

BUSINESS PLAN: PATMOSPHERE

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" Luck is what happens when preparation meets opportunity "

Sêneca

"The will to win, the desire to succeed, the desire to reach its full potential. These are the keys that will open the door to personal excellence."

Confúcio



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Abstract

The present project work focuses the creation of a purple passion fruit production company based in Leiria, Portugal, called **Patmosphere**.

Producing purple passion fruit comes from different interests. It is an exotic fruit that has low expression and is not much explored in the national market.

Company activity will start with 4 hectares then growing to 6 hectares, thus pretending to satisfy a part of the market demand as well as obtain profit with its activity.

The **Patmosphere** will work with cooperatives, being possible sell the whole production. The structure is composed by 3 elements that do the office work. Regarding to production, it will be hired an external company to handle the activities.

Relatively to the market, in contacts established with national hypermarkets, was obtained information that consumption of purple passion fruit isn't higher since sometimes are a stock break, which leads to conclude there is necessary more purple passion.

Due to its scarcity and the quality of its flavor, this fruit also stands out for its price, which is an extra motivation to explore and promote this culture in Portugal, minimizing logistics costs and increasing the speed in the delivery period with high quality product.

Another aspect that allows this business opportunity to become a reality is the factor climate. Portugal has a good weather to production purple passion fruit, with a high number of sunny hours per day with adequate temperatures.

To conclude these motivational reasons why to produce purple passion fruit, there are no are no producers of it in Leiria, as well as, the production lands are already owned by the company thought heritage.

Key words: Entrepreneurship, Business plan, Purple Passion fruit, Agriculture

JEL Classification System: Q13- Agribusiness; Q15- Agriculture and Environment



Business Plan objectives

Identifying and explaining the rationale for the business opportunity is crucial, since a good business plan begins by focusing on two issues: Is the market for this product large enough or growing fast? Is the industry or could it become attractive? For entrepreneurs and investors, these are the big questions that seek to be answered in a business plan, since they are indicative or not of potential ideas and markets (Sahlman, 1997).

The business plan creation firstly implies an extensive search and comprehension of determined product or service, being a support base for the decision process and for the objectives of the company.

Relatively to this specific project, the main objective is to conclude if the purple passion fruit production is actually an interesting business in the national market. To achieve this conclusion the determining factor is the profitability of the investment in the long term.

There are also others objectives of this business plan that will serve to complete the big picture of the investment in the purple passion fruit.

Those secondary objectives are based in financial information;

Secondary objectives:

- Solvability positive or negative
- Payback period $< / >$ 3 years
- TIR $< / >$ 20 %



Introduction

The realization of this project of purple passion fruit will include all the feature around the fruit and the business associated with itself. The structure of the business plan is based in different parts, where in a theoretical way the plant and fruit will be analyzed first, focusing on their characteristics and needs, as well as its healthy development.

The second part of the work has a set of analysis to the associated market of the fruit business. The objective is to allow the extraction of as much information as possible that allows a comprehensive and deep view of the dynamics of the company in the market.

Through this path it will be easier to analyze the positives and negatives aspects about the business and make a decision relatively to the investment needed to start activity.

In order to complete the project and make it more solid in the financial perspective is the third and last part of the project, which includes all the mathematics of the business. The structure will be organized in a set of tables that present all the revenues, costs and others within a total of 5 years of business activity.



1. Literature Review

1.1 The Purple Passion fruit

1.1.1 Plant and fruit presentation

The passion flower species belong to the family Passifloraceae, which is composed of 19 genera, the Passiflora genus being the most expressive, with about 400 species (Junqueira, et al., 2006).

The purple passion fruit is native of southern Brazil and was thoroughly dispersed during the 19th century to other countries in South America, Caribe, Asia, Africa, India and Australia. Passion fruit is adapted today throughout the tropics and subtropics and has naturalized and escaped in many areas (Morton, 1987).

It is a climbing plant with a vigorous continuous growth. The root system is shallow, climbing stem, lobed and green leaves with tendrils (supporting organ) flowering yolk and vegetative yolk (branch origin) in the axilla of the leaf. The root system of the pivotal type, comprises between 0.30m and 0.45m depth and a radius of 0.60m from the stem (Kliemann et al. Al., 1986; Sousa et al., 2002; Urashima, 1985).

The flower is hermaphrodite with stigmas located above the anthers. It's flowering starts between 4 to 5 months (Rebelo, 2012) Produces small fruits with rounded format that weighs between 0,050kg and 0,090kg, sweet taste, variable acidity according to the variety, state of maturation and place of production (Madeira, 2013). As Oliveira and Ruggiero (2005) mentioned, some species of the Passiflora genus have enormous commercial potential, such as the purple passion fruit (*Passiflora edulis sims*), which is the focus of this business plan. According to Ferrão (2002), the cultivation in Portugal is possible in the low altitude zones of almost all the country, but only recently has been cultivating this species with a certain extension.



Figure 1 - Purple passion fruit in different stages of maturation & purple passion plant

Source: author

1.1.2 Nutritional necessities

This fruit is valued for its taste aroma, nutritional content as a source of provitamin A, ascorbic acid, vitamins A, B, C and E, calcium, phosphorus, iron, protein and magnesium, with low fats and calories (Wenkam, 1990; Schotsmans and Fischer, 2011). It also contains potassium has a high level of fiber and has a pH about 3 and a high content of organic acids, being predominantes citric acid, lactic acid and the malonic acid.

There is also another author that defends the importance of passion fruit, referring that besides having excellent organoleptic properties is rich in minerals, vitamins and phenolic compounds, making this fruit a good natural source of antioxidants (Dhawan et al., 2004).

Based on (Costa et al., 2008) the macronutrients required by passion fruit are in descending order: nitrogen (N), potassium (K), calcium (Ca), sulfur (S), phosphorus (P) and magnesium (Mg).

The micronutrients are manganese (Mn), Iron (Fe), Zinc (Zn), Boron (B) and Cooper (Cu).

The mineral nutrition of passion fruit (*Passiflora edulis*) is one of the factors that contribute most to fruit productivity and quality. It is recommended the soil chemical analysis be performed annually to allow monitoring and maintenance of adequate levels of nutrients during the plant cycle.



1.1.3 Fruit utility

In general, passion fruit has three main uses: in natura consumption, industrial processing and pharmaceutical applications (Bhat and Palyath, 2015). The appearance of a fruit is the main factor of quality from the point of view of fresh marketing. In this way, with regard to in natura consumption, consumers generally seek to consume fruits with better appearance, evaluating attributes such as size, shape, colour, texture (perceived) and apparent defects (Sato et al., 2007).

In industry, pulp is the main matrix used in the transformation processes, producing, among the main products of passion fruit, juice at 14° Brix and concentrates at 50° Brix (Coelho et al., 2010). Another industrial use is the use as a flavouring agent in preparations of cakes, ice cream and jellies (Baht and Paliyath, 2016; Schotsmans and Fischer, 2011). The sub products (husks and seeds) that originate in the processing of passion fruit juice correspond to about 65 to 70% of the fruit's weight, constituting an agro industrial residue.

In this context, many researches have emerged in the last decade with economic, scientific and technological interest, in order to determine the composition and properties of these matrices, trying to promote their industrial reuse, incorporation in other food products, as well as the development of new products with (Oliveira et al., 2009).

The third strand of utilization of passion fruit is the pharmaceutical applications. Several parts of this plant have bioactive properties and extracts have been used to treat anxiety, insomnia, asthma, broccoli, urinary tract infections (Zibadi and Watson, 2004), as a mild sedative, in the treatment of asthma broquial, gastrointestinal nerve disorders and problems in menopause (Schotsmans and Fischer, 2011).

1.1.4 Sustainability of the plant

In order to achieve satisfactory results relatively to production it is necessary to take in consideration a few factors that will influence the growth and the development of the plant, as in quality and quantity, as for the plant as for the fruit.

According to (Costa et al., 2008), among the factors of the environment of greatest influence for the growth and development of passion fruit plants are, temperature, altitude, relative humidity, luminosity and soil moisture. Knowledge of the response of the plant to



the effect of temperature variation, throughout the crop cycle at all stages of its development, is essential to identify the best planting conditions, as well as the most appropriate cultural treatments from planting to planting. End of the plant's useful life. For Junqueira et al., (1999) Prolonged rainfall, cold and dry winds, low nighttime temperatures, pest attacks, and disease significantly affect the development and quality of the fruit.

Menzel & Simpson (1988) report that solar radiation is the environmental factor that contributes most to flowering fluctuations and the formation of passion fruit. These authors verified that plants submitted to low radiations presented growth and the development of the branches and the productive potential reduced. The same reasoning is used by Vasconcellos & Duarte Filho (2000) to justify the low yield per plant in the densified plantings, since the natural shading of the branches decreases the photosynthetic gain of the plants

The passion fruit grows ideally in regions with elevations between 100 and 900m, average temperature in 23 of 25° C, low relative humidity and precipitation around 800 to 1700mm well distributed throughout the year, with limitations for areas subject to occurrence frost (Meletti, 1996). Although, Madeira (2013) says the purple varieties are a specie very tolerant to cold and frost. Petry et al., (2001) explained that the plant needs protection from wind to find better conditions to its development.

According to Rodríguez (2010), the appropriate altitudes for purple passion growth are between 1,400 and 2,000 meters, but for Zibadi and Watson (2004), the altitude and latitude do not appear to be a constraint to cultivation other than through the temperatures associated with them. Purple passion fruit grows best in a subtropical climate and requires a lot of sun for optimal growth and fruit production, thus very hot places and partial shade may be preferable (Schotsmans and Fischer, 2011). For Costa et al., (2008) the duration of plant growth stage production and fruit quality are limited mainly by temperature and luminosity. Considering it, more than 11 hours daily light provides better flowering conditions as well as better fruits.

1.2 Soil Requirements

In Portugal, a grazing is carried out to bury the residues of the previous crop, following by soil preparation, and finally, a new grazing is realized, through which the organic corrective and the fertilizer is applied in the soil (Andrade et al., 2005). Initially, if necessary, the terrain should be leveled so as to promote efficient drainage of excess water (Branzanti, 1989)



The choice and orientation of soil mobilization operations depends on soil type, soil moisture level, cultural background and type of irrigation used (Andrade et al., 2005).

