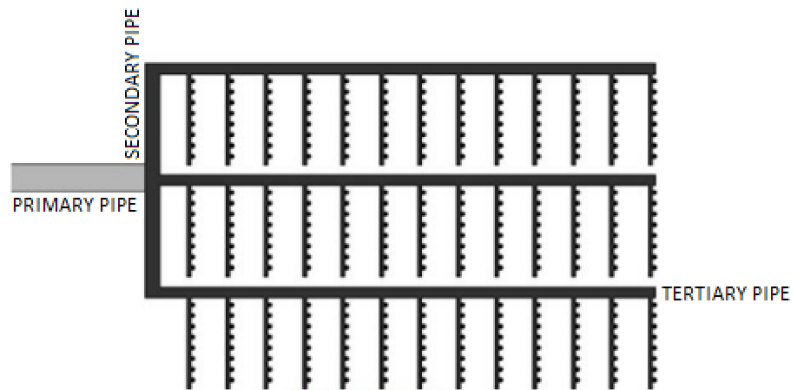


Figure 39: Primary, Secondary and Tertiary Pipe
Source: Novagric

13. Filtration system: used to prevent the risk of clogging and impurities in the emitters.



Figure 40: Filtration System
Source: Astralgrow

14. Fertigation system: helps controlling the pH (Hydrogen Ion Concentration) and EC (Electrical Conductivity) of the water and the fertilizers being supplied.



Figure 41: Fertigation System
Source: Maher

15. LED Panels: panels that will provide solar light to the plantation (with adjustable intensity to our linking)



Figure 42: Led Panels
Source: Gestión Compartida

16. Control Elements: composed of irrigation controllers that help us control and manage everything from the opening of solenoid valves and the connection of the pump to the control of fertilizer injection, pH and electrical conductivity of the irrigation of water.

- a. pH sensor
- b. Temperature control
- c. Electrical conductivity control
- d. Flowmeter

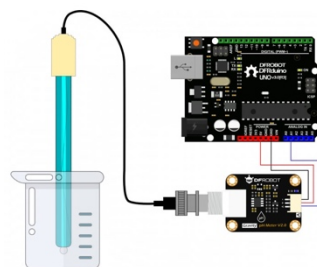


Figure 43: pH sensor
Source: Mouser Electronics



Figure 44: Temperature control
Source: Nafcom



Figure 45: Electrical Conductivity control
Source: RobotShop



Figure 46: Flowmeter
Source: Gestiriego

17. Control Software: computer system to control the parameters of the control elements.

18. Electric Carts: their function is to assist workers in harvesting vegetables ready for commercialization.

19. Extra Accessories: scissors, extra cubes, deposits...

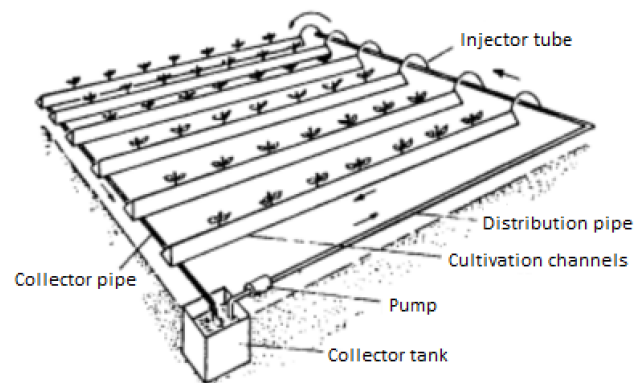


Figure 47: Schematic diagram of an NFT installation
Source: infoAgro



Figure 48: a Drip System Installation
Source: Novagric



Figure 49: Plantation of tomatoes with the Drip System
Source: Hydroponic system



Figure 50: Closer perspective of the Drip System
Source: Novagric

Inventory for the Electrical Installation

1. **Solar panels:** they will be the energy source for the operation of all devices that require electricity to function, primarily the LED panels.



Figure 51: Solar panels
Source: Tierra

2. Inverter



Figure 52: Inverter
Source: Tekno solar

Silveri Beltran, licensed in photovoltaics from the Barcelona School of Engineering, conducted a study on the inventory needed and the cost of this installation. View ANNEX 8.10.1 for a more detailed list of the inventory needed.

We are aware that some installations may fail. Therefore, as a backup plan we will have the option to rent and have a manually operated system in place of the one controlled by a computer.

In the case of the electric pumps, submersible pumps, horizontal pumps, the filtration system and the frequency installation, we have accounted for an additional unit for each in case the initial one fails. Therefore, in the initial costs, two of each are included as backups.

Regarding the photovoltaic installation, our back up plan option is a combustion engine generator expected to function very sporadically to prevent the effects of a potential power cut.

4.3 Legal

In order to start operating we need certain licenses to acquire and to present. Below is a list of the necessary licenses required which are essential to ensure the legality and proper functioning of the company.

1. Licenses required to open the company:

- Constitution legal form:
 - Certification of company name→ 18,24€
 - Opening of current account→ 0€
 - Constitution of the company→ 245,15€
 - Obtaining CIF→ 0€
 - Payment of the property transfer tax→ 600€
 - Registration in the commercial registry→ 60€
 - Legalization of official books→ 42,35€
- Activity license:
 - Opening license regime: 2610€ + 3,25% of the budget
 - Environmental license regime→ 201,35€+3,25%
- Start of the activity
 - Social security treasury → 0€

2. Presentation of the responsible declaration for the installation of pressure equipment: This procedure involves a fee of 34.15€ and is essential to install the equipment needed.

3. Communication of the opening of a workplace or resumption of activities without construction works: This procedure is free and must be submitted to initiate the activity.

4. Presentation of the responsible declaration for high voltage electrical installations: This procedure also requires a fee of 34.15€ and is mandatory for the installation of the electrical equipment.

5. Registration of the Community Environmental Management and Audit System (EMAS): this procedure is free

6. Presentation of the responsible declaration for fire protection installations: this procedure involves a fee of 34,15€.

7. Official registration of procedures and operators of phytosanitary defense means: This procedure involves a fee of 89,15€.

4.4 Human Resources

With the start of the project, our priority is to maintain operational efficiency while meeting our highest quality standards. Our company is committed to optimizing resources and maximizing productivity, and with that, avoiding overloading in personnel expenses. Therefore, a small but efficient work team is essential.

Also, according to Samuel Martínez from Novagric, a company dedicated to researching, designing, manufacturing and installing technological projects for intensive agriculture, he advised us that for every 1000m² of area, there should be 3 workers.

The main objective of our human resources strategy is to ensure that each worker plays a significant role in the company's success. With this idea in mind, we have structured a qualified management team as well as a dedicated and committed operational staff.

Since the key to our approach is specialization and efficiency, by maintaining a compact team, we minimize the costs associated with labor, while ensuring that each team member plays a vital role in the hydroponic cultivation process and in managing the company. Therefore, our team will consist of 3 workers, 1 technical manager and 1 sales manager who will be the director of the company.

4.4.1 Organizational chart

1. Operations and sales manager (Director):

- Profile: Professional with knowledge in operations and marketing.
- Functions:
 - Coordination of operational and sales activities
 - Development of marketing strategies
 - Sales and customer service management
 - Operations and logistics management
- Responsibilities:
 - Development and implementation of commercial and marketing strategies
 - Identification of market opportunities
 - Customer relationship management
 - Distribution logistics management
- Salary: 2.000€/month (net amount)

2. Technical manager and team leader

- Profile: Agricultural or chemical engineer
- Functions:
 - Teamwork coordination
 - Technical supervision of the hydroponic cultivation process
 - Resource and supply management
 - Development and implementation of agricultural strategies
 - Quality control of the products, the water and the substrate.
- Responsibilities:
 - Ensure compliance with standard quality regulations
 - Process optimization
 - Research and development (R&D)
 - Supplier relationship management
- Experience required: Experience in hydroponic agriculture and team management.
- Salary: 1.700€/month (net amount)

3. Operational staff (3 employees):

- Profile: Agricultural worker

- Functions:
 - Preparation of substrates and nutrient solution
 - Planting and harvesting of lettuce and tomatoes
 - Maintenance and cleaning of equipment and facilities
 - Control and monitoring of hydroponic system parameters
- Responsibilities:
 - Perform assigned tasks efficiently
 - Compliance with quality and safety standards
 - Report any anomalies or incidents to the technical manager
- Experience required: Previous experience in agricultural work
- Salary: 1.300€/month (net amount)

Following the philosophy of optimizing the company's fixed costs, we believe that the best solution is to outsource both accounting and administration as well as the transportation and distribution.

4. Accounting and Administration:

- Profile: Accounting and administrative services company
- Functions:
 - Maintain the company's accounting
 - Perform payroll and payment management
 - Prepare financial and tax reports
- Responsibilities:
 - Keep the company's accounting up to date.
 - Ensure compliance with tax and labour organizations
 - Provide periodic financial reports

5. Transportation:

- Profile: Transport company specialized in the distribution of agricultural/hydroponic products.
- Functions:
 - Pick up and deliver products to customers
 - Ensure timely and safe delivery
 - Maintain quality standards during transport
- Responsibilities:
 - Meet established delivery schedules
 - Maintain product quality during transit
 - Notify any incidents or delays in the delivery

With this working team, we have estimated a total production of 588.960; 300.960 lettuces a year and 288.000 kilograms of tomatoes a year. This estimation is further developed in the *Section 5.2.1*

We are aware that to grow the firm will be hard, so we think that a great solution would be a modular installation. This installation is key to grow quickly since we will know how much a module can produce, its costs, its needs... We feel confident that we will have the necessary information after one year and then we would be able to adjust our budget.

5. FINANCE

5.1 List of initial costs³

We have classified the initial costs into two types: Capital Expenditure costs (CapEx) and Operating Expenses costs (OpEx). CapEx refers to the investments with a useful life of more than one year, while OpEx includes expenses that need to be paid monthly and provide a shorter-term benefit.

CAPEX COSTS	PRICE
Marketing	4.000,00 €
Logo Design	800,00 €
Web Design	2.100,00 €
Packaging Design	1.100,00 €
Licenses	3.968,69 €
Computer Equipment	2.010,89 €
Laptop (2)	938,00 €
Dock station	64,90 €
Screen (2)	298,00 €
IP Phone System	444,00 €
Printer	45,99 €
Camera	220,00 €
Photovoltaic Installation	52.000,00 €
Production Machinery	77.480,97 €
Agricultural Materials	683,06 €
Electric Carts (2)	438,00 €
Ladders (2)	245,06 €
Building and equipment works (50€/m2)	99.000,00 €
TOTAL CAPEX WITHOUT AMORTIZATION	239.143,61 €

Table 6: List of Capital Expenditure Costs (CapEx)
Source: Own

³ View all calculations and references in Annexes part 8.10 and 8.11

OPEX COSTS	PRICE
Marketing	148.439,66 €
Alimentaria Fair	3.327,50 €
Web Mantainance	800,00 €
Web Hosting and Domain Registration	280,00 €
Packaging Purchase	144.032,16 €
Phytosanitary treatments	139,90 €
Phytosanitary products	139,90 €
Raw materials	23.475,56 €
Lettuce seeds	13.380,68 €
Tomato seeds	2.137,92 €
Coconut fiber substrate	7.680,00 €
Fertilizer	276,96 €
Supplies	10.608,12 €
Electricity	3.207,00 €
Water	7.401,12 €
Salaries	121.296,00 €
Rent	33.600,00 €
Insurance	975,00 €
Professional services	35.175,00 €
Logistic expenses	30.375,00 €
Accounting administrative expenses	4.800,00 €
Communications	396,72 €
Telephone and internet	396,72 €
Materials	199,40 €
Agricultural materials	99,40 €
Office supplies	100,00 €
Software licenses	150,30 €
Office	134,40 €
Windows	15,90 €
Maintenance	2.800,00 €
Maintenance of the software for water control	300,00 €
Maintenance of the solar panels	1.000,00 €
Maintenance of the general production equipment	1.500,00 €
TOTAL OPEX	377.255,66 €

Table 7: List of Operating Expenses Costs (OpEx)
Source: Own

We have also considered the amortization for each of the CapEx costs, detailed below:

CAPEX COSTS	PRICE	AMORTIZATION (10 YEARS)	AMORTIZATION (5 YEARS)
Marketing	4.000,00 €		
Logo Design	800,00 €		
Web Design	2.100,00 €		
Packaging Design	1.100,00 €		
Licenses	3.968,69 €		
Computer Equipment	2.010,89 €		402,18 €
Laptop (2)	938,00 €		
Dock station	64,90 €		
Screen (2)	298,00 €		
IP Phone System	444,00 €		
Printer	45,99 €		
Camera	220,00 €		
Photovoltaic Installation	52.000,00 €	3.640,00 €	
Production Machinery	8.613,21 €		
Agricultural Materials	683,06 €		136,61 €
Electric Carts (2)	438,00 €		
Ladders (2)	245,06 €		
Building and equipment works (50€/m2)	99.000,00 €	9.900,00 €	
TOTAL CAPEX WITH AMORTIZATION	30.660,69 €		

Table 8: List of CapEx costs considering amortization
Source: Own

We have decided to amortize the computer equipment and agricultural material in 5 years and the photovoltaic installation and the works in the building in 10 years. It is important to mention that the production machinery (8.613,21€) is already amortized at 10 years.