Soil drainage is important because too much water in the root system can lead to disease problems, such as root rot. The slope of the land should not exceed 12% and the position on the slope should avoid the accumulation of water (Zacharias et al., 2016)

According to (Costa et al., 2008) is fundamental that the selection of the soil be carried out with discretion, observing physical and chemical characteristics of the soil used, such as effective depth, texture, porosity, organic matter content, acidity and availability of soil nutrients. Relevant content was mentioned by Junqueira (2005), since poorly drained soils favor the attack of microorganisms that cause root rot.

For Zacharias et al., (2016) soils with medium texture, adequate nutrient content and well drained are considered ideal for planting passion fruit. Although, Morton, (1987) considered that passion fruit tolerates a wide variety of soils and grows best on well drained, sandy loams with pH of 6.5–7.5. Complementing the importance of a correct pH in the soil, Zacharias et al., (2016) says that soil pH above 6.5 promotes the unavailability of copper, iron, zinc and aluminum and promotes greater availability of boron, calcium, sulfur, phosphorus, magnesium, nitrogen and potassium. When the pH of the soil is below 5.5, there is a problem of aluminum toxins and deficiency of calcium and magnesium. Considering the necessary conditions above mentioned, Watson and Bowers (1965) adds important information, by explaining that the low air and soil temperatures, water stress, low leaf nitrogen levels and possibly short photoperiods can restrict passionfruit growth and fruiting potential.

1.3 Water conditions

The water content in the soil is one of the factors that most influence the flowering of the passion fruit culture (Vasconcellos; Cereda, 1994). The plant is very demanding on water conditions, because it has a continuous development. Prolonged water deficiency can cause paralysis of vegetative activities, delayed flowering, flower and fruit drop, with significant reduction in productivity and fruit quality (Costa et al., 2016).

Generally, annual rainfall should be at least 35 inches (90cm). The vine and fruit also require a lot of water, especially when the fruits are maturing, so irrigation systems are often installed. This species is shallow-rooted but withstands drought by defoliating and roots can be protected by organic mulch (Schotsmans and Fischer, 2011)



Passion fruit responds well to irrigation, and moisture content in the soil is one of the factors that most influence the flowering of the crop (Vasconcellos, 1994). The lack of moisture in the soil causes leaf and fruit fall from passion fruit, especially at the beginning of its development. When fruits remain in the plant in a situation of water deficiency, they can grow with wrinkling, and this impairs the quality of production (Manica, 1981; Ruggiero et al., 1996). Dripping is considered the best system because it does not cause excess moisture to form in the aerial part of the plant. Four drippers are usually used per plant, spaced 50 centimeters apart. The amount of water varies depending on the soil and the age of the crop (Meletti, 2015)

Results obtained by Martins et al. (1998) showed the relation between the applied total water depth (rain + irrigation) and the productivity of the drip irrigated passion fruit crop. For the authors, the maximum economic productivity is obtained with a blade around 1360 mm. The results also showed that irrigation use leads to a 36% increase in crop productivity. Olitta (1984), in studies on drip irrigation, found that this system allows good control of irrigation and water saving in several crops and, in some conditions, has resulted in yields higher than those obtained with other methods.

Lucas (2002) concluded that fruit weight, juice density, bark thickness and juice yield were significantly influenced by the irrigation.

1.4 Pollination

Regarding the present business plan, the plantation will be made, as already mentioned, inside a greenhouse, in order to take the maximum profitability of the plant. Therefore, the type of pollination to be considered will be the manual type.

Pollination is one of the most important phases in the production of passion fruit. It is known that the percentage of fruiting, fruit size, number of seeds and yield are positively correlated with the number of pollen grains deposited in the stigma during pollination (São José et al., 2011)

Manual pollination is the transfer of pollen grains from male structures - anthers - to the feminine part of the flower, - stigmas. When performing manual pollination, a greater amount of pollen is deposited on the surface of the stigma. As a consequence, more pollen germinates and fertilizes the eggs, thus forming more seeds. In addition, in artificial pollination, practically all the open flowers in the day are pollinated, unlike insects. Thus, there are two great advantages: greater number of fruits produced and of greater weight



(size), that reach better prices in the market (Vasconcellos,2015).

Artificial pollination is more efficient than natural pollination, about 50% and 30% respectively. One way to measure the need to use this practice is to evaluate the number of fallen flowers. (Silva n.d)



Figure 2 - Natural pollination of purple passion plant

Source: www.olhares.sapo.pt/maracuja-foto575208.html

1.5 Production Localization

Before the implementation of an enterprise such as the passion fruit culture, it is very important to make an evaluation of the logistics of regional and local production, and of commercialization of the fruits. The entire agribusiness chain of passion fruit must be previously analyzed, with ease of guaranteeing the availability of technical assistance services and a proximity to the consumer centers. The availability of skilled labor for the necessary cultural dealings, the availability of water and electricity are also important factors to consider (Costa et al., 2008).

It is necessary to create a good planning of the dimensions of the area of planting, so that the cultural treatments and mainly the harvest are benefited. The area chosen for planting should preferably be far from any other established passion fruit crop, preferably in new areas, with adequate soil and climate (Zacharias et al., 2016)

Reinforcing the idea, Costa et al., (2008) says, the planting should be done in a sunny and well-drained area, with flat relief, easy access, and if possible, away from other production areas around at least 500 meters.



1.6 Greenhouse planting process

Consider that this business plan aims the production of purple passion fruit in the center of Portugal in greenhouses, the protected cultivation consists of a technique that allows certain control of climatic variables like temperature, humidity of the air, solar radiation and wind. This control translates into a gain in productive efficiency, in addition to the protected crop reduces the effect of seasonality, favoring more balanced supply over the months (Silva, Silva and Pagiuca, 2014).

For Zacharias et al., (2006), The cultivation of passion fruit in greenhouses is justified by the higher yield per area and the better quality of the fruit. Although, to achieve high quality fruit, it is necessary to apply specific treatments before planting, based on Gontijo, Zandone and Pinto (1990), the soil fertilization should be done 30 to 60 days before planting and according to the result of the soil analysis. Relatively to the necessity of space inside the greenhouse for planting, Zacharias et al., (2006), concluded that the best spacing is 1.6 m between rows and 2 m between plants. The passion fruit needs support to provide the distribution of branches, facilitate cultural operations and optimize light harvesting by the productive branches. This structure is usually constructed with wooden pole and plain wire (Meletti & Bruckner, 2001).

The most commonly used driving system is the espalier, and treated eucalyptus wood can be used. The tensioners should be 14 to 16 cm in diameter, the intermediate stakes 6 to 8 cm, galvanized wire 12 should be 1.7 to 2.0 meters above the ground and the wood should be drilled to a depth of 0.7 to 1 meter (Gontijo, Zandonade and Pinto, 1990).

Ideally, the orientation should be in the east-west direction, as the sun runs along the line of the horizon longitudinally (Zacharias et al., 2016)

There is a need for year-round irrigation and all flowers must be pollinated manually, due to the absence of rain and insect pollinators inside the greenhouse. The irrigation system that most adapts to greenhouse cultivation is the drip system, which provides greater water savings and does not water the leaves of the plant, thus avoiding the appearance of various diseases. (Zacharias et al., 2006).

Spending on pest and disease control can also reduce in protected cultivation. Plants grown in greenhouses, for example, have a lower incidence of pests and diseases, which makes the product cleaner (Silva, Silva and Pagiuca, 2014).



1.7 Pruning

Pruning is necessary in order to enable satisfactory yields. Pruning it is also required by the intense development of the plant, which produces a dense vegetal mass that allows the emergence of pests and diseases, and cause an increase in weight borne by the driving system (Lima et al., 2006)

The first pruning is called pruning training. Approximately 15 days after planting, pruning begins, eliminating all lateral buds, leaving only the most vigorous branch, which will be led by the wire to the wood (Oliveira, 2002). In the period between harvests, cleaning pruning is done by removing all dry or diseased branches, providing better aeration to the passion fruit foliage and reducing the risk of contamination of the new buds. When the plant overcomes the wire, the terminal gum is removed to force the emission of lateral gums.

Subsequently, these buds should be raised in order to force the development of the lateral buds that will form the productive branches. Thus, a T-shaped plant is evenly distributed along the support wire. From this stage onwards, the growth of the sprouts grown from these lateral cords towards the ground must be kept free (Sampaio, et al., 2007).

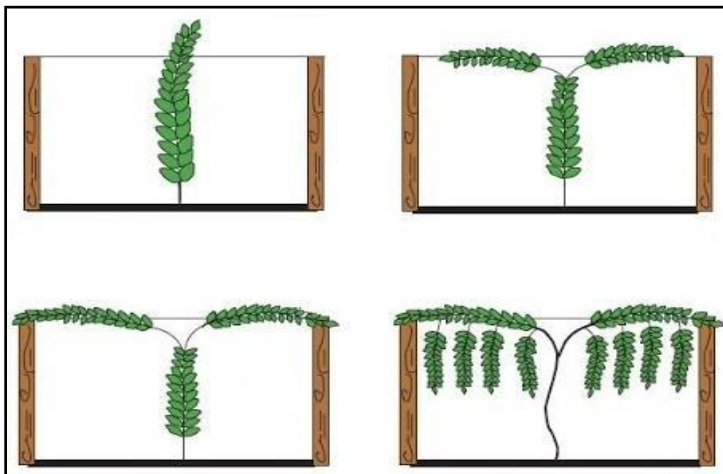


Figure 3 - Model of pruning passion fruit plant

Source: www.saudemaracujas.blogspot.pt/2016/02/poda-do-maracuja

1.8 Sensibility to diseases viruses and bugs

Relative to its sustainable growth, the passion fruit needs a lot of cares. There are a considerable number of causes that can damage its development, resulting in a poor



production and consequently low profits associate to the culture. For Peruch, Colariccio and Schroede (2011) the diseases are considered limiting factors in the production of passion fruit. Supporting the identical opinion, Joy and Sherin (2001) there are many factors contributing to reduction in longevity and productivity in passion fruit plants, especially diseases of viral, bacterial or fungal etiologies. Fungal diseases affect passion fruit from seedling phase to adult plant stage harming roots, stems, leaves, flowers and fruits. During post-harvest stage, several fungi affect plants in the field conditions resulting in great loss during the fruit storage, transport and commercialization.