5.2 Production and Income⁴

5.2.1 Annual Production

The industrial warehouse measures 147 meters in length, 13.5 meters in width, and 4 meters in height. We have allocated 27 meters for the technical area (installation of pumps, systems., etc.) and the entrance. This leaves us with 120 effective meters for production, which we have divided between our two products, leaving 60 meters for lettuce production and 60 meters for tomato production. For the width, we have left a margin of 0.75 meters on each side, leaving 12 effective meters in width for production.

All data needed to calculate the production has been extracted from websites and videos listed in the Bibliography (Section 7)

Regarding lettuce production, we will use a technology that allows us to cover almost 95% of the space and can be manually adjusted to create an aisle. In the picture below, there is an example of how it looks like:

⁴ Note that all calculations have been made with estimates that are as accurate as possible, knowing the company's information.



Figure 53: Technology we will use for lettuces
Source: Jose Elías



Figure 54: Technology we will use for lettuces from another perspective
Source: Jose Elías

In these photos, we can observe a hydroponic cultivation system with tubes placed in rows. In the first image we can see a view of the NFT system used for the lettuces, showing how the arrangement of the tubes looks like.. In the second image, a person is manipulating the system, turning a handle to separate some of the tubes, creating a passageway that allows movement between the rows to facilitate the harvesting of the lettuce.

For each meter, 5 tubes fit together, so if we have 12 meters in width, we get 60 tubes from one end to the other ($5 \text{ tubes} * 12 \text{ meters}$). To calculate the effective cultivation meters, we have taken the 60 tubes and multiplied them by the 57 meters of length (leaving a margin of 3 meters for the aisles). We obtain 3.420 effective square meters of cultivation ($60 * 57 = 3.420$). Moreover, for each meter, there are 8 holes where the lettuce will be placed, so if we multiply the 3.420 meters by 8, we get a production of 27.360 lettuces per cycle. Since there are 11 cycles in a year, we estimate an **annual production of 300.960 lettuces**.

We have decided that 40% of the lettuce will be of Trocadero type, as it is the most sold, 30% will be Batavia, and the remaining 30% will be Oak leaf. This results in a production of:

- 40% Trocadero: $300.960 * 0,4 = 120.384$ Trocadero lettuces
- 30% Batavia: $300.960 * 0,3 = 90.288$ Batavia lettuces
- 30% Oak leaf: $300.960 * 0,3 = 90.288$ Oak leaf lettuces

Regarding tomatoes, we need coconut fiber substrate. We have estimated that we will have 8 lines of tomatoes (0,2m wide the bag + 1,25, wide the aisle= 1,45m wide → $12\text{m}/1,45\text{m} = 8$ lines of tomatoes). For each line, we will have 2 bags of coconut fiber, which leads us to 16 lines ($8 * 2$). We multiplied the 16 lines * 60 effective meters= 960 m² * 3 tomato plants= 2.880 total tomato plants.

We multiplied these 2.880 tomato plants by 10kg produced by each plant, giving us a production of 28.800 kg of tomatoes per month. Multiplied by 10 months, since the other two months are for changing crops, we get **288.000 kg of tomatoes per year**.

We have decided to produce 40% of the tomatoes of the cherry type, another 40% of round type, and 20% of San Marzano type, since their demand is only in the restaurant sector and is not as abundant as the other two types.

- 40% Cherry: $288.000 * 0,4 = 115.200$ kg of cherry tomatoes
- 40% Round: $288.000 * 0,4 = 115.200$ kg of round tomatoes
- 20% San Marzano: $288.000 * 0,2 = 57.600$ kg of San Marzano tomatoes

In the following pictures we can see a better view of how the production of tomatoes looks like.



Figure 55: Tomato cultivation with Drip System
Source: Ceikor



Figure 56: Closer perspective of tomato cultivation with Drip System
Source: Ceikor

5.2.2 Income

To calculate the amount of revenues that we will obtain, first we have calculated how much it costs us to produce each product.

To do that, first we calculated the total fixed costs for the 6 products. Then we have divided these fixed costs by two, for the lettuce and for the tomatoes. Afterwards, we calculated the costs that lettuce share, such as the NFT tubes and the cost that tomatoes share, such as the coconut fiber substrate and its irrigation emitters.

We obtained the following costs:

Total Fixed Costs	238.653,97 €
Fixed Costs for Lettuces	119.326,99 €
Shared Costs for Lettuce	1.746,00 €
Fixed Costs for Tomatoes	119.326,99 €
Shared Costs for Tomatoes	7.965,62 €

Table 9: List of total costs to calculate Income
Source: Own

With the data, we calculated how much it costs us to produce each type of lettuce and each type of tomato. To calculate it we have divided the fixed cost between the annual production of each product, then we multiplied the shared costs by the % that we will produce for each product and finally, we have calculated the individual cost for each of the products, taking into account the cost of packaging and the cost of seeds.

	Lettuce		
	Trocadero	Batavia	Oak Leaf
Fixed Cost	47.730,79 €	35.798,10 €	35.798,10 €
Shared Cost * %	698,40 €	523,80 €	523,80 €
Individual Cost	31.949,91 €	24.161,07 €	23.781,86 €
Total Production Cost	80.379,11 €	60.482,96 €	60.103,75 €
	Tomatoes		
	Cherry	Round	San Marzano
Fixed Cost	47.730,79 €	47.730,79 €	23.865,40 €
Shared Cost * %	3.186,25 €	3.186,25 €	1.593,12 €
Individual Cost	41.921,28 €	20.972,16 €	16.764,48 €
Total Production Cost	92.838,32 €	71.889,20 €	42.223,00 €

Table 10: Total costs for cultivating each type of product
Source: Own

After having the costs for each product, we proceed at calculating the income we will generate, summarized in the following table:

To calculate the amount of revenue, we estimated that we sold 85% of the annual production, due to potential damages of the products.

PRODUCTION OF 85%	
LETTUCE	
Total Production of Lettuces	255.816
Annual Production for Trocadero	102.326
Unit cost per lettuce	0,79 €
Selling price to distributor	1,02 €
Net Margin	0,24 €
Total Revenue for Trocadero Lettuce	104.492,84 €
Annual Production for Batavia	76.745
Unit cost per lettuce	0,79 €
Selling price to distributor	1,02 €
Net Margin	0,24 €
Total Revenue for Batavia Lettuce	78.627,85 €
Annual Production for Oak Leaf	76.745
Unit cost per lettuce	0,78 €
Selling price to distributor	1,06 €
Net Margin	0,27 €
Total Revenue for Oak Leaf Lettuce	81.140,07 €
TOTAL REVENUES FOR THE LETTUCES	264.260,76 €
TOMATOES	
Total Production of Tomatoes	244.800
Annual Production for Cherry	97.920
Unit cost per kg of cherry	0,95 €
Selling price to distributor per kg	2,48 €
Net Margin	1,53 €
Total Revenue for Cherry Tomato	242.998,27 €
Annual Production for Round	97.920
Unit cost per kg of Round	0,73 €
Selling price to distributor per kg	2,13 €
Net Margin	1,40 €
Total Revenues for Round Tomato	208.804,61 €
Annual Production for San Marzano	48.960
Unit cost per kg of San Marzano	0,86 €
Selling price to distributor per kg	2,23 €
Net Margin	1,37 €
Total Revenue for San Marzano tomato	109.180,80 €
TOTAL REVENUES FOR THE TOMATOES	560.983,68 €
TOTAL REVENUES (LETTUCE + TOMATOES)	825.244,44 €

Table 11: Total Revenues for lettuce and tomatoes
Source: Own

This leads us to a revenue of 262.260,76€ for lettuce and 560.983,68€ for tomatoes. Therefore, we estimated a total annual revenue of **825.244,44€**

5.3 Financing

We have estimated that the cost of the total initial investment is 329.602,20€. For our intended financing we will use different sources. The investment will be funded through: own funds, an external investor, credit and grants.

We have structured the amount needed from each source as shown in the following table⁵:

	Contribution	Total
Own Funds	45%	148.320,99 €
External Investor	25%	82.400,55 €
Credit	20%	65.920,44 €
Grants	10%	32.960,22 €
TOTAL INITIAL INVESTMENT: 329.602,20€		

Table 12: Finance distribution of total investment
Source: Own

Here are some grants that we have identified as a source of intended financing:

1. Generalitat de Catalunya: grants for R+D Green Nuclei
 - *Document.* (n.d.). Diari Oficial de la Generalitat de Catalunya. Retrieved 10 May 2024, from <http://dogc.gencat.cat/ca/document-del-dogc/>
2. Cambra de Comerç de Barcelona: Sustainable program for small and medium enterprise 202424
 - *Sede Electrónica.* (n.d.). Retrieved 10 May 2024, from <https://sede.camara.es/sede/barcelona/tramites/TR0000005313>
3. Generalitat de Catalunya: Green Action Coupons
 - *Cupons ACCIÓ a la competitivitat de l'empresa.* (n.d.). ACCIÓ - Agència per la - Competitivitat de l'Empresa. Retrieved 10 May 2024, from <https://www.accio.gencat.cat/ca/serveis/innovacio/innovacio-empresarial/cupons-accio-a-la-competitivitat-de-lempresa/>

Regarding the external investor, we believe that he can be attracted to invest in our project for different reasons. Firstly, because he will get an economic return of 25%. And also, because we are an innovative project in agriculture and food production, we use technology and efficient production systems to produce a quality, proximity and sustainable product, therefore the demand in this sector is in constant growth, and the production of vegetable food is a growing industry.

In fact, there is a great interest in the “agribusiness” sector by some investors. According to an *Article from CBRE*, more than 1 billion euros were invested in this sector in 2022.

There are investment funds that are strongly committed to businesses that add value and contribute to sustainability through investment in what is called “Natural Capital”. We have identified an investment fund known as Climate Asset Management.

⁵ The cost of initial investment has been estimated using all CapEx costs and for the OpEx costs we took into account only the cost of the first two months.

For the Credit, we have computed a stimulation of a loan, which can be viewed in ANNEX 8.12.

5.4 Profit and Loss Account⁶

	YEAR 1
Operating Income	825.244,44 €
Sales Revenues	825.244,44 €
Operating Costs	385.224,35 €
Purchase of goods	167.647,62 €
Wages and Salaries	91.200,00 €
Social Security paid by the company	30.096,00 €
Repairs and maintenance	2.800,00 €
External Services	35.175,00 €
Supplies	10.608,12 €
Licenses	4.118,99 €
Rent	33.600,00 €
Insurance Premium	975,00 €
Marketing	8.407,50 €
Office supplies	596,12 €
Operating result (EBITDA)	440.020,09 €
Depreciation	91.559,76 €
Earnings Before Interest and Taxes (EBIT)	348.460,33 €
Financial Income	0,00 €
Financial Expenses	2.609,93 €
Result before taxes	345.850,40 €
Income tax	79.545,59 €
Net Profit	266.304,81 €

Table 13: Profit and Loss Account
Source: Own

5.4.1 Contingency plan for lower sales rates

We are aware that this is an estimation, and we might not sell 85% of the production. Therefore, we made a contingency plan for having lower sales rates. We have detailed how much of the production we can sell until it gives us negative profits. In the table below, we see that if we sell 50% of the production, we will get very low profits, this implies that if we sell 48% of the production, we will have losses. Therefore, in the balance sheet, we will include Retained Earnings(*), in case we have a year with lower sales rate.

Production	85%	75%	50%	48%
Net Profit	266.304,81 €	191.371,64 €	4.536,63 €	-10.410,18 €

Table 14: Net profit for other sales rates
Source: Own

⁶ Note that all calculations have been made with estimates that are as accurate as possible, knowing the company's information.

5.5 Balance Sheet⁷

ASSETS	513.834,82 €	EQUITY	412.042,33 €
Non-Current Assets	216.467,51 €	Equity	412.042,33 €
Intangible Assets	7.984,59 €	Net income	266.304,81 €
Logo design	800,00 €	Share Capital	46.856,86 €
Web design	2.100,00 €	Retained Earnings*	65.920,44 €
Packaging Design	1.100,00 €	Grants, donations and legacies	32.960,22 €
Licenses	3.984,59 €		
Property, Plant and Equipment	208.482,92 €		
Laptop	750,40 €	LIABILITIES	101.792,49 €
Dock Station	51,92 €	Non-Current Liabilities	65.920,44 €
Screen	238,40 €	Long-term debts with credit institutions	65.920,44 €
IP Phone System	355,20 €		
Printer	36,79 €		
Camera	176,00 €	Current Liabilities	35.872,05 €
Photovoltaic Installation	48.360,00 €	Suppliers	18.028,49 €
Production Machinery	68.867,76 €	Creditors	17.843,56 €
Electric Carts	350,40 €		
Ladders	196,05 €		
Building and works	89.100,00 €		
Current Assets	297.367,31 €		
Inventory	293,27 €		
Raw Materiañs	243,27 €		
Office Supplies	50,00 €		
Trade debtors	79.826,83 €		
Clients	79.826,83 €		
Cash	217.247,21 €		
Bank	152.960,22 €		
Cash register	64.286,99 €		
TOTAL ASSETS	513.834,82 €	TOTAL EQUITY + LIABILITIES	513.834,82 €

Table 15: Balance Sheet
Source: Own

⁷ Note that all calculations have been made with estimates that are as accurate as possible, knowing the company's information.

5.6 Cash Flow Statement⁸

	MONTHS											
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Revenues	0,00 €	0,00 €	82.524,44 €	82.524,44 €	82.524,44 €	82.524,44 €	82.524,44 €	82.524,44 €	82.524,44 €	82.524,44 €	82.524,44 €	82.524,44 €
Costs	176.164,91 €	40.021,31 €	40.021,31 €	40.021,31 €	40.021,31 €	40.021,31 €	40.021,31 €	40.021,31 €	40.021,31 €	40.021,31 €	40.021,31 €	40.021,31 €
Marketing CapEx	333,33 €	333,33 €	333,33 €	333,33 €	333,33 €	333,33 €	333,33 €	333,33 €	333,33 €	333,33 €	333,33 €	333,33 €
Licenses	3.968,69 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €
Computer Equipment	2.010,89 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €
Photovoltaic Installation	52.000,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €
Production Machinery	77.480,97 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €
Agricultural Materials	683,06 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €
Building and works	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €	8.250,00 €
Marketing OpEx	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €	12.369,97 €
Phytosanitary treatments	11,66 €	11,66 €	11,66 €	11,66 €	11,66 €	11,66 €	11,66 €	11,66 €	11,66 €	11,66 €	11,66 €	11,66 €
Raw materials	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €	1.956,30 €
Supplies	884,01 €	884,01 €	884,01 €	884,01 €	884,01 €	884,01 €	884,01 €	884,01 €	884,01 €	884,01 €	884,01 €	884,01 €
Salaries	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €	10.108,00 €
Rent	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €	2.800,00 €
Insurance	81,25 €	81,25 €	81,25 €	81,25 €	81,25 €	81,25 €	81,25 €	81,25 €	81,25 €	81,25 €	81,25 €	81,25 €
Professional services	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €	2.931,25 €
Communications	33,06 €	33,06 €	33,06 €	33,06 €	33,06 €	33,06 €	33,06 €	33,06 €	33,06 €	33,06 €	33,06 €	33,06 €
Materials	16,62 €	16,62 €	16,62 €	16,62 €	16,62 €	16,62 €	16,62 €	16,62 €	16,62 €	16,62 €	16,62 €	16,62 €
Software licenses	12,53 €	12,53 €	12,53 €	12,53 €	12,53 €	12,53 €	12,53 €	12,53 €	12,53 €	12,53 €	12,53 €	12,53 €
Maintenance	233,33 €	233,33 €	233,33 €	233,33 €	233,33 €	233,33 €	233,33 €	233,33 €	233,33 €	233,33 €	233,33 €	233,33 €
TOTAL	-176.164,91 €	-40.021,31 €	42.503,14 €	42.503,14 €	42.503,14 €	42.503,14 €	42.503,14 €	42.503,14 €	42.503,14 €	42.503,14 €	42.503,14 €	42.503,14 €

Table 16: Cash Flow Statement
Source: Own

6. CONCLUSIONS AND ROAD MAP

As a conclusion, we have seen that there is a market to operate, since the demand of these vegetables is in constant growth, the production of these products in Catalonia is scarce and throughout the years, more people are being aware about the importance of sustainability. Moreover, we have seen that the competition is low, indicating an opportunity to become a pioneer in the market.

In addition, according to our estimations, indicate that the firm would obtain positive profits, making it successful and valuable.

In a few years, we expect the company to experience significant growth through different strategies. Firstly, we plan to diversify our product offerings. After having made a market analysis, we have identified that the cultivation of peppers could provide considerable profitability. Although we have decided to postpone this initiative due to the higher initial operational costs, our intention is to diversify and expand our product range, considering the incorporation of peppers in the future.

We also plan to implement a growth strategy based on an “integrated partners” system. This strategy will allow the company to achieve higher sales volumes and economies of scale, making it more profitable and attractive.

Moreover, we will also explore the option of establishing strategic alliances and collaborations. Firstly, we would like to collaborate with biogas companies to manage the waste that we

⁸ Note that all calculations have been made with estimates that are as accurate as possible, knowing the company's information.

generate. Additionally, we seek to partner with companies that can help us develop a line of prepared products that would allow us to add value.

Finally, we want to mention that these growth strategies aim to consolidate the model and its profitability. At this time, we do not have a defined long-term strategy to sell the company to a larger one or consider a future exit to the stock market. For the moment, we define a medium-term plan to make it profitable and make it grow and, in the future, once the company is consolidated, we will define the next steps to take, whether we continue our own path as a company or consider making the investment profitable with a partial or total sale.

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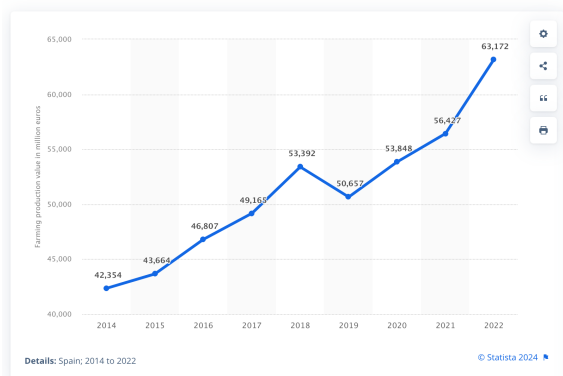
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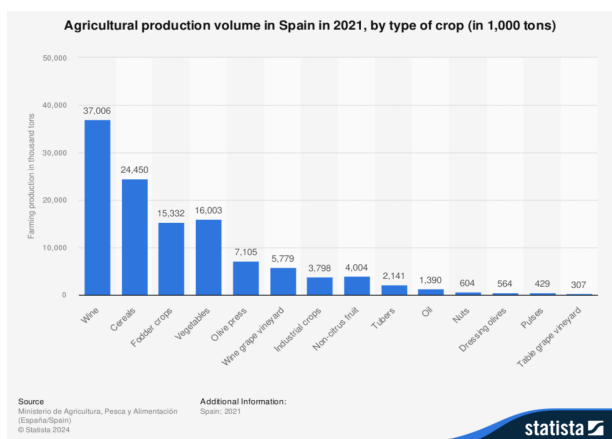
8. ANNEXES

8.1 Agricultural production Value in Spain from 2014-2022

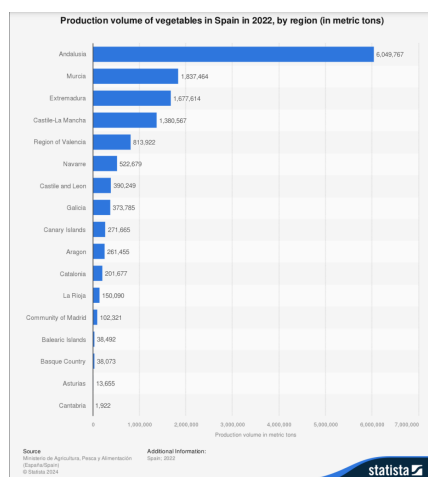
Agricultural production value in Spain from 2014 to 2022
(in million euros)



8.2 Agricultural Production volume in Spain by type of crop in 2021



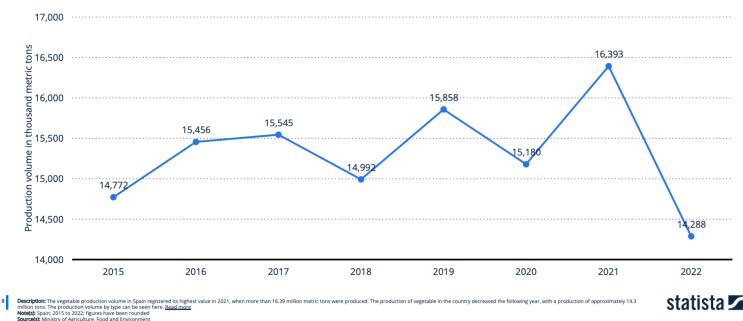
8.3 Production volume of vegetables in Spain by region in 2022



8.4 Annual Production of Vegetables in Spain from 2015-2022

Annual production of vegetables 2015 to 2022 (in 1,000 metric tons)

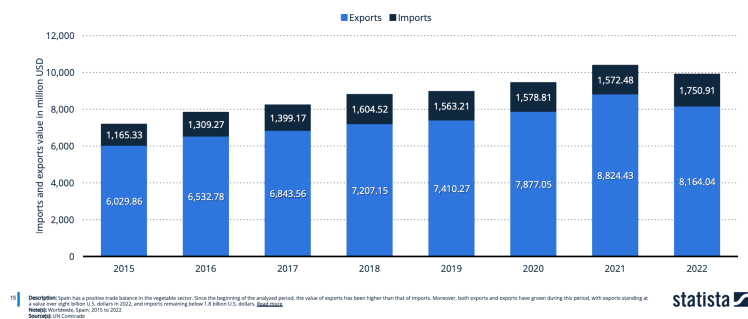
Vegetable production volume in Spain 2015-2022



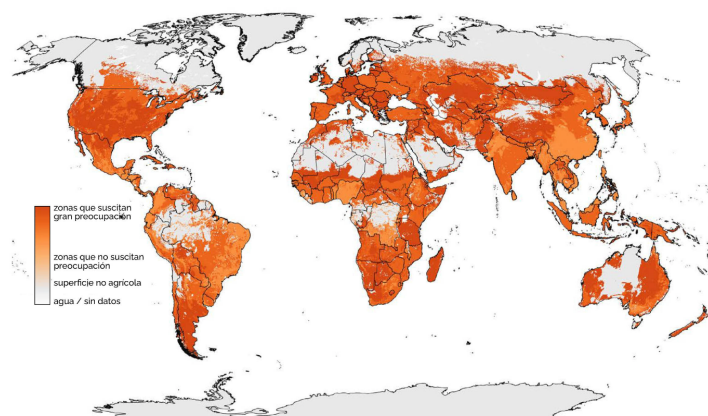
8.5 Value of vegetable exports and imports in Spain

Value of vegetable exports and imports in Spain from 2015 to 2022 (in million U.S dollars)

Vegetable international trade value Spain 2015-2022



8.6 Regions of the world that raise concern about being exposed to pesticide contamination



8.7 Description of the text in the individual packaging

Why is important to consume this product?