According to São José et al. (2000), several diseases caused by viruses affect the cultivation of passion fruit. Constant monitoring of the nursery must be carried out for the immediate elimination of plants with symptoms of diseases. Plants that could host the virus should be disposed of around the nursery (Costa et al, 2008).

1.8.1 Diseases & Viruses

Anthracnose

For São José Et al., (2011), the anthracnose is caused by the fungus *Colletotrichum gloeosporioides*, that reaches the whole aerial part of the plant. Occurs in conditions of high humidity and temperature and low light and ventilation (Carvalho, Stenzel and Auler, 2015).

The fungus penetrates the fruit, at the harvest stage, through wounds, natural openings and directly on the intact surface causing large, rounded, dark-colored lesions that evolve into a soft and depressed rot. These lesions affect the pulp of the passion fruit, deteriorating it (São José et al., 2011).



Figure 4 - Anthracnose disease on purple plant leaf

Source: www.revistacampoenegocios.com.br/control-fitossanitario-do-maracuja



Septoriose

Thus, assuming these two diseases as highly harmful for the passionfruit, the Septoriose can be also danger, but not that much as the two others. Assuming, based on Fischer, Kimati and Rezende (2005), the disease only occasionally causes significant damage, especially in nurseries and crops where chemical control to prevent epidemics of fungal diseases is poor. The symptoms manifest themselves as distinct spots on the leaves of widely spaced, fairly regular plants in circular orbits 1 to 4 mm in diameter, bounded by a darker line (São José et al., 2011).

In affected plants, even leaves with no apparent symptoms of different ages may fall early, which may result in the drought of branches and sometimes in the death of the plant (GÓES, 1998). The favorable conditions for the development of the disease are humidity and temperatures (Pinto et al., 2006).



Figure 5 - Septoriose disease on purple plant leaf

Source: www.infonet-biovision.org/PlantHealth/Crops/Passion-fruit

Cladosporium

Scab, which is also known as Cladosporium causes significant damages when not controlled (Goes 1998). Plants infected with the Cladosporium show small round spots on the leaves. Spots are initially translucent, later become necrotic showing greenish-grey centers which correspond to fungal fructification. Lesions can perforate leaves, occur on veins and cause them to be deformed leading to abscission (Joy and Sherin, 2001).

To handle this disease, it is necessary avoid high densities of seedlings in plant nurseries, as well as excessive irrigation. (Piza Jr. 1994; Willingham et al. 2002).



Figure 6 - Cladosporium disease on a purple plant leaf

Source: www.agrolink.com.br/problemas/verrugose

Collar Rot

Diseases caused by fungi affect the passion fruit plant from the seedling phase until the adult-plant stage, harming roots, stems, leaves, flowers and fruits (Joy and Sherin, 2001). Collar rot has been identified in Uganda (Emechebe and Mukiibi 1976). The first aboveground symptom is mild dieback followed by changing of leaf color to pale green, leaf wilt, defoliation and finally plant death, resulting from the complete necrotic girdling of the plant collar (Cole et al. 2002). For Emechebe and Mukiibi, (1976) the disease generally affects plants one to two years after planting, although it may occur earlier in replanting areas where the pathogen has previously appeared. To avoid this disease or to manage it, is necessary as Joy P.P. & Shering C.G., (2001) mentioned, that areas previously presenting the disease should be avoided for new plantings and nurseries. Badly-drained soils have to be avoided and careful irrigation has to be conducted in order to avoid the excess of water.



Figure 7 - Collar rot disease on purple plant

Source: <https://www.daleysfruit.com.au/forum/passionfruit-problem/>



Hardening Virus

The hardening virus reach more than 70% of the plants in affected orchards. Passion fruit woodiness virus causes serious damages in vines, reducing leaf area, decreasing productivity, yielding fruit without commercial value and reducing the economical lifespan of the orchard (Rezende, 1994; Gioria et al., 2000).

However, the most characteristic symptom of this virus is the mosaic and the deformation of the leaf blade (Peruch, Colariccio and Schroede, 2011). Relatively to the treatment of this virus, Gioria et al., (2000) mention that recommended cultural practices can be followed for minimizing the virus as, usage of virus free seedlings of new plantings.



Figure 8 - Hardening virus on purple passion fruit

Source: <http://www.infonet-biovision.org/PlantHealth/Crops/Passion-fruit>.

1.8.2 Bugs

Although the effects of the viruses and diseases, the existence of certain bugs can be danger for the development of passion fruit plant, being another factor that will be take in consideration and analyzed.

The passion fruit plant hosts a great diversity of insects and mites (Fadini; Santa-Cecília, 2000; Aguiar-Menezes et al., 2002), some species of these arthropods being capable of causing economic damages, reducing fruit production (Brandão et al., 1991).

Leaf Stripper Caterpillars

Leaf stripper caterpillars are the most common pests of passion fruit. However, caterpillars are not the most harmful insects to passion fruit cultivation (Silva et al., 1968)

Although the occurrence of caterpillars is quite frequent in passion fruit, few species



cause economic damages such as *Dione juno juno* (Rossetto et al., 1974). *D. j. Juno* is a butterfly with orange, being 30 to 35 mm long and 50 to 70 mm wide (Picanço et al., 2001).

The most visible symptom of *D. j. Juni* is the partial or complete defoliation of the plants, caused by its food habit (Aguiar Menezes et al., 2002). Young plants or with reduced leaf area are the most sensitive to the attack of these pests, (Fancelli, 1998).

For leaf stripper caterpillars, sampling should be done weekly and evaluation can be done by direct observation of the percentage of defoliation and the control is performed when a level of 30% of defoliation is verified in a field (Picanço et al., 2001).



Figure 9 - Leaf stripper caterpillar on passion fruit

Source: www.blogs.ifas.ufl.edu/pinellasco/2009/05/15/snowbush-under-attack-by-spanworm

Bedbugs (Hemiptera: Coreidae)

The adult is about 20 mm long, dark green in color, with two orange lines on the back and extending from the head to the scutellum (triangle-shaped structure at the base of the wings) (Fancelli; Gallo et al. 2002), but its main morphological characteristic is leaf expansions in the hind leg tibia (Rossetto et al., 1974). Bedbugs attack various plant organs, leaf buds, leaves, branches and fruits, causing serious damage to the crop. Due to their agility, easy displacement, and the existence of alternative host plants, they are considered one of the main pests of passion fruit (São José et al., 2011)

Bedbugs do not cause significant damage, which may be related to the presence of natural enemies that keep their populations low (Fancelli, 2002). Take samples and eliminate postures, nymphs and adults when the culture is small. For larger orchards, the index suggested by Picanço et al. (2001) is 3% of the fruits attacked, by the direct evaluation of 10 fruits. The periodicity of the sampling and the division of the cultivated area into plots follow the same recommendations made for the defoliation caterpillars.



Figure 10 Bed bugs on passion fruit plant

Source: www.infonet-biovision.org/PlantHealth/Crops/Passion-fruit

Bromate-borer (Coleoptera: Curculionidae)

It is a beetle with approximately 7mm in length, brown coloring, white elytra with two brown bands that intersect. According to Santos & Costa (1983), the female makes the posture in the thinner branches. The larvae penetrate the branches, and the preference for posture is independent of the age of the branch (Boaretto et al., 1994). The posture is carried out in the months of March to July and the hatching occurs between eight and nine days. There are numerous and extremely small eggs that can reach more than 700 per stance. When this insect is fully developed reach 8mm in length (Costa et al., 1979).

The exit of the adult occurs through circular holes, opened in the branches by the larvae before they become butterflies (Rossetto et al., 1978). After the hatching, the larvae begin the construction of the galleries inside the branches, where all their development takes place (Facelli; Almeida, 2002).

The main signs of attack are lateral orifices in the branches, originating from larval activity, making the branches weak, brittle and dry, due to a cellular hypertrophy, typical of simultaneous attacks of this pest in a single branch (Mesquita, 1998; Fancelli, 2002).

The galleries constructed by the pest grow larger as the larva develop, until the branch is completely hollow and thick, occurring later cancers or tumors, which end up exposing completely the galleries (Costa et al., 1979; Fadini, 2000).

The most common measures for the control of the rod borer, indicated by Fancelli and Mesquita (1998) and Gallo et al. (2002), are: to carry out preventive surveys for the immediate detection of the first signs of attack and to proceed to the elimination of the attacked parts or even of the whole plants;



Figure 11 - Bromate - Borer on passion fruit plant

Source: www.cpt.com.br/cursos-fruticultura-agricultura/artigos/pragas-do-maracuja-controla-da-broca-do-maracujazeiro

1.9 Necessary cares for healthie plantation

For Peruch, Colariccio and Schroede (2011) balanced fertilizations allow nourished plants to be better able to withstand the onslaught of pests and diseases. In the case of passion fruit, a balanced fertilization should be carried out on the basis of soil analysis. Nitrogen fertilizations must be carried out with criterion, since the excess of this nutrient can leave the leaves more susceptible to the pathogen.

Another important measure that is important to consider, as the same authors refers is regarding with the utilized tools. Viruses can be transmitted mechanically and it is highly recommended to wash the pruning tools used in the orchards with detergent or bleach before they are used in a new plant (Peruch, Colariccio and Schroede 2011).

Based on Giorgia et al., (2000) the practice of elimination of diseased plants has been recommended in orchards with a virus problem in order to avoid the spread of the disease. Plants with up to 7 months of transplanting seedlings that present symptoms of the disease should be eliminated.

1.10 Harvest

The harvest is one of the final steps before the passion fruit reach the market, it consists in take out the fruit from the plant or get it from the ground

Based on Lima et al., (2002) before harvesting, it is recommended to pass between the



rows and knock down the ripe fruits that have not fallen spontaneously or are caught between the branches of the plants.

The passion fruit harvest period varies from 6 to 9 months after definitive planting in the first year, depending on the region and climatic conditions. Planting in the months closest to summer allows early harvesting (6 months) while planting in the colder months results in later harvesting (Lima et al., 2006).

For Bruckner (1995), harvesting occurs on average 70 days after pollination. However, according to Zacharias et al, (2016) these periods can vary with the species and cultivar, planting region, climatic conditions and the crop irrigation regime. If the crop is irrigated, harvesting will occur more quickly.