- Sustainably grown products
- Local products
- Fresh products
- Secure products

Advantages of hydroponic system:

- Consumes very little water
- Does not depend on the climate
- Optimizes space
- Reduces emissions
- Food security
- Incidence of disease low

Nutritional Value of a Lettuce:

Calories: 14kcal

Fat: 0,2g

Carbohydrates (total) 2.9 g

Dietary fiber 1.3 g

Sugar 0.8 g

Protein 1.4 g

Vitamin C 9,2 mg

Nutritional Value of a Tomato:

Calories: 22kcal

Proteins: 1g

Total fat: 0 g

Carbohydrates (total) 3.5g

Fiber: 1.4g

Calcium: 1,2 ml

Magnesium: 1,0 ml

Vitamin C: 26 ml

8.8 Interview to Jose Beltran

ENTREVISTA JOSE BELTRAN

- 1. Bona tarda Jose, gràcies per prendre't el temps per parlar amb mi. Volia saber una mica sobre com funciona el sistema d'integració i si seria una bona decisió implementar-ho en el meu projecte.**

Primer et volia preguntar, a què et dediques i com t'has involucrat en el món de del sistema d'integració a la producció agrícola?

Jo sóc un ganader agrònom del sector porcí, hi porto tota la vida dedicant-me a això. Conec aquest món del sistema d'integració ja que és un sistema molt popular desde fa anys en els sectors ramaders, especialment en els sectors avícola i porcí tant a Catalunya com a la resta de l'estat espanyol. La meua empresa, forma part d'una xarxa d'empreses ramaderes integrades a una empresa integradora anomenada Valls Companys.

- 2. Podries explicar en què consisteix aquest model i quines són les característiques principals?**

El sistema d'integració en la producció agrícola implica una associació entre una empresa matriu, que actua com a integrador, i altres empreses productores associats. L'empresa matriu és propietària i aporta les cries dels animals, l'aliment i el suport tècnic veterinari... per l'altra banda, el productor integrat aporta les instal·lacions, és a dir, la granja, l'equipament tècnic intern, l'energia, l'aigua consumida, però sobretot, el més important i per el que fa diferencial aquest sistema, la mà d'obra. Això permet més flexibilitat, escalabilitat i sostenibilitat econòmica per a tots els involucrats. Per part del productor, la contraprestació econòmica s'estableix en base a unes matrius de producció que tenen en compte el número d'animals criats finals, així com uns ratis de conversió on es pondera l'aliment consumit (pinsos) i els volums finals produïts, és a dir, et paguen per tants animals criats. Per altra banda, l'empresa matriu consegueix estalviar gran part de costos fixes i pot augmentar la seva capacitat productiva sense la necessitat de fer grans inversions en estructura, recursos o personal.

No sé si coneixes el terme Flagship, pero aquest sistema és un plantejament molt similar al que estableixen sistemes franquiciats de sectors com la moda o la restauració, on es crea una implantació de negoci Màster Franquicia o Flagship on es defineixen tots els processos del negoci.

- 3. Quins són els beneficis que has trobat en adoptar aquest model a la teva granja?**

Per la meua part, com a productor, mitjançant un contracte amb l'integrador, la meua empresa s'assegura producció tot l'any, i per tant rendiment econòmic sense preocupar-me de la demanda del mercat ja que per dir-ho d'alguna manera, a mi sempre em compren. Pero qui veu mes reflectats aquests beneficis es l'empresa integradora, ja que com t'he comentat abans, aquest sistema permet augmentar la teva capacitat productiva sense la necessitat de fer grans inversions en infraestructura i recursos.

- 4. Com es garanteix el compliment per les dues parts dins la xarxa d'integració?**

S'estableixen acords contractuals detallats a llarg termini entre l'empresa matriu i els productors associats i es defineixen clarament les responsabilitats i compromisos per les dues parts. Les diferències contractuals entre productors es mínima ja que normalment es negocien les mateixes condicions per als ramaders integrats. A més hi ha serveis

d'assessorament tècnic continu per part de l'empresa integradora i es supervisa de prop els processos de producció per garantir la qualitat i eficiència en tot moment.

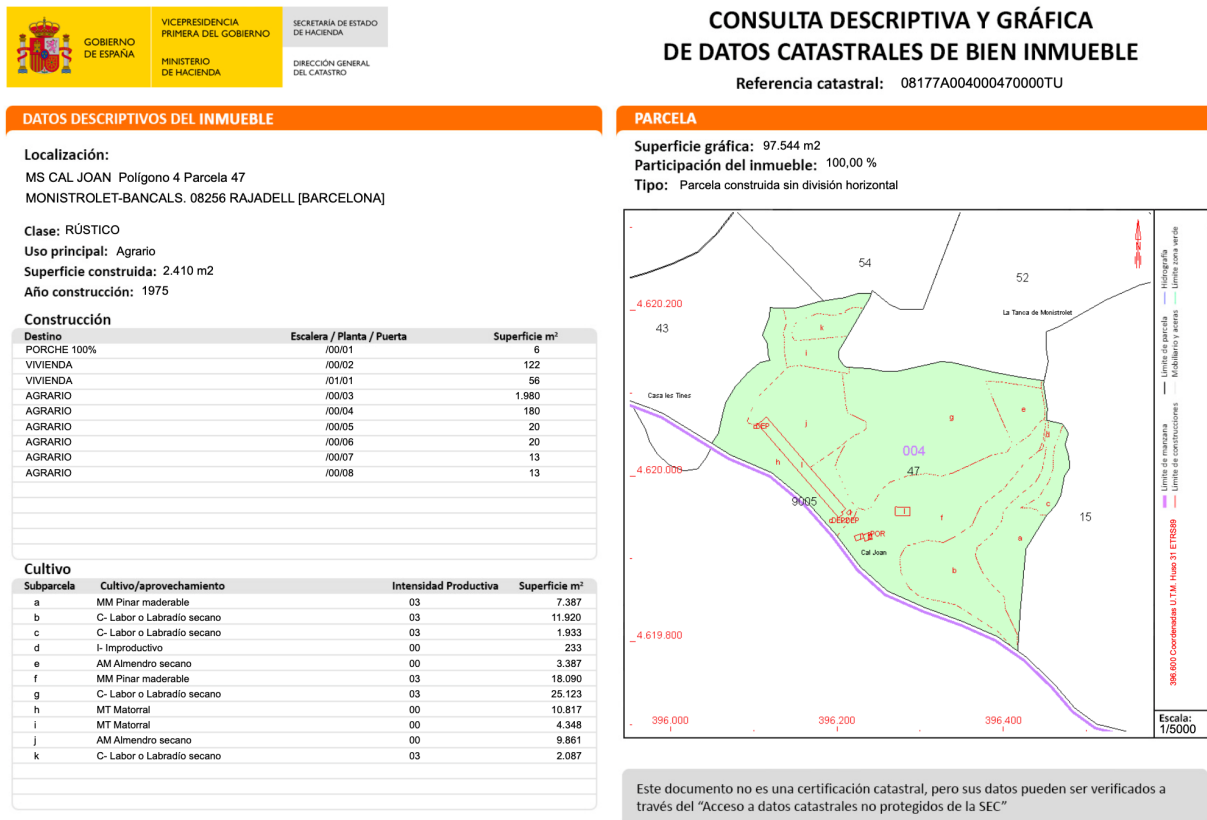
5. Quins desavantatges té aquest sistema?

Un dels principals desafiaments és definir i establir el sistema productiu i de gestió inicial que han de seguir tots els productors associats. A més, en altres sectors, com em dius que és el teu cas, pot ser difícil trobar empresaris que estiguin interessats en integrar-se al sistema.

6. Per últim, creus que seria una bona idea utilitzar aquest sistema en altres sectors, com per exemple en el meu projecte basat en l'hidroponia?

Absolutament, crec que aquest model d'integració té un gran potencial per ser aplicat en altres sectors. Es un sistema que funciona, com t'he dit, els avantatges de compartir infraestructures existents, reduir costos operatius i diversificar fonts d'ingressos són beneficis per qualsevol tipus de sector. A més, al final no es tant diferent la cria d'animals amb el cultiu de plantes, t'has d'assegurar un bon sistema logístic que controli les necessitats de matèria prima (en el teu cas les llavors), de la gestió operativa de la comercialització del producte i la capacitat de supervisió dels socis integrats. De fet, és més semblant del que et sembla, ja que la majoria de ramaders estan familiaritzats amb el sector agrícola, ja sigui perquè tenen horts a les pròpies granges o camps de cultiu. Segur que el teu plantejament és una bona opció per a ramaders que vulguin diversificar la seva activitat i els seus ingressos.

8.9 Descriptive and graphical representation of cadastral data of the property⁹



⁹ Source: data provided by Silber Beltran

8.10 Calculations of initial costs

8.10.1 Photovoltaic Installation and Electricity cost¹⁰

In order to calculate how much a photovoltaic installation adapted to our conditions would cost, we contacted Silveri Beltran, who holds a degree in photovoltaics from the Barcelona School of Engineering. He has conducted a study to determine the cost of the installation and the cost of electricity we will consume annually.

GREEN SEED - Projecte de sostenibilitat energètica, consum d'aigua i reciclatge del residu orgànic.

GreenSeed fa una aposta decidida per ser un projecte sostenible en sentit integral. El disseny del projecte, dels sistemes de cultiu i del tractament del residu orgànic s'han fet per minimitzar l'ús de recursos energètics, aigua i reaprofitar els residus.

PROJECTE ENERGÈTIC

Els sistemes energètics de la planta de producció s'han dissenyat en base al consum d'electricitat per evitar emissions contaminants. A excepció d'un sistema de back up energètic de seguretat, que serà un generador de motor de combustió que es preveu que funcioni de manera molt esporàdica per prevenir els efectes de possibles talls d'electricitat. Al mateix temps, s'instal·larà una planta fotovoltaica d'autoconsum al sostre de la nau per generar una energia equivalent a la consumida per l'explotació, és a dir, l'explotació serà neutra des del punt de vista energètic. L'autoconsum elèctric directe representarà una part rellevant del total necessari (estimat en un 60%), ja que bona part dels consums es faran en hores de producció d'energia solar. La resta d'energia elèctrica consumida serà de la xarxa elèctrica, contractant una tarifa d'autoconsum compensat que s'explicarà a continuació.

Consum elèctric anual estimat:

El consum elèctric s'ha estimat en base al les dades reals d'instal·lacions similars situades a zones climàtiques equivalents a l'emplaçament de la nau de producció. Concretament s'ha fet el càlcul de consum sobre factures elèctriques reals d'una explotació avícola. Els sistemes necessaris pel funcionament de la planta d'explotació son:

- Ventilació i extracció: per regular el flux d'aire de l'interior de la nau, especialment en el mesos de més calor, per tal d'equilibrar la humitat.
- Calefacció: Per sistemes d'aerotèrmia industrial d'alta eficiència. Necessaris per mantenir una temperatura mínima, especialment a les nits i en mesos més freds.
- Il·luminació: Amb sistemes Led de baix consum.
- Sistemes generals: Bombes d'aigua, sistemes i maquinària elèctrica d'explotació.