The fruits sold to the industry are harvested, two or three times a week, when they fall to the ground. The fruits destined to the in natura trade are harvested directly from the plants, with a small peduncle (Meletti, 1995)

Mature fruits should be collected in the field in 12 kg bags and taken to a clean, fresh, airy and sun-protected place for cleaning and selection. On the other hand, fruits that are rejected in selection (rotten, with symptoms of pests and diseases), should be discarded as soon as possible, immediately removed from the site and incinerated or buried, to avoid contamination, and proliferation of undesirable insects and microorganisms (Zacharias et al., 2016)

1.11 Storage

Post-harvest management basically consists in selecting the fruits according to the classification appropriate to the market or industry for later (Nogueira et al., 2005).

For the maintenance of the physical, chemical and biological qualities, Bastos, (2006) consider that the transport of the fruits to the processing area must be done soon after the harvest, or in the coolest hours of the day. Zacharias et al., (2016) refers that fruit uniformity, ripeness, absence of defects and packaging conditions are issues that must be considered, so that they are well accepted. In general, the concern should always be to emphasize the quality of the fruits in the eyes of the consumer. The fruits can be stored at temperatures in the range of 10 ° C to 15 ° C.

Supporting this following line, Silva, (1999) assumed that passion fruit is considered of difficult conservation, because, together with the dehydration, with the consequent loss of weight and wrinkling of the bark, it presents susceptibility to rot and pulp fermentation



(Silva, 1999). Having in consideration the analysis of Castro (1994), the storage period of passion fruit can be extended, provided that mechanisms are used to reduce perspiration and fruit respiration rates, such as lowering the temperature (between 5.6 and 7.2 ° C).

Zacharias et al., (2016) mention that storing the passion fruit under refrigeration, allow to maintain the good qualities for a period of 2 to 3 weeks. Although, if this process is not respected, the mass loss can reach up to 20%, which usually results in wilting of the bark. If the fruit is sold by weight, the farmer will lose profitability. Relatively to its state of conservation and attractiveness for the consumer, the use of waxes as a surface coating reduces moisture loss and slows down wrinkling, providing glossy appearance, which can be enjoyed by the consumed (Chitarra & Chitarra, 1990).

1.12 Commercialization

The quality of the product is expressed in a set of characteristics and properties that determine its degree of excellence and the level of satisfaction of the final consumer. In addition, it may be defined by a set of extrinsic and intrinsic attributes and be viewed under different aspects, distinguishing between commercial quality, organoleptic quality and dietary quality (Sousa et al., 2005).

The commercial quality is related to the normalization of the product valued by the markets, internal and external (Sousa et al., 2005). Marketing rules prevent consumers from being misled by laying down rules on the definition, presentation and labeling of the product (EC, 2007). In addition, such standards promote fair competition through product classification according to a single reference that is accepted internationally (EC, 2007).

In the organoleptic quality, external attributes such as appearance and visual effects, and internal attributes such as aroma, flavor and texture are highlighted (Sousa et al., 2005). (Sousa et al., 2005).

1.12.1 Knowing the market

Marketing or distribution channels can be understood as a set of interdependent organizations involved in the process of making the product or service available for consumption or use (STERN, 1996). In the opinion of Trento, Sepulcri and Morimoto, (2011) they consider that the marketing process begins with the production, going through packaging, purchase, sale and logistics activities. This dynamic of production, for



permanence in the market, implies that the producers have volume, quality, diversity and regularity of supply, since consumers need to feed daily.

Sustaining this consideration, Zacharias et al., (2016) assume that the producer must plan the planting and cultivation conditions to obtain a good price at harvest time. Relatively to the market in natura, it is important that the fruits arrive with good appearance thus being harvested, sorted and cleaned for transportation as soon as possible, to the consumer market.

In terms of fruit appearance, the processing industry is less demanding. The international market is very receptive to purple passion fruit, corresponding to the preference in Europe and the United States, where smaller fruits and less acidic. These countries import purple passion fruit, which predominate in the orchards of South Africa and Australia (Meletti, 2006).

1.12.2 Market Competitors

The farmer needs to identify who the competitors are in the market for their products, how they operate, what quality is presented, how the transactions are made, the form of payment, and the market share of the competitors. Such observations allow the identification of strengths and weaknesses and identify new market opportunities (Trento, Sepulcri and Morimoto, 2011).

1.12.3 The path to success

More important than selling is always selling. This requires a long-term commitment. It means honoring commitments even if you have to give up more advantageous opportunities and guarantee quality at any cost. One of the secrets to successful marketing is meeting customer requirements by providing a product that meets your needs on a regular basis (Trent, Sepulcri and Morimoto, 2011).

According to Hamel and Prahalad, (1995) quality will no longer be a competitive differential, but only the passport for entry into the market. The secret of success in marketing is always seeking the satisfaction of the desires and needs of customers. There is a need to know a little more about the market, potentialities, opportunities and threats (Trent, Sepulcri and Morimoto, 2011).

Considering this knowledge relatively to the market commercialization, in the practical part of this business plan will be deepened study and analyzed the whole system



around the purple passion fruit. Thus, strategic analysis will be conducted to achieve an approximately result to the reality of the production and commercialization in Portuguese markets about purple passion fruit.

1.13 Investment project

Investors seek among the various investment possibilities the best alternatives, mainly in view of the rates of return (Soutes, Schvirck and Machado, 2006).

According to Bodie, Kane and Marcus (1998) investment involves compromising resources in the expectation of future benefits. By compromising resources, the investor incurs an opportunity cost, in that he sacrifices the possibility of spending his resources today, in the right environment, opting to invest them in an alternative that will return future results in an environment of risk and uncertainty.

Based on Avillez et al., (2006) considered that an agricultural project can be understood as a proposal to apply a relatively scarce set of resources directly associated with diversified combinations of exclusive or predominantly agricultural activities, made with the intention of generating in the future a flow of goods and services.

1.13.1 Evaluation of investment project

A project is understood as a set of systematized information for the purpose of informing an investment decision. It intends to estimate the value to be created by the investment, increasing the efficiency of the use of resources (Barros, 2007)

1.13.2 Economic or Pre-financing Evaluation

The economic analysis of an investment project is carried out by comparing revenues and corrected expenses. This analysis assesses the return on investment on the assumption that it is financed exclusively by equity. It is assumed that the financing structure has not yet been defined, so it does not influence the decision that falls on the criteria used to support it (Miguel, 2006).



1.13.3 Financial or Post-Financing Evaluation

It is intended, depending on current and future conditions, to verify whether the invested capital is remunerated and reimbursed in such a way that the revenues generated exceed the expenses incurred in a longer or shorter period. This analysis evaluates the return on investment, considering the borrowing costs arising from the use of foreign capital and other consequences of the option for the capital of others, which include, for example, fiscal savings (Meneses, 1996).

1.13.4 Life cycle

Based on Avillez et al., (2006), The agricultural projects correspond to proposals for the application of scarce resources, the effective allocation of which should be a priority concern of the decision-making centers responsible for directing agricultural activity. This is usually divided into the following four phases: conception and formulation, execution, exploration and extinction.

Conception & Formulation

The main objective of the conception and formulation phase is to collect and process all the basic information necessary to justify decisions regarding the future of the corresponding investment initiative.

Implementation

The implementation phase corresponds to the implementation of the set of investment decisions previously defined in order to achieve the objectives.

Exploration

The exploration phase consists of the development of the activities directly associated with the investment over the respective useful life.

Extinction

The end of the economic life of the investment.



1.14 Investment plan

The Investment Plan must contain the assets to be acquired within the scope of the project, the investment years and the respective values. The content of this component comes from the selected alternatives resulting from the technical studies carried out. It should include the description and time schedule of investments in investment property, tangible fixed assets and expected intangible assets and respective amounts, per investment year up to the final year of the project's useful life (Marques, 2006).

In the strict sense, in economics, investment means the application of capital in means that lead to the growth of productive capacity, that is, capital goods (Phillips, 2004)

1.15 Investment cost

The investment cost represents the amounts spent on the acquisition of goods paid once or in installments. The capital invested represents the amount of funds that the company dedicates to the realization of the investment project (Brealey & Stewart, 2003).

An agricultural crop requires large investments at the time of its implementation. The costs involve the value of land and its preparation, equipment, infrastructures and labor, among others, causing this activity to have a high initial investment (Grant, 1995).

For Barros, (1995) the information to determine these costs can be obtained either from the study of projects already in operation, or directly from budgets made by suppliers of equipment, buildings, etc., being desirable the use of both simultaneously.

1.16 Working Capital

In accounting, the working capital of a company is defined as the difference between the current assets and the current liabilities of this company. It is everything the company has available in one year in cash and in stock (Brealey & Stewart, 2003).

Between the moment the project is carried out and the moment the product is sold on the market, a certain amount of circulating capital (working capital) is required to finance operating costs and During the period preceding the outflow of production. In the agricultural sector where the production cycle is usually annual, operating working capital can be very important, since farm and crop costs must be financed up to harvest (Grant, 1995). Typically, woody fruit trees only start production from the second year onwards and reach optimum



yields (the cruising year) as from the sixth and seventh year of production, so the determination of the working capital required is especially important in this type of project (Grant, 1995).

1.17 Operating plan

For Avillez et al., (2006) the exploration plan consists of a description of the project's expected useful life, the expected annual operating costs and revenues from the investment.

Although, for Barros (2008), in drawing up the operating plan, the assumptions used to calculate the project's costs and income should be described. In this section, the estimated financial statements for sales, cost of goods sold and materials consumed, personnel expenses, etc. should be presented.

The objective of this plan is to gather the basic numerical data to calculate the cash flow of the project, in particular the operating cash flow (Marques, 2006).

1.18 Exploration costs

For Barros (2007), operating costs include all the costs that the company must bear to ensure the performance of its activity. It is also important to consider, essentially, direct operating costs, structural costs and amortizations.

Costs should be classified as Fixed or Variable.

Fixed costs

Fixed costs are those that happen independently of the volume of production or sale of the product / service. That is, there is always the same cost or expense, regardless of the quantity sold of the product or service (Santos et al., 2008).

Variable costs

The variable costs fluctuate according to the amount of "variable factors" used, and therefore the volume of production. It depends on the physical volume of products or services, which increase and decrease according to the change in the quantity of products or services produced (Femenick, 2015).



1.19 Operating income

Consider Cebola (2005), operating income or revenues are the monetary inflows that occur in an entity, usually in the form of cash, resulting from the exercise of the activity. In private companies, this revenue normally corresponds to the sale of goods or services.

Gross revenue, for accounting purposes, is the proceeds from the sale of goods and services. In other words, we can say that gross revenue is the total revenue from the activities of the organization, representing the sum of all revenues (Barros, 2008).

Investment income forecasts are based on the market study, which, when analyzing the evolution of the demand for a product and prices practiced, makes it possible to predict with greater reliability the value of sales (Barros, 1995).

1.20 Financing plan

The Financing Plan, which details the map of origins and applications of funds, in order to determine the values that should be included in the provisional balance sheets of the years considered in the project (Samuelson & Nordhaus, 2005). In this plan, the sources of financing envisaged, capital and the respective financing conditions (Barros, 2007).

1.21 Cash flow

According to Barros (1995), cash flows are annual flows throughout the life of the investment project, obtaining through the sum of net results, reintegration, amortizations and financial charges. The residual value of equipment and constructions usually gives rise to the release of monetary flows, which should be added to the last cash flow forecast, if this release of funds occurs (Gitman & Madura, 2003).

Cash flow is not a static measure and changes when, for example, the company sells more products or services, reduces costs, sells assets, increases product prices, invests more equity or borrows from the bank. To ensure the money needed for payments, it is important for companies to build the cash flow map (Ferreira, 2015).

1.22 Profitability criteria

In today's business world, most agents, including financial institutions and some



clients, require business purpose support studies to provide a financial justification for an investment decision that allows the project to identify and analyze pro-actively the expected benefits and costs of the project (Zunido and Magalhães, 2006).

According to Ponciano (2006), the evaluation of economic and financial viability is extremely important in investment planning, especially when it refers to sectors of competitive markets, as in the case of agriculture, where most activities present low profitability and possibility of risks and uncertainties.

NPV

The NPV or net present value is the present value of a project, calculated from future cash flows. It is firstly an evaluation of all the cash flows involved in the project, both positive and negative (Nogueira, 2009).

For Barros (2007), an indicator widely used in feasibility analysis studies, given by:

$$NPV = \sum_{t=1}^T \frac{C_t}{(1+r)^t} - C_0$$

Equation i - NPV

Where C_t is the cash flow in year i and t the discount rate, which is a risk-free interest rate plus a risk premium established for the type of project in question (Damodaran, 2001). According to Gitman and Madura (2003), NPV is a sophisticated capital budgeting technique that considers the value of money over time.

Since any investment only generates cash flow in the future, it is necessary to update the value of each of these cash flows and to compare them with the value of the investment. In case the investment value is lower than the current value of the cash flows, the NPV is positive which means that the project has a positive profitability. To update future cash flows, the discount rate is used (Barros, 2007).

IRR

The IRR or the internal rate of return is another very important indicator for assessing the viability of a project (Nogueira, 2009).



The internal rate of return on an investment project is the discount rate that cancels the net present value. It can be said that the IRR is the highest rate at which the investor can borrow to finance an investment without losing money (Zunido and Magalhães, 2006).

Represent a discount rate that equals, in a single moment, the inflows with cash outflow, that is, it is a rate for a most current quality and a zero. This rate measures the maximum pay for the funders that a project can be offered. If a TIR > cost of capital, the project is acceptable, however, a TIR < cost of capital, the project should be refused. The internal rate of return is obtained by matching the NPV to 0, that is:

$$0 = \sum_{t=0}^n \frac{CF_t}{(1 + IRR)^t}$$

Equation ii - IRR

This equation has, in general, no analytical solution, and is solved by successive approximations, and computational means are used for its determination (Meneses, 1996).

Payback

The payback period represents the time it takes to recover the amounts invested through the cash flows generated by the same investment. In other words, it represents the time required for the Net Present Value (NPV) to reach positive values (Nunes, 2017).

When evaluating payback, we should also consider the point at which break-even occurs. Typically, in the early years of the project, projects are not profitable since the company will have to bear startup costs and will not, in principle, have a very significant turnover (Nogueira, 2009).

For Zunido and Magalhães (2006), this technique measures the number of time periods that elapse until the capital invested in the project is recovered.

Through this method exists a confirmation on the viability of a business, that is given by the break-even-point, which occurs when the value of revenues is equal to the sum of fixed costs and variable costs.

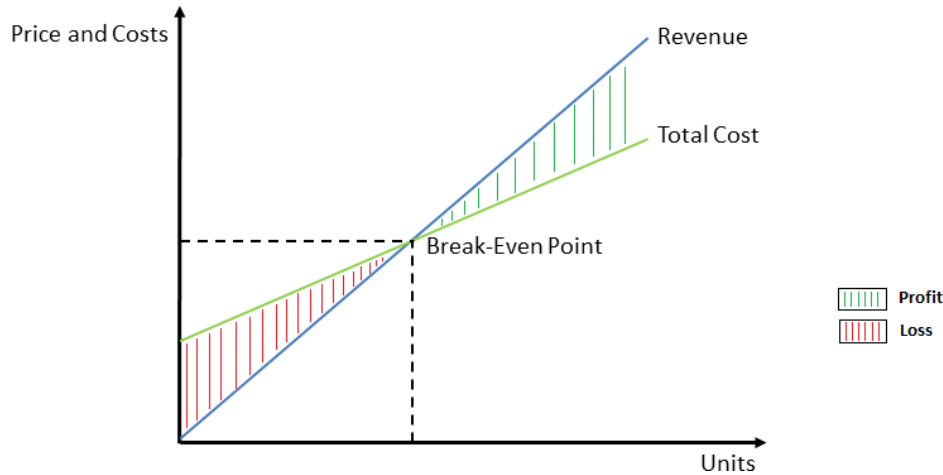


Chart 1 - Payback; Break-even point

Source: Author

1.23 Risk Analysis

It is important for the investor to be aware of the possibilities that may occur in order to establish strategies to circumvent factors that may produce less favourable results, and the forecasts that serve as the basis for the evaluation of the investment decision are subject to uncertainty and risk. (Miguel, 2006)

In calculating the values of payback, IRR and VAL, we must make sensitivity analyses that take into account this type of possible events. The sensitivity analysis will reveal to what extent the estimated indicators are reliable and to what extent a given type of risk will have an impact on the project's profitability (Nogueira, 2009)

Through risk and uncertainty analysis, a broader and more useful perspective is formed in the decision-making process, while at the same time assessing the interest of the available investment alternatives. (Neves, 2002)

Due to the uncertainties of the globalized world, scenario analysis is an important tool in developing new strategies within the company. This type of analysis explores the various paths that the company can follow and then implement the one that best matches the company's goals (Borges, 2009)

Pessimistic scenario:

Scenario composed of the most pessimistic estimates that critical variables can assume. This scenario will lead to the worst outcome that the project can expect.

**Optimistic scenario:**

The critical variables assume values according to an optimistic expectation, giving rise to the maximum results of the project, within what is foreseen.

Probable scenario:

This scenario combines the most likely values that critical variables can take, allowing the most likely outcome of the project to be obtained.

2. Methodology

The development of the present business plan is divided in four different parts that are interrelated themselves, thus allowing the business investor to make a proper decision regarding to the project.

The first part is exclusively dedicated to study and analyze the whole possible viable information about the purple passion fruit. In this analysis it is include any aspect since the plantation until the harvest of the fruit, passing through the positive factors that able the plant to growth healthy and vigorous until the negative factors that injure the plant and its sustainability.

This research is divided in two parts, one implied the consultation of diverse sites and books, and the second was based in direct and telephonic contacts with producers that explained me more specifically the details associated to the production and commercialization.

The second part focuses on a set of analysis of the market context and the responsive capacity of the company. Although, to enhance the quality and the accuracy of the written information there were applied specifics management tools as well as the PESTEL analysis, SWOT analysis, 5 forces of Porter, 7's Mckinsey and SMART objectives.

Through e-mail and telephonic contacts contacts with national hypermarkets and producers it was obtained important data regarding to the economic response of purple passion fruit in the markets.

Although it was very difficult obtain some data, since there are internal politics that doesn't allow share information with external contacts.

The whole creation process of the **Patmosphere** is the third part of this business plan, as well as how it will develop its activities. To conduct this part of the project, mainly it was made a formal presentation of the company, which includes the internal structure, mission,



vision, shared values and the local of production. It was also explained in detail how to build the production structure and the necessary equipment to initiate the project.

The mathematical part of a business plan is highly valuable because it allows the investor to decide if the opportunity is the right one to take. Based on that, the last part of this project is composed by the financial/economic life of the company in 5 years of activity. To obtain these values, the information shared from the hypermarkets as well as the producers were very important, allowing a more complete analysis based in the veracity of the information.

The quality of purple passion fruit is inversely proportional to the quality of available data of it. Being a tropical fruit and yet low explored, it lacks a lot of data and was highly hard to find necessary information to complete this business plan with the present structure mentioned above.

Excluding the research part in internet and books as well as in libraries, it required a lot of e-mails, telephonic contacts and exhaustive trips to different parts of Portugal to establish direct contact with producers and cooperatives.

Although, with all respect for any other works, this business plan gathers a set of theoretical and practical information of purple passion fruit, being until today one, if not the one, of the most complete and available document about this fruit in an academic point of view.

3. Global external analysis

All organizations are included in two different environments, one of which has more influence on the company and the other more influenced by the company.

These are the external and internal environment, respectively.

However, to define the right strategy to the right business in the right market, it is important to consider some analysis that will help promote those choices. Regarding the global external analysis will be approached the analysis of PESTEL, which includes political, economic, social, technological, ecological and legal factors.

Subsequently, a more incisive approach will be made to the industry based on analyses of markets, competition, suppliers and distributors. In addition, the level of attractiveness of the industry will be evaluated using the analysis of the 5 Competitive Forces of Porter.



Political

The year 2016 began with a recent government, in a political scenario of austerity, in which external help was requested to the IMF in 2011 to be able to face several situations that shook the Portuguese economy. From the beginning of this request to the present, millions of taxpayers have felt considerable effects on the available income, which clearly determines certain expenditures on various products.