CÀLCULS CONSUM ANUAL ENERGIA ELÈCTRICA (en kWh)

	Ventilació	Calefacció	Il·luminació	Sistemes	Total
gener	0	4.000	2.500	500	7.000
febrer	0	4.000	2.500	500	6.500
març	0	4.000	2.500	500	6.500
abril	400	2.000	2.500	500	4.900
maig	400	2.000	2.300	500	4.700
juny	600	0	2.300	500	2.900
juliol	600	0	2.300	500	2.900
agost	600	0	2.300	500	2.900
setembre	400	2.000	2.300	500	4.700
octubre	400	4.000	2.300	500	6.700
novembre	0	4.000	2.500	500	6.500
desembre	0	4.000	2.500	500	6.500
	3.400	30.000	28.800	6.000	68.200

¹⁰ Source: Silveri Beltran

Sistema Fotovoltaic d'autoconsum elèctric

El sistema fotovoltaic s'ha dissenyat per tal que pugui generar una energia equivalent a la que consumeix la instal·lació. Això significarà que el projecte serà neutre des del punt de vista del seu balanç energètic. Com s'ha comentat prèviament, s'ha estimat un percentatge del 60% d'autoconsum, es a dir, d'energia fotovoltaica consumida instantàniament per l'explotació quan es produeix. El 40% restant de la producció s'evacuarà per la xarxa elèctrica i serà compensada econòmicament per la companyia subministradora, amb una tarifa de subministrament elèctric d'autoconsum.

El disseny del sistema fotovoltaic s'ha dimensionant amb el programa PVGIS, expressament per a l'explotació de GreenSeed. El programa PVGIS (Photovoltaic Geographical information System) és una eina d'accés públic dissenyada per la Unió Europea per projectar instal·lacions fotovoltaiques. Introduint dades bàsiques de la instal·lació que es vol projectar (potència) i les característiques de l'emplaçament (ubicació, orientació, inclinació, etc.) t'ofereix una càlcul de l'energia que produirà. El sistema te una **potència instal·lada de 55 kW** i s'estima una **producció anual d'energia de 68.936 kWh**, equivalent a l'energia consumida anualment.

Pressupost de la instal·lació fotovoltaica:

S'ha pressupostat la planta fotovoltaica basat en imports reals de mercat a 2024, tant dels materials com dels costos de ma d'obra de la instal·lació, els permisos i projecte d'enginyeria.

Pressupost instal·lació Fotovoltaica GreenSeed 55 kW de potència.

	Preu unitari €	Unitats	Preu total	Especificacions del material
Panells	110	100	11.000	Tier 1 - 550 W Huawei 10 kW
Inversors	2.000	6	12.000	
Estructura	25	100	2.500	
Fixacions	5	400	1.800	
Proteccions AC/ DC	60	20	1.200	
Cablejat	20	50	1.000	
Muntatge panells	70	100	7.000	
Muntatge Elèctric	100	100	10.000	
Permisos	1.000	1	1.000	
Projecte enginyeria	2.000	1	2.000	
Treballs en alçada	150	10	1.500	
Petit material	10	100	1.000	
Total			52.000	

Els sistemes fotovoltaics amb tecnologia actual son fiables i resistent. Tenen una vida estimada d'entre 25 i 30 anys, amb un manteniment bàsic i reposició d'elements menors. El projecte de GreenSeed te prevista la seva amortització a 10 anys, tal com es reflexa al compte de resultats. Això significa que 15-20 anys de la seva vida útil aportaran energia a un cost residual.

Càlculs del sistema de compensació energètica:

Els sistema fotovoltaic permetrà un autoconsum del **60%, 41.362 kWh**, de l'energia anual necessària (68.200 kWh). La resta d'energia produïda (27.574 kWh) es bolcarà a la xarxa elèctrica i es rebrà una compensació econòmica en factura de la companyia elèctrica amb qui es contractarà el subministrament (26.838 kWh) per cobrir les 24/365 hores del dia (energia que s'ha de pagar a la companyia elèctrica per quan no hi ha hores de llum)

Quadre dels càlculs de compensació energètica en kWh

Consum anual energètic	68.200
Energia Fotovoltaica produïda	68.936
Energia auto consumida 60%	41.362
Energia subministrada per la xarxa	26.838
Energia excedent bolcada a la xarxa	27.574

S'ha descartat actualment contemplar la instal·lació de bateries d'emmagatzematge de l'energia excedentària del sistema fotovoltaic que no es pot auto consumir. El motiu és el seu cost econòmic comparat amb un sistema de tarifa elèctrica contractat amb la companyia que subministrarà l'energia anual necessària, que permetrà compensar econòmicament l'excedent energètic bolcat. En un futur, si la tecnologia de bateries evoluciona i es redueix el seu preu, es valorarà.

Estudi de mercat de tarifes elèctriques.

Amb l'objectiu d'identificar la tarifa més òptima per a contractar el subministrament energètic necessari per garantir la cobertura anual i rebre la compensació econòmica per l'excedent aportat a la xarxa, s'ha fet un estudi real a preu de tarifa d'algunes de les companyies elèctriques que ofereixen el servei de compensació econòmica dels excedents de la producció fotovoltaica. Els càlculs s'han fet en base a les xifres de consum, producció fotovoltaica y compensació econòmica que es rep per l'energia excedent de la instal·lació fotovoltaica. El resum és el que apareix al següent quadre:

Companyia elèctrica	Total € Potència	Total € Energia	Total € Factura	Preu mitjà kWh contractat	Preu mitjà kWh compensat	Import € compensació	Total € factura anual compensada
Som Energia	1.148	5.731	6.880	0,223	0,11	2.992	3.887
Endesa	1.220	4.503	5.723	0,168	0,08	2.252	3.471
Goiener	1.136	4.339	5.475	0,169	0,08	2.268	3.207
Clarity Energia	1.206	4.216	5.421	0,161	0,08	2.163	3.258
Fenie Energia	1.148	6.136	7.284	0,235	0,12	3.147	4.137
Doméstica Energia	1.148	4.482	5.630	0,177	0,09	2.374	3.257
Electra	1.177	6.918	8.095	0,264	0,13	3.548	4.547
Factor Energia	1.832	5.852	7.684	0,215	0,11	2.880	4.804

Energia subministrada per la xarxa kWh 26.838

La tarifa elèctrica té diferents components. El component de potència és el que correspon a la part fixa que cal abonar en funció de la quantitat de potència que tens contractada a la instal·lació. L'energia és comptabilitza en funció del consum en kWh.

Com s'aprecia al quadre, la tarifa més avantatjosa identificada correspon a la companyia **Goiener**, amb la tarifa de la qual s'estima un cost de l'energia elèctrica que caldrà contractar de **3.207 € anuals**.

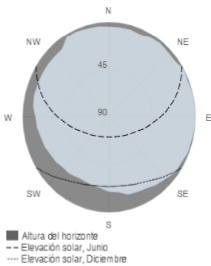
Programa PVGIS:¹¹



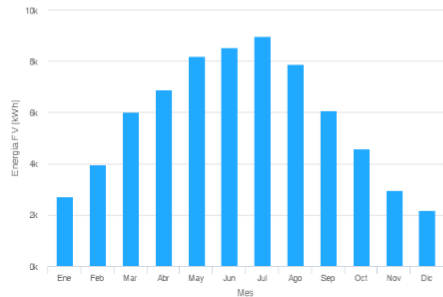
PVGIS-5 valores estimados de la producción eléctrica solar:

Datos proporcionados:		Resultados de la simulación	
Latitud/Longitud:	41.725,1.752	Ángulo de inclinación:	10 °
Horizonte:	Calculado	Ángulo de azimut:	45 °
Base de datos:	PVGIS-SARAH2	Producción anual FV:	68936.17 kWh
Tecnología FV:	Silicio cristalino	Irradiación anual:	1673.35 kWh/m²
FV instalado:	55 kWp	Variación interanual:	1861.01 kWh
Pérdidas sistema:	14 %	Cambios en la producción debido a:	
		Ángulo de incidencia:	-3.18 %
		Efectos espectrales:	0.68 %
		Temperatura y baja irradiancia:	-10.65 %
		Pérdidas totales:	-25.1 %

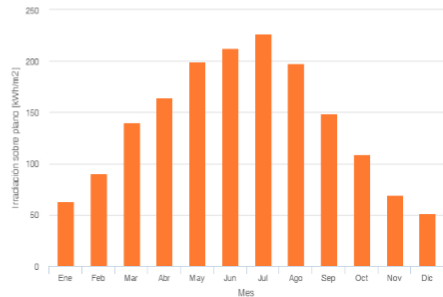
Perfil del horizonte en la localización seleccionad



Producción de energía mensual del sistema FV fijo:



Irradiación mensual sobre plano fijo:



Energía FV y radiación solar mensual

Mes	E_m	H(i)_m	SD_m	
Enero	2718.9	62.8	269.7	E_m: Producción eléctrica media mensual del sistema definido [kWh]. H(i)_m: Suma media mensual de la irradiación global recibida por metro cuadrado por los módulos del sistema dado [kWh/m²]. SD_m: Desviación estándar de la producción eléctrica mensual debida a la variación interanual [kWh].
Febrero	3950.1	90.4	384.0	
Marzo	6025.8	140.3	492.1	
Abril	6896.8	164.4	506.2	
Mayo	8181.5	199.6	790.9	
Junio	8533.7	212.9	337.2	
Julio	8964.5	226.9	259.9	
Agosto	7881.0	197.7	308.9	
Septiembre	6062.4	148.6	333.3	
Octubre	4584.9	109.4	385.6	
Noviembre	2949.4	69.1	326.9	
Diciembre	2187.3	51.3	132.5	

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Informe creado el 2024/04/28

¹¹ Source: Silveri Beltran from Photovoltaic Heographical Information System (PVGIS)

8.10.2 Production Machinery Calculation¹²

<i>Production Machinery</i>	Price	AMORT. 10 YEARS	AMORT. 5 YEARS
Pump System	1.960,00 €		392,00 €
Electric pumps	700,00 €		140,00 €
Submersible pumps	740,00 €		148,00 €
Horizontal pumps	520,00 €		104,00 €
Filtration system	500,00 €		100,00 €
Fertigation system	3.187,00 €		637,40 €
Tanks	2.040,00 €	204,00 €	
Irrigation emitters	1.428,10 €		285,62 €
Variable frequency drive installation	260,00 €		52,00 €
Pipes	1.316,03 €		263,21 €
Primary pipe	202,48 €		40,50 €
Secondary pipe	71,07 €		14,21 €
Tertiary pipe	1.042,48 €		208,50 €
LED panels	45.619,83 €	4.561,98 €	
Water control equipment	3.710,00 €	371,00 €	
NFT tubes	17.460,00 €	1.746,00 €	
TOTAL WITHOUT AMORTIZATION	77.480,97 €		
TOTAL WITH AMORTIZATION	8.613,21 €		

8.10.3 Raw Materials Calculation¹³

<i>TOMATO SEED CALCULATION</i>	Cherry	San Marzano	Round
Production of tomato per plant (in kg)	1.152	576	1.152
Number of plants in a pack	6	6	6
Cost of the seeds	5,84 €	4,63 €	2,98 €
Total seed cost for each type of tomato	1.121,28 €	444,48 €	572,16 €
Total Cost for tomato seeds	2.137,92 €		

<i>LETTUCE SEED CALCULATION</i>	Trocadero	Batavia	Oak Leaf
Production of lettuces for a year	120.384	90.288	90.288
Number of seeds in a pack	5.000	5.000	5.000
Cost of a pack of seeds	222 €	233 €	212 €
Total seed cost for each type of lettuce	5.345,05 €	4.207,42 €	3.828,21 €
Total Cost for lettuce seeds	13.380,68 €		

<i>FERTILIZER CALCULATION</i>	
Potassium	48,16 €
Phosphorus	25,00 €
Nitrogen	81,60 €
Magnesium	55,10 €
Calcium	67,10 €
Total Cost Fertilizer	276,96 €

<i>COCONUT FIBER SUBSTRATE CALCULATION</i>	8€*60m*16 lines
Total Cost Substrate	7.680,00 €

¹² Source: Own

¹³ Source: Own

8.10.4 Packaging Calculation¹⁴

CALCULATION COST PACKAGING

Information costs packaging	
1 small box of tomatoes	0,15 €
1 individual packaging for each lettuce	0,16 €
1 large box for tomatoes	0,40 €
1 large box for lettuce	1,20 €

TOMATO	
Annual tomato production of 100%	288.000
Annual tomato production of 85%	244.800
Number of small boxes for tomatoes	612.000
Number of large boxes for tomatoes	25.500
There will fit 24 small boxes of tomatoes into 1 big box	

LETTUCE	
Annual lettuce production of 100%	300.960
Annual lettuce production of 85%	255.816
Number of tubes	63.954
Number of large boxes	21.318
There will fit 12 lettuces into a big box (3 tubes of 4 lettuces)	

	TOMATO		
	Cherry	Round	San Marzano
Annual Production of 85% (kg)	97.920	97.920	48.960
Kilos of tomatoes per small box	0,4	0,8	0,5
Number of individual small boxes (annual)	244.800	122.400	97.920
Small boxes needed per kilo of tomatoes	2,5	1,25	2
Unit cost per small box	0,38 €	0,19 €	0,30 €
Kilos of tomatoes per big box	9,6	19,2	12
Unit cost per big box	0,04 €	0,02 €	0,03 €
Total Unit cost of the packaging for tomatoes	0,42 €	0,21 €	0,33 €
Annual Packaging cost for tomatoes (€)	40.800,00 €	20.400,00 €	16.320,00 €

	LETTUCE		
	Tocado	Oak leaf	Batavia
Annual Production of 85% (unit)	102.326	76.745	76.745
Unit cost per individual packaging	0,16 €	0,16 €	0,16 €
Unit cost per a big box of lettuce	0,10 €	0,10 €	0,10 €
Total unit cost of the packaging for lettuce	0,26 €	0,26 €	0,26 €
Annual Packaging cost for lettuce (€)	26.604,86 €	19.953,65 €	19.953,65 €

TOTAL ANNUAL COST FOR THE PACKAGING	144.032,16 €
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¹⁴ Source: Own with data from Quico Soler, worker are Minerva company specialized in the manufacture of all types of carboard packaging

8.10.5 Salaries Calculation¹⁵

<i>SALARIES CALCULATION</i>	€/person (annual)	Social Security (33%)	Total
3 operators	15.600,00 €	5.148,00 €	62.244,00 €
1 technical manager (engineer)	20.400,00 €	6.732,00 €	27.132,00 €
1 operations and sales manager	24.000,00 €	7.920,00 €	31.920,00 €
TOTAL	91.200,00 €	30.096,00 €	121.296,00 €

8.10.6 Water consumption Calculation¹⁶

El consum d'aigua anual de l'explotació s'ha calculat partint d'informació especialitzada en cultius hidropònics i gestió de l'aigua. El portal especialitzat IAGUA informa que per terme mig per produir 1 kg de vegetals amb sistema hidropònic es necessiten 36 litres d'aigua. Aquesta quantitat únicament representa entre el 15 % i el 20% del total d'aigua que es consumiria amb un sistema agrícola convencional. La sostenibilitat del sistema és evident.

La producció de vegetals del projecte en aquesta primera fase, s'estima en uns 400.000 kg (tomàquets + enciams). Això equivaldria a un consum de 14.400.000 litres d'aigua (14.000 metres cúbics). En acord amb les tarifes d'aigua de rec de la Generalitat de Catalunya, seguint el model de consum d'una granja, el preu d'aigua per reg és de 0,52€/m² + 121,12€ de preu fix per el comptador. Això ens surt un consum anual d'aigua de **7.401,12€**

References:

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WATER CALCULATION

Fixed Price	121,12 €
€/m ²	7.280,00 €
Total	7.401,12 €

¹⁵ Source: Own

¹⁶ Source: IAQUA and Generalitat de Catalunya

8.10.7 Transport Calculation¹⁷

We have estimated that a truck will collect our products three days a week, with each trip covering approximately 135 km. Over 50 weeks in a year, this adds up to a total annual distance of 20.250 km. (135 km * 3 days/week * 50 days a year = 20.250 km a year).

Based on the information from Silveri Beltran, a worker in Cimalsa, the estimated cost per kilometer is 1,5€, taking into account that it will be a 3ton electric and refrigerated truck. Multiplying the total distance by the cost per kilometer gives us the total annual transportation cost: 20.250km * 1,5€/km = 30.375€

Therefore, the estimated annual transport cost is **30.375€**

8.11 References of initial costs

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 - *Cerca guiada de tràmits*. (n.d.). Canal Empresa.
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 - Laptop:
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¹⁷ Source: Silveri Beltran from Cimalsa data

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- IP Phone Sytem:
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- Printer:
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- Camera:
Cámara Digital 4K, CCN 64MP Cámara de Fotos con Pantalla táctil de 3.0 ", 16X Zoom Digital Cámara compacta con función WiFi, con Bolsa de cámara, Capucha, 32GB TF Card, Negro: Amazon.es: Electrónica. (n.d.). Retrieved 30 April 2024, from https://www.amazon.es/Digital-CCN-Pantalla-compacta-funci%C3%B3n/dp/B0CBVTP74T/ref=sxin_15_pa_sp_search_thematic_sspa?mk_es_ES=%C3%85M%C3%85%C5%BD%C3%95%C3%91&content-id=amzn1.sym.6bbfcf3e-79c9-4165-a53e-2222a7f6775a%3Aamzn1.sym.6bbfcf3e-79c9-4165-a53e-2222a7f6775a&crid=12M196N5OZHSHJ&cv_ct_cx=cámara+fotos&dib=eyJ2ljojMSJ9.KtFah02GTfBQvB5fX43h9Ujqibz_rmC35plfrnrmHmVYScWyHvM5u_-HsDHo_M_tC6halrlvTkLmAkM3a6xAKQ.dSwrReCOp46G5vaWrOg_I

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- Ladders:

Escalera de plataforma móvil para supermercado, almacén, camioneta, con ruedas, 1,5 metros, 2 metros—AliExpress. (n.d.). Retrieved 30 April 2024, from https://es.aliexpress.com/item/1005006132089361.html?src=google&src=google&albch=shopping&acnt=439-079-4345&slnk=&plac=&mtctp=&albbt=Google 7 shopping&albagn=888888&isSmbAutoCall=false&needSmbHouyi=false&albcpr=18928172568&albag=&trgt=&crea=es1005006132089361&netw=x&device=c&albpq=&albpd=es1005006132089361&gad_source=1&gclid=CjwKCAjw57eXBhAsEiwAalxaZgYF1jFjLnqj0jTCzkQOmDlimeXYFYFSrKKi2VTTr2TXAxpj-4XhrnVhoCnH8QAvD_BwE&gclsrc=aw.ds&aff_fcid=5392ef8251d84745b495739cd3b9d4aa-1714303734487-05092-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=5392ef8251d84745b495739cd3b9d4aa-1714303734487-05092-UneMJZVf&terminal_id=f19c779de30b4923a33bcbfb8b886402&afSmartRedirect=y

- Production Machinery

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- Building and works: based on the approximation Jose Beltran gave us and data from the Irritec company, we have estimated that it will cost 50/m2. With 1980 m2 that our industrial state has, this gets us to a total annual cost of **99.000€** (1980m2 *50)
 - Contáctenos - Irritec Iberia. (n.d.). Irritec Iberia. <https://irritec.es/contactenos/>
- Phytosanitary treatments:

FloraFlex—Root Drip—1 Gallon (3,78L) – NPK Store. (n.d.). Retrieved 24 May 2024, from https://npkstore.nl/en/products/floraflex-root-drip-1-gallon-3-78l?variant=42785294745839&gad_source=1&gclid=CjwKCAjw9cCyBhBzEi wAJTUWNQGIKjwk3toGu3NbKKwSdzSw_JZXjrMFz-4GtWqPxZkA5GB8363mcBoCBUIQAvD_BwE
- Raw Materials:
 - Lettuce Seeds:

GroHo Hidroponía es. (n.d.-a). *Semillas lechuga batavia verde peletizada*. GroHo Hidroponía Es. <https://www.groho.es/product/lechuga-batavia-verde-alision>

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TOMATE MS6. (n.d.). Fitoagricola. <https://www.fitoagricola.es/tomate-pera-rosa-ms6>

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- Coconut fiber substrate:

La CasaVerde. (2021, December 7). *Tabla de fibra de coco FICO en saco - Los mejores invernaderos de aluminio y cristal para jardín y terraza*. Los Mejores Invernaderos De Aluminio Y Cristal Para Jardín Y Terraza. <https://www.la-casaverde.com/producto/tabla-de-fibra-de-coco-fico-en-saco/>
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Calcio Ca-15—Bionova. (n.d.). Retrieved 1 May 2024, from https://www.growimagine.com/nutrientes/489-19604-calcio-ca-15-bionova-8718531673243.html#/2415-volumen-5_I

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PHOSPHORUS PLUS HESI - Growplant. (n.d.). Retrieved 1 May 2024, from <https://www.growplant.es/tienda/phosphorus-plus-hesi/>

- Insurance:

¿Cuánto cuesta un seguro para empresas? (2021, September 8). RibéSalat.
<https://ribesalat.com/cuanto-cuesta-un-seguro-para-empresas/>

- External Services:
 - Accounting: we talked to a family manager accountant and told us approximately 400€/month.
 - Transportation: Own estimation taking into account what Silveri Beltran told us from Cimalsa data
- Communications
 - Telephone and Internet:
Oferta Fibra y Móvil para autónomos al mejor precio | Ofertas Vodafone Empresas. (n.d.). Retrieved 30 April 2024, from https://oferta.vodafone.es/empresas/vodafone-one/?cid=187414840:dt-20140601:cp-vdf_toe_continuidad:cn-sem:kw-2281549601512:cl-no_cliente:sp-Google:cr-:gk-generica:st-prospecting:ta-base:md-empresas:ds-responsive:pr-voz:wn-toe:pl-/VDF-TOE-Mobile-Cong-BASE&gad_source=1&gclid=CjwKCAjw57exBhAsEiwAalxaZr1wJ31UmgVj7zphha1bgSrAwYyernZt6CQyosNS4PL7Hsdmn7H7NB0CDJAQAvD_BwE
- Materials
 - Agricultural Materials:
100 Uds kit de visita vestuario con bata, calzas, gorro y mascarilla | Formato ahorro | Iberomed. (n.d.). Iberomed. <https://iberomed.es/kit-de-visita-vestuario-con-bata-calzas-gorro-y-mascarilla-caja-de-10uds.html>
 - Office supplies: we estimated around a 100€ of pens, pencils, rulers, notebooks...
- Software licenses
 - Office:
Comparar planes y precios de Microsoft 365 para empresas | Microsoft 365. (n.d.). Retrieved 30 April 2024, from <https://www.microsoft.com/es-es/microsoft-365/business/compare-all-microsoft-365-business-products>
 - Windows:
Windows 11 Pro Licencia 1 PC - € 7,95. (n.d.). Retrieved 30 April 2024, from https://softwaresoriginales.com/products/microsoft-windows-11-pro/?currency=EUR/refresh2&utm_source=google&utm_medium=cpc&utm_campaign=20852872796&utm_content=684186327721&utm_term=&device=c&product_id=SOFTWJ93XEI2OLY9141&gad_source=1&gclid=CjwKCAjw57exBhAsEiwAalxaZuhdBgR0viaZ91o0CYS-T7fk51eegfJwb2TSPNkpJMX1DgMFbHYVhoCI-gQAvD_BwE

- Maintenance:
 - Maintenance of the solar panels: Silveri Beltran told us that the cost of the solar panels maintenance will be around **1.000€**.
 - Maintenance of the software of water control: we have estimated **300€**
 - Maintenance of the general production equipment: based on the data from Novagric, we have estimated a cost of **1.500€**

8.12 Loan Simulation

Selecciona tu préstamo:

 Préstamo Personal
  Préstamo Sostenible

 Anticipo de Nómina
  Pago de Impuestos

¿Cuánto dinero necesitas?