It was made efforts of all political parties thus trying to conciliate desires and wishes from both sides. This capacity for dialogue was also largely driven by the change in the presidency of the republic, which began its mandate in March of the same year.

The current year of 2017 has been generally marked by a stable governance policy, which has been concerned just as it was in previous years with the payment in instalments of the debt to the IMF. In total, Portugal has already paid 76% of the total loan granted to the fund, with early payments expected in 2018, which contributes decisively to the improvement of debt sustainability, reducing the cost of debt and allowing a more balanced management of payments.

Regarding purchasing power, at the initiative of the political power, pensioners will receive 50% of the value of the Christmas subsidy in 2018 and consequently 100% in 2019, factor that will bring higher purchasing power to citizens.

It is important to realize there is a willingness on the part of the government, through the National Strategy, to promote organic farming by increasing its production. A working group was created in 2016 to develop this strategy.

Relatively to the purple passion fruit, there is also a higher interest in the promotion of this culture. In Madeira, the regional government intends to expand the area of passion fruit cultivation by four hectares per year by 2021.

Based in the willingness of increase the production, exists 33 projects approved the passion fruit culture whose eligible investment is around 3 million and seven hundred thousand euros.

With a positive and optimistic trend towards the evolution of organic agriculture in the Portugal, it is also necessary to study it and collect data on the agricultural sector, and how the intervention policies can improve this industry making it more competitive.



Economic

As mentioned first in the country's policy analysis, Portugal is going through a financial phase with the IMF, paying its debt.

Based on projections for the Portuguese economy in the period 2017-2019, made by the Bank of Portugal, the Portuguese economy is expected to maintain a recovery trajectory over the projection horizon. This is expected to increase 1.4 percent in 2016 of Portuguese gross domestic product (GDP) and 1.8 percent in 2017, 1.7 percent in 2018 and 1.6 percent in 2019.

It is important to note that this expectation is mainly marked by the increase in investment in the country, as by the increase in private consumption and exports.

Overall, the current projections point to the reinforcement of the upward trend of the Portuguese economy, which will give companies more strength to focus on products and services that are appropriate to the global need, in which there are no physical borders or reduced limits.

The labour market also follows this growth, with an anticipated increase in the employability rate of 1.6 per cent in 2017 and about 1 per cent in 2018 and 2019. However, average productivity, which will translate into equally low real wage growth.

Equally important is the stabilization of the labour force, after a period of continued decline in previous years. Thus, the cycle of production, commercialization and consumption will see its level increase to values more attractive to the continuous reinforcement of investment.

The investment in purple passion fruit also helps even that in a small quantity, in the support of this increment of the employability, since it will create new places of work.

Madeira has the objective of tripling the production and increasing farmers' incomes by 20%. The archipelago currently produces 140 tons of passion fruit per year, in an area of 23 hectares

The farmer's income is 49,000 euros per hectare per year, but the strategic plan points to a 20% increase over the next five years, just as it expects to double the volume of exports to 14 tonnes.

By supporting this policy and promoting its incentive, farmers can rely on up to 75% of their community funding for their projects with the support of government technicians

In summary, current overall projections suggest that economic activity will continue to recover in the period 2017-2019, with a pattern of growth characterized by high export



dynamics and business investment, which will be accompanied by increased employment and continued rate reduction of unemployment.

Social

With regard to the social and cultural aspects, it is possible to draw a deeper conclusion if the Portuguese Welfare Index (IBE) is analyzed. This index belongs to the National Institute of Statistics (INE) and is based on other indexes that evaluate the material conditions of life and the quality of life.

In the 10 areas that make up the welfare index, Education, Environment and Civic Participation and Governance are the most favorable components of well-being in the period between 2004 and 2015.

During the last decade, it has been verified that in all the years since 2006 there has been an aggravation of the indicators related to economic vulnerability, reaching the minimum value in 2013. From this year onwards this index reversed and began to register a growth that has been maintained until the year 2016.

Taking the example of the field "Work and Compensation", this shows the most unfavourable evolution and contributed significantly to the decline in the index of material living conditions, which between 2004 and 2014 saw a global decline of more than 28 percentage points. However, this field of "Work and Compensation" also increased again in 2014 and 2015.

Regarding with the migration policies, Portugal adopted this year a new rule that allows foreigners to legalize in the country, with only a promise of employment contract. This results in a clear increase of the population in the country, which is positive since it is possible to considering an increase in skilled labour, but at the same time, it may be problematic for the already existing skilled labour in Portugal that will have more difficult to find a job.

The birth rate has increased and the emigration rate has decreased, but nonetheless there has been a decline in the resident population in Portugal since 2010. From 2015 to 2016, Portugal lost about 0.31% of residents.



As for the level of schooling in Portugal, there are more and more students entering the college, thus contributing to the qualification of the aforementioned workforce.

The number of students enrolled in higher education is the highest in the last seven years, which is equivalent to around 49,914 new students, thus according to available data, that between 2013 and 2017 the number of students in higher education increased by 20%.

In this way, one can conclude that Portugal is preparing for a growth of the economy by forming new and more professionals suited to the different areas, while allowing the entry of foreign labor, which of course adds value to the products and services in national territory.

Technological

In a world where the upgrade in technology is daily and that directly influences the lives of all people and businesses, thus creating a huge impact on everything that also happens daily, is strictly necessary follow this evolutionary pattern, avoiding mistakes or even stay behind others companies in the sector

With all these advances, the agricultural mechanization industry is also developing, by focusing on the different market segments, creating a form of network to respond quickly to the agricultural demand of the different regions, avoiding as much barriers as possible.

To support the technological advances in agriculture, the optimism of European farmers in the business context is also highlighted, overcoming the pessimism that existed in the year 2016 and motivating new interest in investments in this business area.

Another important factor of the agricultural business are the national and international markets/fairs, which in addition to promoting the contact between several entrepreneurs, also promotes the appearance of new technologies in the market, helping that these besides publicized are put into practice faster.

Ecological

There has been a growing concern on the part of the Portuguese people with the environment, especially since the last 10 years until today, and there is also an awakening to the consumption of products in a more rational and environmentally conscious way.

Actually, 44% of the consumers admit to do selection of waste. On the other hand, compared to 1998, where the concern for the environment was 71% of the total of the



Portuguese, it is now more 93%.

It is clearly important to mention that 80% of Portuguese people consider climate change a serious problem and only 4% say that the problem is not serious, while 10% think the problem is so serious that we cannot do anything.

Citizens and businesses need to be more aware of climate change issues, especially in the agricultural business, since it has a huge impact in the production.

Relatively to purple passion fruit, being a sensitive plant, and depending on its type of production whether in the open air or in the greenhouse, it can be highly influenced by viruses or others and the culture mainly affected by temperature fluctuations.

Legal

As notorious by the global external analysis that was conducted, the purple passion fruit has at this moment satisfactory space to grow in the national and in the international market with archipelago of Madeira investing 3.7 million in projects that will enable the region to produce more of this culture, thus triplicating the area from 23 hectares to 60 hectares.

Since this fruit has a substantial high price in the market when compared to the most of other fruits, is naturally that its consumption shall be inferior. However the good news about the recovery of the Portuguese economy and the increase in the available income of the Portuguese families allows the market to explore the fruit in higher percentage.

Although, even with the little information but based in the collected one, it is possible to conclude that is a market with capacity to grow since there is a bet in higher productions which represents the will to promote this fruit in large scale.

4. External analysis of the industry

Market

There isn't a lot of information about the consumption of exotic fruits, much less about the purple passion fruit in the Portuguese market, which is relevant to for a better conclusion about how the internal consume is processed.

However, in a large approach to the agricultural sector, there are some data about relevant information that enable to conduct a more correct analysis.



The market analysis of the fruit and vegetable industry will be divided into two parts, a first approach to producing companies and then an analysis of the real consumption by the internal market.

The production of horticultural crops (where, in a general way, includes the fruits) has had in the last two decades production increases of 3% to 5%.

Growth in agricultural sector turnover has gradually increased, mainly due to consumption in the domestic market, with the exception of 2012 and 2013, when the external market has made a larger contribution, as shown in the Chart II

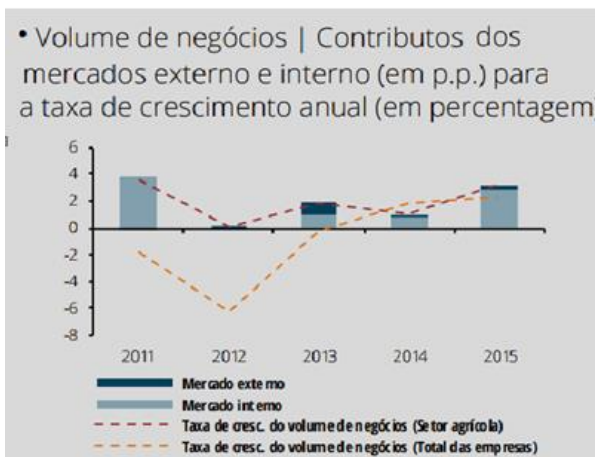


Chart 2 - Agricultural market growth

Source: Banco de Portugal

Regarding the agricultural sector's EBITDA, there is an increase of 19 per cent in 2015 (25 per cent of total companies), continuing the recovery trend registered in the last three years. The percentage of companies with negative EBITDA in the agricultural sector was 30 percent in 2015, down from 33 percent in 2014.

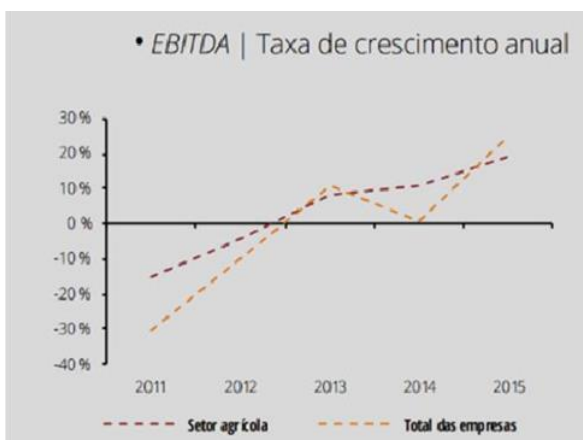


Chart 3 - Annual growth rate of agricultural sector

Source: Banco de Portugal



Regarding consumption in the domestic market, Portugal still depends on the importation of agricultural products to be supplied. This creates an opening for new investments in agriculture, promoting the incentive to produce. By 2015, several agricultural investors have quintupled the area of agricultural production.