65.920 €

¿En cuántos meses quieres devolverlo?

84 meses

¿Deseas protegerte contratando el Seguro de Protección de Préstamos?

Fallecimiento por enfermedad o accidente, invalidez permanente absoluta, desempleo e Incapacidad temporal.

No

Consulta si tienes un préstamo inmediato online y tus condiciones personalizadas

Tu cuota mensual desde

955,17 €

Comprueba si está PRE-AUTORIZADO

Importe total financiado	66.579,20 €
Comisión de apertura financiada desde (1,00%)	659,20 €
Tipo de interés nominal anual (tipo fijo) desde	5,45% (5,90%TAE ¹⁾)

Descarga tu informe en PDF

Documentación necesaria y costes asociados

¹⁾TIN desde 5,45% (TAE 5,90% mínima) hasta 11,75% (TAE 13,13% máxima). La TAE variará por el cobro de una comisión de apertura porcentual y en función del plazo de amortización elegido. EL TIN, la TAE y la Comisión de Apertura dependerán del perfil crediticio del cliente.

Ejemplos basados en una financiación formalizada el último día de mes.

Desde: Tipo de interés nominal anual fijo del 5,45% y comisión de apertura financiada 1,00%, calculado mediante sistema de amortización francés. Cuota mensual 955,17 €. Importe total financiado 66.579,20 €. Importe total adeudado de 80.234,28 €, que incluye importe solicitado (65.920,00 €), comisiones (659,20 €) e intereses (13.655,08 €). Coste total del préstamo 14.314,28 €. TAE 5,90%.

Hasta: Tipo de interés nominal anual fijo del 11,75% y comisión de apertura financiada 2,00%, calculado mediante sistema de amortización francés. Cuota mensual 1.177,97 €. Importe total financiado 67.238,40 €. Importe total adeudado de 98.949,48 €, que incluye importe solicitado (65.920,00 €), comisiones (1.318,40 €) e intereses (31.711,08 €). Coste total del préstamo 33.029,48 €. TAE 13,13%.

8.13 Interview to Joaquim Bas, founder of Groots

Doncs mira, primer em volia preguntar el vostre model de negoci en què consisteix exactament?

Mira, nosaltres, és una mica confús perquè hi ha una part de tecnologia, la qual desenvolupem tecnologia de cultiu, i després la part de venda de producte. Llavors, com que consisteixen les dues línies separades, al final una es complementa amb l'altra. I el que fem és, a través de la tecnologia de cultiu, implementem nous productes al mercat.

És una mica això el que fem. Nosaltres, les vendes venen de la venda de producte al supermercat. No venen de la venda de tecnologia.

D'acord. Llavors, en la vostra cadena de valor, en quin punt de la cadena de valor del sector de l'alimentació us trobeu vosaltres?

Nosaltres ens trobem entre el sector primari, perquè tenim una part de cultiu, i després també el sector, diguem-li, no sé, terciari, o de comercialització o de distribució de productes. Per una part, nosaltres sí que cultivem alguns productes, i per l'altra també ens associem amb productors locals o, per exemple, distribuïdors de productes vegans, i fem altres elaborats.

D'aquests punts, heu experimentat alguns desafiaments o reptes, diguéssim?

Sí, o sigui, els dos són bastant diferents, però nosaltres el que passa és que ens hem trobat que estem fent els dos. Llavors, en la part de producció, aquí els reptes són més tecnològics, que és desenvolupar un sistema de cultiu, perquè l'hem fet nosaltres, diguem-ne, des de zero, que ens permeti cultivar d'una manera més sostenible, que això ja ve junt amb la hidroponia, i després que sigui rendible. Llavors, el repte de la part de tecnologia és poder cultivar enciams o herbes aromàtiques i que al final puguis competir amb el camp o amb els altres fruits que pots trobar al mercat.

Aquest és el repte més important. I això es soluciona gràcies a l'optimització de l'energia i del sistema de cultiu. Si optimitzes més les tasques, tens menys mà d'obra i al final et surt més a punt.

O si optimitzes més la distribució de les plantes en l'espai, per exemple, també optimitzes més l'energia que pots servir per il·luminar. Llavors aquí després et surt a compte activar aquestes varietats. I per l'altre costat, el de producte i comercialització, els reptes són més... és més... aquesta és l'indústria que ja existeix, llavors és més reptes de poder escalar, d'escalabilitat, de passar d'una empresa més petita a més gran, per automatitzar processos d'envasat, de piquing, etc.

Llavors és una mica un sector nou amb el que ja es coneixíem i que ens hem hagut d'adaptar. Llavors el repte d'un costat és més tecnològic per tenir rendibilitat i per l'altre és més de poder escalabilitat. Perquè al final per poder treballar en supermercats has de tenir un volum concret, una maquinaria concreta, etc. però al final els reptes segueixen a venir al dia a dia.

Em podries explicar una mica en què consisteix la hidropònia i com és que heu decidit fer ús d'aquesta tecnologia vosaltres?

Mira, sí, nosaltres sempre ho expliquem com si fos en tres parts, el nostre sistema cultiu. Tens per una part, com dius tu, el cultiu hidropònic, que és cultiu sense terra, on nosaltres fem servir un substrat, en aquest cas fibra de coco, on posem la llavor, i després a través d'un circuit tancat reciclem aigua amb nutrients i això fa que tu puguis estalviar fins a un 95% d'aigua, perquè tota l'aigua que la planta no fa servir es torna a utilitzar un altre cop. En el camp, quan regues, l'aigua es drena i es perd.

El fet que sigui hidropònic també fa que puguis cultivar en vertical, que aquí és l'altra part, és el cultiu vertical. El cultiu vertical el que fa és optimitzar un espai, que tu pots posar més plantes per metre quadrat. Llavors fem servir unes torres de cultiu de quatre metres d'alçada on posem més plantes per metre quadrat.

I l'altra, l'última, és l'entorn controlat. Tenim l'hidropònic, tenim vertical, que és optimitzar espai, i després l'entorn controlat, que aquí el que fem és, gràcies a la tecnologia LED i de control ambiental, controlem exactament el que necessita la planta per créixer a nivell de condicions de CO₂, d'humitat, temperatura i d'hores de llum, per exemple. Nosaltres no ho cultivem a l'exterior, ho cultivem en un espai tancat, on a la planta, per exemple, a l'ancià molt alfàbrega, li donem 14 hores de llum.

I el que fem és replicar els espectres del sol, el repliquem amb la tecnologia LED. I nosaltres hem anat avançant, hem anat desenvolupant aquesta tecnologia, tant de cultiu vertical, per optimitzar el que et deia abans, de l'operativa perquè sigui rendible, i la tecnologia LED també. També l'hem anat desenvolupant a nosaltres, els tipus de xips, quin espectre ha de tenir, què afecta diferent a la planta.

Tu pots fer que una planta tingui més sabor, o més aroma, etcètera, segons el tipus de llum o les hores de llum.

Responent-te a l'altre pregunta, nosaltres sí que vam veure que hi ha altres països, com als Estats Units o al Japó, que estaven més avançats, o inclús altres països del nord d'Europa, que ja estaven fent ús del cultiu vertical amb tot controlat.

Però crèiem que podíem millorar una mica aquesta tecnologia i que la podíem fer nosaltres també. Llavors vam començar desenvolupant-la, gràcies a les impressores 3D, vam començar amb unes 16 impressores, que ens va permetre poder anar canviant el disseny i adaptar-lo una mica a les plantes que volíem concedir i una mica al sistema en general. I vam anar avançant, avançant, i això fa 5 anys ja que estem treballant amb aquesta tecnologia, i l'hem anat canviant i adaptant una mica al mercat.

Però una mica és això, ens vam posar a fer-ho primer perquè vam demanar pressupost a aquestes empreses de fora, vam veure que era bastant elevat el pressupost i que podíem, d'alguna manera, millorar-ho. Llavors, per exemple, si tu veus una mica el món del cultiu vertical, hi ha moltes que fem servir estanteries, nosaltres fem servir torres de cultiu, perquè creiem que té uns avantatges a nivell de creixement de la planta, de control de plagues, d'optimització d'espai, que és millor. Llavors, hem anat tirant per allà.

I d'hidropònia hi ha diferents sistemes? Llavors, vosaltres quin utilitzeu?

Que sigui hidropònic només vol dir que està cultivat amb aigua i sense terra. Això fa que hi hagi aquest estalvi d'aigua.

Per exemple, hi ha hivernacles que fan cultiu hidropònic també, i fa anys que ho fan. A Múrcia n'està ple. Llavors, el fet que sigui hidropònic, vertical i tot controlat ja és diferent, que és el que fem nosaltres.

Llavors, el fet que sigui vertical, aquí hi ha diferents sistemes, només amb estanteries o amb torres. Si després mires alguna foto del nostre cultiu, són torres. Sí, sí, les he vist. Després, si busques altres empreses de vertical farming, n'hi ha moltes. Aerofarms, o moltes. Ja ho veuràs.

Hi ha algunes que tenen torres i algunes que tenen estanteries. Cada cop n'hi ha més de torres, però abans eren totes amb estanteries.

I vosaltres teniu els proveïdors de la tecnologia aquesta?

Sí, la tecnologia és nostra, la fem nosaltres.

Llavors hem fet motlles d'injecció. Per exemple, nosaltres no fabriquem el LED en si, però sí que anem al fabricant i li diem vull que facis un LED d'aquestes dimensions, amb aquests xips, tal, tal, tal. Llavors, ho ajuntem tots nosaltres.

I això és clau, i ha sigut clau en Groots, perquè ens hem pogut adaptar als canvis de la indústria. És una indústria molt nova, que cada cop té més canvis

Doncs això requereix uns canvis en el sistema. Llavors, si tu ja el coneixes i entens com funciona, doncs és més fàcil fer-ho i més barat. Llavors, aquí va una mica la clau de fer-ho tu i no comprar-ho fora.

Més endavant ja es veurà com serà ja la tecnologia. Però abans nosaltres volem demostrar realment que això és rendible i que podem estar, pel que estem fent, venint a supermercats enciams, aromàtiques, cultivades amb el sistema, el cultiu vertical, i que no... i que es fa el compte.

I segons la vostra experiència, quins creus que són els reptes més grans que hem fet contra aquesta indústria?

El principal és la rendibilitat, que és per això que no n'hi ha més, que és que el que et cultius et surti a compte.

Llavors, perquè sobretot el major cos és energètic i la gràcia seria vincular el cultiu vertical, l'entorn controlat, amb, per exemple, una font d'energia renovable potent. Nosaltres, per exemple, aquí tenim plaques solars, a la nostra nau de cultiu, però tindria sentit fer la següent granja de cultiu al costat d'un generador més gran d'energia renovable, com per exemple un camp de plaques solars molt gran o un camp d'energia eòlica, i així tindríem molt sentit. I després, de reptes, el principal és poder cultivar més varietats, per no quedar-te només amb enciams i amb herbes aromàtiques, sinó poder fer fruits vermells, per exemple, fresses, etc. Això ara no és real, no es pot fer, perquè surt molt car, i llavors no tens sentit. Nosaltres hem crescut fresses, hem crescut molts tipus de fruits, però no té sentit cultivar-los, perquè al final ningú te'ls podria comprar a aquest preu. Llavors ara encara ha d'evolucionar la tecnologia per permetre això.

Sobre les regulacions i els certificats que es necessiten, com afecten això a la producció i comercialització dels productes hidropònics?

En quant als certificats, no... Al final no hi ha cap impediment. El que sí que no es pot tenir en cultiu vertical o hidropònic, és el certificat ECO. Per exemple, aquest no es pot tenir, perquè per poder tenir ECO has de treballar amb terra.

És a nivell europeu i fa anys que està així escrit i això no ho canviarem ara. Els Estats Units sí que ho van canviar i el cultiu hidropònic pot ser ECO. Però a Espanya, a Europa encara no.

Però nosaltres no ens situem al costat de la producció ECO, sinó al costat del cultiu... O sigui, quan a preu, al costat del cultiu tradicional. Perquè volem competir amb l'alimentació en general, no només amb el sector ECO. Sí que compartim valors, inclús podem ser més sostenibles que l'ECO, però realment a vegades també és un rebuig tenir ECO perquè ja és més car.

Després a nivell de la venda, certificacions de sanitat com tothom i res especial.

I creus que la tecnologia de la hidropònia és una tecnologia establerta o aquesta tecnologia va creixent, diguéssim? Llavors, pot fer que aquesta ara quedi obsoleta?

No, jo crec que no. Jo crec que hi ha varietats que sí que tindrà més sentit cultivar-les en cultiu vertical, més que res, perquè ja no es poden ni cultivar a la terra. Hi ha altres que seguiran creixent a la terra si poden seguir creixent, i llavors, a poc a poc, aniran abarçant... No serà que li treus el camp, sinó que directament és com que complementes.

A més de comprar-ho del Marroc, per exemple, o de comprar-ho de no sé on, ho fas tot aquí i complementes amb el camp. Nosaltres ho veiem més així, no com un substitut.

I creus que aquesta tecnologia anirà innovant-se al cap dels anys? Que s'anirà implementant cada cop més, diguéssim?

Sí, cada cop es podran produir més productes.

Vas incorporant, per exemple, al següent pas, fruits vermells, que n'hi ha uns quants. Seria el següent pas. Després ja es provarien amb fruits més grans.

I cada cop, en funció de com vagi, amb el cultiu tradicional i com es va innovant el sistema, en funció dels costos d'energia i tal, anirem incorporant més productes. Tant nosaltres com tothom que està ficant el món. I ara, parlant una mica sobre el producte, quines són les qualitats que li dona la hidroponia al producte? Jo sempre parlo, no només d'hidroponia, sinó del que hem dit abans, hidroponia, en pràctica, al entorn controlat.

Perquè al final el que diferencia més el producte és l'entorn controlat, que és el fet d'utilitzar energia, la il·luminació LED, controlar la temperatura, CO2, humitat, tal. I això fa que la planta, per exemple, la teva pregunta, està en condicions ideals i tot, pots potenciar, amb la llum, molts nutrients, etcètera, pots potenciar unes vitamines, per exemple, o uns principis actius de la planta. Això fa que després tinguis una planta amb més aroma, etcètera.

Això sí que ho pots fer amb un cultiu hidropònic més fàcilment, perquè pots controlar això, exactament quants nutrients li fiques a la planta, quina temperatura, quanta llum, i això afecta directament a la planta. Llavors, per les plantes de fulla, ja hem vist que podem potenciar-ho, pels fruits encara no. Llavors, ara mateix, si fóssim a cultivar fruits vermells, no estaríem preparats a millorar les condicions dels fruits vermells del camp.

Ens queda molt encara per treballar. Molt. I ara la meua pregunta és, que el vostre producte principal és verdures de fulla, la meua pregunta era per què us heu concentrat, com és que hi ha aliments de fulla, però entenc que és el que es pot fer, no? Sí, perquè és el que ara mateix té sentit a nivell econòmic, cultivar.

I també tenia curiositat que també he vist que oferiu plats elaborats, com és que oferiu aquests plats elaborats? És una estratègia per deixar de comercialitzar el producte primari o simplement per ampliar la vostra gamma de producte?

Sí, esclar que hi ha, perquè tu quan et fiques en el món del que comentàvem dels reptes del món dels dos mons, del cultiu o del producte, distribució i tal, has d'ampliar gamma per poder afrontar els costos logístics, poder tenir més presència lineal, etcètera.

Però per una part, però primer de tot és molt clar que tu guanyes més per quilo, per exemple, si jo produeixo alfàbrega, i fas una sapata alfàbrega o la vens a granel, ho invento, ho vens a 12 al quilo, però si després d'això fas un pesto, per exemple, doncs obtenir més de 12 al quilo és el 40. Com que pel quilo de vaca guanyes més. Llavors per aquí, per treure més rendibilitat del cultiu és millor, i després per tenir més presència lineal, també fer més marca, fer producte més elaborat, que no un comoditi com una alfàbrega o una menta o una corienta.

I en quant a una mica la comercialització, he vist que vosaltres veneu online, no? També a canals minoristes, diguéssim? Sí, no, o sigui, principalment a supermercats.

Sobretot a Bonpreu, a Carrefour, al Campo, Sorli, a Perolsky, a Obesco, que estan al País Basc, i cada cop venen a més supermercats. I venen format de el que venen més, al top, potser un 90% de les ventes són aromàtiques. Ah, vale.

És amb els que ens podem diferenciar més, ara.

Creus que aquests són els canals de distribució més efectius per arribar als consumidors?

De moment sí, perquè com que és un negoci de volum, és qui gestiona més volum, i de moment sí.

I, per exemple, aquest producte, diguéssim, a quin segment de clients està dirigit?

En el cas de les aromàtiques envasades, crec que fem més, com és un producte bàsic, que no tenim comoditi, està dirigit a tothom, tots els públics, perquè al final quan vas al supermercat tens necessitat de comprar alfàbrega per fer un pesto, doncs compres la que hi ha. O menta per fer un mojito, el que sigui.

Llavors, en el cas del consumidor dels plats preparats vegans, aquí sí que ens enfoquem més en un consumidor que tingui en compte més la sostenibilitat, el bon bagatge, etcètera. Que està més alineat amb el món del cultiu vertical, perquè dona una mica de la mà, no?, de tenir un futur millor, etcètera. Doncs aquest sí que tenim un target més jove, més conscient, que al final hi ha menys volum, hi ha menys consum que l'altre, però sí que diferencia una mica més.

Heu observat alguns canvis significatius en els últims anys de la consciència dels consumidors a l'hora de comprar, amb el factor sostenible, diguéssim?

Sembla que sí, però encara no. I sobretot ha baixat bastant el consum del... de tot el que és vegà, la tendència a la vegana també ha baixat bastant.

A final s'està mirant més la butxaca que en un altre cop. Però bueno, al final és el que dèiem, que nosaltres busquem buscar estar al mateix nivell, no?, que l'agricultura tradicional, l'alimentació tradicional i no l'eco, tampoc ens afecta tant.

Quins són els factors que creus que influeixen en les decisions de compra dels consumistes en aquest mercat?

Jo crec que el fet que sigui de proximitat sempre és el que més destaca. Primer preu i després proximitat.

I després potser un altre seria el tema del packaging, el catró, tal. Però primer sempre es preu i després si és proximitat també es valora molt. Perquè tu creus que la gent quan veu sostenible no... no els és com més igual, diguéssim? No, i interessa, però després hi ha moltes enquestes d'això que diuen en plan, a tu t'agrada que sigui sostenible si pagaries més si quant més? Bé, potser un 10 cèntims més.

O 20. Llavors et quedes una mica igual. Llavors, ara nosaltres ho portem més cap a que el cultiu vertical reculturat és sostenible, perquè està dins de la tecnologia.

O sigui, ja només pel cultiu hidropònic ja hi està vida aigua i tal. Però a part també és necessari perquè el camp ja està fallant llavors nosaltres no fallem durant tot l'any. A l'estiu, per exemple, els enciams ja comencen a haver-hi fallo enciams i al camp li costa.

Nosaltres no. Llavors tu pots seguir consumint enciams, per exemple. I això sí que és una cosa que ha valorat el client que és el súper, com el consumidor perquè està alineat.

Heu notat que durant l'any, per exemple, la venda d'enciams varia molt, diguéssim? Bé,

nosaltres en concret les aromàtiques, per exemple, sí que és molt estacional que depèn molt dels mesos de l'any.

Es ven més o menys. Es ven molt més a l'estiu i al desembre. Les tres mesos d'estiu i al desembre, sobretot, perquè és... Bé, en general, els supermercats, tant els enciams com tot, es ven la venda al desembre i als tres mesos d'estiu.

El resta de l'any va bé, però molt menys. Les aromàtiques, sobretot, encara es nota més perquè és un producte que es pren molt per festes, l'estiu. Quan cuines a casa o pesa vents i tal, compres més aromàtiques que el dia a dia del gener, febrer, març.

Heu implementat o teniu pensat diferents estratègies per gestionar aquesta oferta?

Diguéssim, per aquests mesos on no hi ha tanta oferta... Sí, la incorporació dels enciams justament és per això. Per poder estabilitzar una mica la venda durant tot l'any.

Perquè els enciams sí que és un consum bastant estàndard. Les aromàtiques no. Aromàtiques és més estacional.

Llavors, seria dels enciams i dels elaborats que estem fent de salses i això també és per això.

I la proporció en quant a importància que se li dona a aquest cultiu, quina creus que seria?

No ho sé, la veritat. Però ja et dic, el primer és el preu.

I després que sigui proximitat. I després, inclús en un cop, ja ni es comunica tant el que és cultiu vertical.

Quin tipus de feedback heu rebut per part dels clients en relació a la qualitat i el sabor dels productes?

Els productes que cultivem nosaltres sempre han sigut bons, han sigut molt bons.

I, a més, com que la majoria dels productes són productes frescos, com enciams, aromàtiques, només el fet que estiguin collits i envasats al mateix lloc ja guanyes molt. Perquè en el camp, la majoria de cops, quan collen, després ho porten a envasar a un altre lloc. I tot aquest temps que triguen a portar-ho d'un lloc a l'altre, perd propietats nutritives, les plantes. Només per això ja guanyem. I després, també, el cas de l'alfàbrega, és molt sensible a la temperatura. I llavors, si la transportes amb fred, que és com es transporten tots els productes als centres logístics dels supermercats, es torna negre.

I nosaltres, gràcies al control d'il·luminació i de nutrients, hem aconseguit que li costi més tornar-se negre. I això sí que ho valorem. El fet que a tu t'arribi el producte i que estigui bé, millor, doncs això està bé.

Però després, a nivell organolèptic, d'aprovar-ho i tal, al final no el fa agradar. O sigui, tampoc et canvia la vida. Però sí que milloren aquestes coses.

I això del tema de la logística, és fàcil, relativament, transportar els productes?

Sí, perquè en els supermercats està centralitzat, sobretot. És fàcil, però és car. I per això necessites molt volum.

Llavors, fàcil és perquè tu portes a una central de bon preu, on sigui, i ell mateix reparteix les botigues. Al principi fèiem més fruiteria al restaurant, i es complicava més perquè sí que havies de gestionar tu els enviaments, doncs eren pacs més petits a molts llocs. Llavors, aquí sí que és una estructura diferent.

O qualsevol empresa que faci B2C, també es complica molt més. Nosaltres, què fem? Venem a B2B, doncs és més fàcil. I a mercats no heu pensat vendre, per exemple? Sí.

Sí, a mercats també hem venut, també.... Ens passa igual que ens passa amb les fruiteries. Que al final del mercat és que tu vas a la tenda del mercat, i hi ha tendes diferents de mercats. El que fem és, per exemple, vendre-li a Mercabarna, i ells compren a través de Mercabarna. Mercabarna.

A través de Mercabarna ens hem comprat als mercats. Vendre directament al mercat no surt bé, perquè l'enviament és molt car pel que compra. Si al final es torna un negoci de volum, saps? I qui té més volum són els súpers.

I per últim, vosaltres heu invertit en investigació i desenvolupament per millorar els mètodes de producció, diguéssim?

Sí, contínuament. Per millorar i per fer varietats noves, això sí.