A study by Marktest shows that 4175 thousand individuals consumed fruit juices or liquid vegetables in the last 12 months, which represents 48.8% of residents in mainland Portugal. The study also concludes that residents of Greater Lisbon as well as individuals of the higher classes also have a higher than average consumption of fruit or vegetable juices.

Competition

The production of passion fruit has relatively small competition, if analysed at continental level. There are small passion fruit producers scattered throughout the country, but they cannot supply the entire domestic market. *although even not quantified, there is domestic production to supply the foreign market.*, Has mentioned before, Madeira, the largest producer of passion fruit at the national level, intends to triple its production by 2021, thus reaching 380 tons per year.

The production has obtained better results in the Center and the North Coast of Portugal.

Some organic passion fruit producers in Portugal are Physalusa, which in addition to passion fruit also produces other exotic fruits, Green Center, exclusively dedicated to the production of passion fruit and lime Tahiti and Liliana Frazão, individual entrepreneur.

Not supplying the whole internal market, Portugal tends to import the fruit that comes from Brazil, which is currently the largest producer in the world and from Colombia.

This action makes possible to ensure the availability of the fruit throughout the most part of the time in the year to consumers in the national market.

Thus, mainly due to logistics costs, it is understood that Brazil and Colombia lose space in the Portuguese market if producers create the necessary production conditions to satisfy the market more continuously and at more attractive prices.

It is important to realize that the sales prices of the producer are around € 5 Kilo, which promotes and encourages the production of purple passion fruit.

Suppliers



The suppliers of passion fruit are several companies and individual entrepreneurs who sell the plant to producers still in a premature state, or if necessary in a more developed state in terms of growth.

The producers themselves can also take advantage of the seeds of the fruits already produced, or in another case, choose to clone a plant that has specific characteristics of production that have a strategic interest for the producer.

Distributors and Agents

Distributors of fruit, in particular passion fruit, are transport undertakings, engaged by large commercial areas, which carry the fruit after it has been harvested and take it to the large stores of these commercial areas.

The agents are mainly the Hypermarkets, although other companies are also agents, since they use the fruit as a sub product to create the principal product, as juice, yogurts or cakes.

5. Model of Porter 5 forces

Threat of new entrants

The passion fruit industry in Portugal is low explored, with little statistical data among other conclusions regarding the fruit and its processing from planting to commercialization, as well as consumption when compared to other more common fruits.

While it is unattractive due to this lack of information, it is also an industry that can attract new ventures in this market because it is still at an embryonic stage and is able to allow new entrants that can gain space in the market quickly and consistently.

However, already present some companies that have a minimally acceptable production and derived from the costs of installation and maintenance among other costs, such as wages and other legal expenses, it also requires that the new investor creates a plantation large enough to cover these costs and make it profitable.

In this perspective, the entry of new competitors is somewhat reduced, which does not invalidate that a company with an interest in the market of purple passion fruit cannot risk and bet on this fruit. It should be noted that a previous study of this exotic fruit is necessary, due to its conditions of adaptation to our territory, and of all the necessary care to have.



Factor that positively affects the entry of new competitors is the fact that the market does not yet present a high saturation level, opening space for more production.

Bargaining power of suppliers

Being a seasonal fruit, it is consumed in two different ways, through the market in nature and through juices, yogurts and cakes.

A large quantity of purple passion fruit is needed to satisfy the total consumption on the market, where Portuguese production is not fully targeted, as some producers sell their produce to cooperatives and they export accordingly.

On the basis of this strategy, passionflower producers / suppliers are considered to have an alternative to the internal market, which gives them stability and security, thereby increasing their bargaining power, since they are not required to retailers are willing to pay.

This results in a disruption in the supply of fruit, either to processors of the product or to retailers by Portuguese producers, which forces them to have to import the fruit from countries like Colombia and Brazil.

However, since there is a regular need to present the product on the market and to use it as a by-product, the negotiating power of the suppliers of the internal market may increase if there is a failure in operations between the fruit exporting countries and the Portuguese compromise the business relationship.

The threat of substitute products presents a highly improbable likelihood, since purple passion fruit is a fruit with its own characteristics, namely flavour. Thus, there would be hardly any interest in investing in research to create new types of purple passion fruit with certain different characteristics. The closest to this type of passion fruit are the other varieties of passion fruit, namely the yellow passion fruit and the passion fruit sweet.

However, they do not represent a competitive danger since the domestic market is much more accustomed to purple passion fruit than to the other two varieties, as well as the cost to promote them in the market would eventually have a high cost compared to the return that their sale would to present.

Bargaining power of clients

As previously mentioned, are considered as commercial customers: hypermarkets and fruit processing companies. In a small dimension and with low expression when compared to



the main customers, are also the supermarkets and mini markets.

The bargaining power of the main customers is relatively low, since the acquisition of fruit is mainly provided from external countries. Supporting this, they have a constant need to have stock and there are no national producers large enough to guarantee quality and quantity fruit in a short space of time.

In terms of lower-cost customers, their bargaining power is actually lower, mainly because they also buy much lower quantities compared to the main customers of the fruit

Rivalry between competitors

Competition among competitors is still low today, as total domestic production falls short of market needs and part of what is produced is exported, thus creating room for increased production and improvements in fruit quality.

The possible access of new producers to a market that is under development can condition this rivalry in different ways, either by strategies of flow of production through low cost, which would imply the reduction of profit margins per kilo, or by the high quantity producers and suppliers, which will lead to more dispersed market shares.

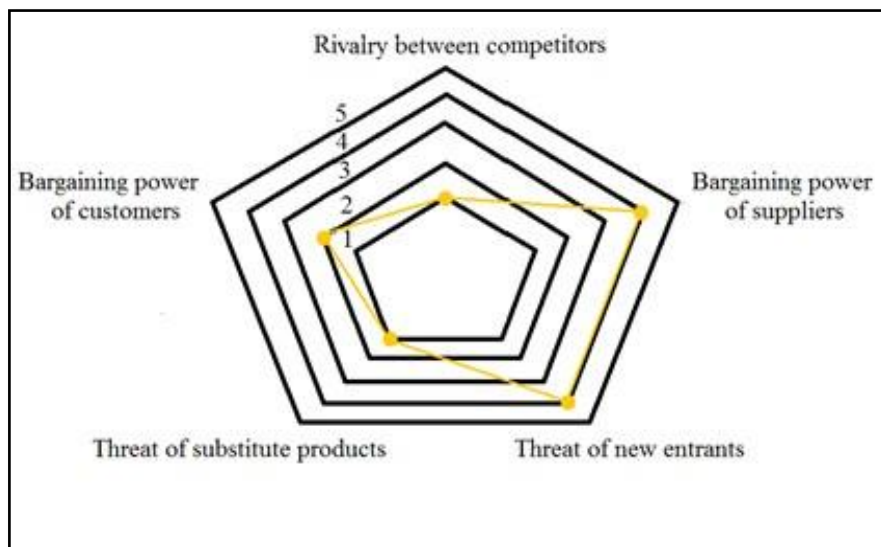


Figure 12 - Porter 5 forces applied to **Patmosphere**

Source: Author

In summary, it is concluded through the analysis of Porter's five forces model that **Patmosphere** will be inserted in a market where the threat of entry of new competitors is relatively high, although there are some barriers. The market has a low rivalry since there is



space to increase production and consumption needs, both for the domestic and international markets.

The bargaining power of suppliers is apparently higher than the bargaining power of customers. However, analysing the bargaining power of suppliers and customers together, this margin could be lower if suppliers were willing to fully produce for the domestic market what is national and boosting their brand. On the other hand, the bargaining power of customers could possibly increase if they get lower prices based in reduced payment deadlines and if they assume responsibility for transporting the fruit to its facilities.

6. SWOT

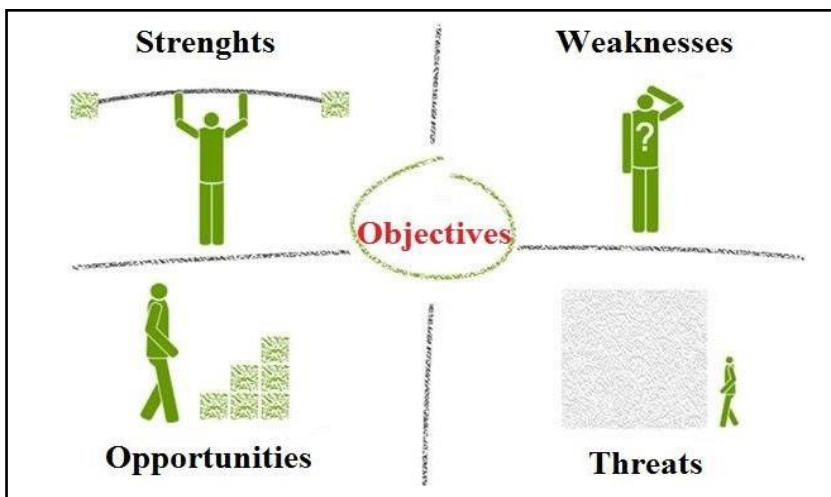


Figure 13 - SWOT analysis

Source: www.visual-paradigm.com/guide/strategic-analysis/what-is-swot-analysis/

To better frame the company within the market in which it competes, an approach to SWOT analysis is strictly necessary. This analysis contemplates two approaches, the first regarding the internal analysis of the company, strengths and weaknesses and the second focuses on the external analysis, opportunities and threats of the environment where it is inserted.

6.1 Internal analysis

Strength:

Quality of the land: The location of the land in the Liz valley offers a very fertile and good production land, located near irrigated areas. In addition to the quality of the terrain



itself, its structure is also advantageous since they are flat.

Location: The location of production is quite attractive, since it is located in the centre of the country, with good local and national access (National Road 109 and A17 highway), located almost at the same distance between the city of Porto and Lisbon, thus facilitating logistics.

Investment: The investment at the beginning of the activity is substantially attractive since the company already has the land for the production, being necessary the construction of the planting structure and the necessary equipment for production.

Made in Portugal: The Portuguese agricultural production is characterized by being quite good, including the quantity of sun that the country has, as well as the quality of the soil and the commitment with which the farmers dedicate themselves to the business, factor that is incorporated in the dna of the workers of **Patmosphere**.

In this way the production of purple passion fruit in the fields of the Liz Valley will focus with priority on the quality of the fruit, in terms of taste quality and presentation.

Thus, to produce local, besides showing trust for consumers, is also a reason for them to continue to buy and help the Portuguese economy and all the agents involved.

Weaknesses:

Team with little experience: The experience of the work team that will constitute this project is relatively low, nevertheless the ambition and the will to learn and improve daily will fill this less positive factor.

Negotiation: Initially **Patmosphere** trading capacity will be weaker than its competitors already in the industry.

Land limitation: The fact that production is limited to a maximum of 6 hectares is a factor that influences the growth of the company if it wants to expand its business more than expected. In case of investment, it will be necessary to acquire more land together with the current production which means new investment.

6.2 External analysis

Opportunity:

Industry growth: The fruit industry is growing and attracts new consumers,



especially for the quality of the fruit, as well as the fact that they are produced in Portugal. The purple passion fruit also evolves favourably with its consumption, being a great opportunity to emphasize the production and to divulge what it is possible to produce with quality in our soil.

Portuguese economic recovery: The Portuguese economy, as previously discussed in the global external analysis, has passed through a period of stagnation in recent years; however, on the basis of the latest indicators, Portugal has maintained its economy, although in a tenuous but consistent way, gradually increasing, promoting sustainable growth. In this way there is an increase in the expectation to make new and better investments in the country, which consequently also promotes the growth of employment.

Medium / Low entry barriers: This market is relatively new, since there is little information about purple passion fruit in Portugal. Thus, it is possible to enter new producers, since there is a need for more production. On the other hand, the only obstacle to entering this market is the lack of numbers and information on this activity in terms of national consumption, which would greatly facilitate the decision making regarding specifications such as areas of production and contacts to establish.

Threats:

Importation: Foreign production is a threat to Portuguese production, as the largest producer of passion fruit in the world, Brazil, produce in economies of scale, such as Colombia. Thus, in addition to large quantities, the price at which the fruit reaches the final consumer will also tend to be lower since the price that is paid is also lower when compared with the Portuguese.

Price: The price is clearly a threat to the consumption of purple passion fruit, since it is the most expensive fruit on the market and minimum salary in Portugal are not high enough to allow a regular consumption of this fruit.

Climate and diseases: This threat is the most difficult to control, and its effects can be mitigated relatively to the climate, through a good protection of the plants (greenhouse or umbrella) and with certain products that can be applied in the plant to create a protective cover. As for diseases, which are highly devastators when attack, there is also a way of combating them, although it has high associated costs, by controlling the plant with the use of chemicals that do not affect the quality of the fruit and have a successful impact on the diseases.



Low level of knowledge: There is an obvious lack of information regarding purple passion fruit in Portugal, as well as the level of production and marketing and the impact of this fruit on the Portuguese economy.

7. SWOT dynamic

The approach to the opportunities and threats related to external analysis, as well as the strengths and weaknesses of the internal analysis, becomes more complete when combined in the dynamic SWOT analysis, thus achieving a greater precision in the analysis, identifying the main challenges, constraints, risks and warnings that the company faces, from a business perspective in the market in which it is inserted.

Strenghts	Opportunities	Challenges
Land quality Location Investment Made in Portugal	Economy recover Industry growth Medium/low barriers Community funds	Easy integration Aggressive strategy Growth perspective
Opportunities	Weaknesses	Restrictions
Economy recover Industry growth Medium/low barriers Community funds	Low experience Negotiation Land limitation	Higher production Fast development of I&D
Weaknesses	Threats	Risks
Low experience Negotiation Land limitation	Importation Price Climate & diseases Level of information	Loss of opportunity Poor adaptation Business failure
Threats	Strenghts	Warnings
Importation Price Climate & diseases Level of information	Land quality Location Investment Made in Portugal	Reinforcement in product quality Necessity of innovation

Figure 14 - SWOT dynamic applied to **Patmosphere**

Source: Author



8. Mckinsey 7S

Mckinsey's analysis consists of analysing seven factors of the organization, which are divided into two categories, Soft S and Hard S., interrelating between them. In this way it is possible to achieve a greater understanding of the business at various levels and to perceive its interconnection. The Hard S are: Strategy, Structure and Systems. The Soft S are: Skills, Staff, Style and Shared Values.

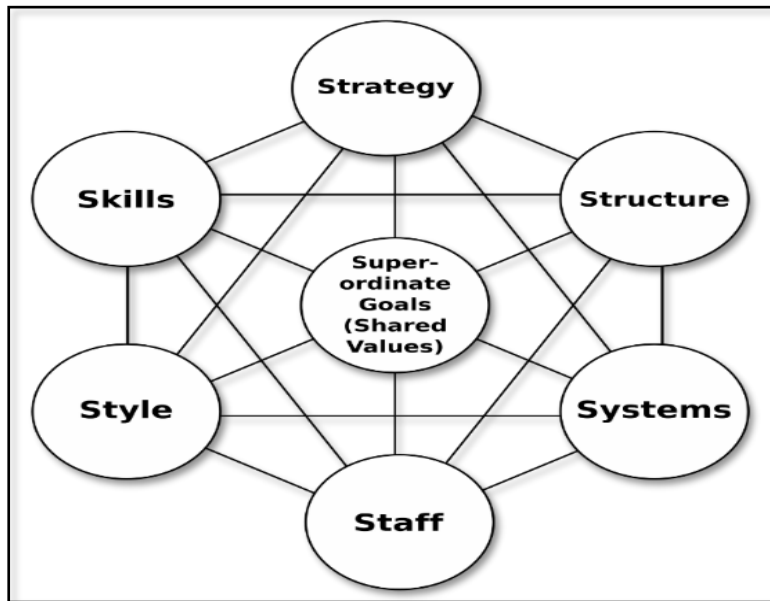


Figure 15 - Mckinsey 7S model

Source: www.researchgate.net/figure/McKinsey-7S-Model

Strategy

Patmosphere initial strategy focus in producing in four hectares in the first year of activity, making it with the best possible quality and ensuring its total outflow through partnerships with cooperatives that already work consistently in the market. fruit.

Subsequently, the objective is to increase the total area of production in the second year according to the market needs for 6 hectares.

Structure

The structure of **Patmosphere** is based on a dynamic that has a high interaction among employees of the company, thus allowing faster and more fluent information.



Through this way, mutual aid and support mentality among the company's members are implied, which will generate a better response to the daily challenges, providing a better function of the activities.

Systems

The company's activity is supported by a number of management control procedures and systems to monitor the quality control processes of fruit production and storage.

Regarding the quality control process of the fruit, the workers based on a weekly analysis will check the leaves of the plant in order to control the state of production and if it is within the normal standards, without interference of diseases or plagues. For a more careful analysis, the fruits will be inspected regularly to ensure that their appearance also meets the minimum requirements stipulated by the company's quality assurance.

Skills

The main characteristics of **Patmosphere** are the focus on quality production within the established deadlines, ensuring the entire process is run with the best possible efficiency and the regular search for new production and marketing processes.

Staff

The staff of the company will follow certain standards, which served as the basis for the intended profile of each element. First and foremost, all employees must have within them an interest in nature and its surroundings, as well as a strong ecological and ethical sense.

Consequently, they should present a reflective and analytical posture that allows them to face all daily situations and challenges as a consistent learning to improve all other work and personal processes.

As for the interaction between elements of the company, based on a communicative dynamic of the company, employees must always present with them a line of truth and understanding, so that the cohesion of the team is a competitive advantage.



Style

Patmosphere style is based on a dynamic and preponderant leadership to analyze diverse points of view, emphasizing to accept new ideas that bring growth for itself as well as for its employees, customers and suppliers.

The strategic model as mentioned above firstly is based on the primacy of the passion fruit quality and the commitment to comply with all agreements between the company and its stakeholders.

Shared values

The followed values of the company are based in the essential characteristic, such as the passion for is being done. The commitment of each element will be preponderant to adjust the company's model to the daily challenges. In addition, constant innovation, sustainability and rigor are an essential part of every element that integrates the **Patmosphere** team.

9. SMART Objectives



Figure 16 - SMART objectives

Source: www.toolshero.com/time-management/smart-goals

In addition to the analysis of the external and internal environment, it is important to outline objectives that allow the successful achievement of the strategy outlined. The SMART objectives are oriented towards the action of what really matters to do, not wasting



time and energy, being very important for **Patmosphere**. These are divided into 5 different categories, being specific, measurable, attainable, realistic and time-definite.

Specific

Patmosphere intends in the first year of activity introduce its production of purple passion fruit in the national market through the support and partnership with cooperatives, ensuring the best possible quality of its fruit.

Measurable

Based in a plantation that range spaces in each plant per line in 1.6m and 2.5m, the production will reach 2500 plants per hectare, being expectable a minimum of 10.000Kg per hectare.

Attainable

After the initial years with partnerships, the **Patmosphere** has the ambition to enter in new markets, exploiting it alone, trying this way as an opportunity to continue growth and expand.

Relevant

In the long future, the company has the objective to export its product to foreign countries, namely the Nordic markets.

Time – Related

At each year the main financial objective of the **Patmosphere** company is assure a financial stability of the company, maintaining an average ROE over the next 3 years of more than 10%.



10. Analysis to the Patmosphere - development strategy

Business strategy 1 - 3 years

High quality fruit
Production increase
Partnership with cooperatives

Business strategy + 3 years

Continuation of the partnership with cooperatives
Analysis of partnership vs exportation
Establishment of new contacts

Year 1 – 2019

In the first year of business activity there are many important aspects to take into account, such as the company's strategy for the future and what steps to take to achieve it.

The strategy of **Patmosphere** is based on the partnership between the company and cooperatives that are already inserted in the fruit market and which need more purple passion fruit for sale, regardless of whether the market is internal or external.

This partnership aims to help the company to sell all its annual production, maximizing its financial return.

The land on which the first 4 hectares of production will begin will be worked and enriched, so that at the beginning of the plantation, it can grow vigorously and sustainably.

Year 2 - 2020

The year of 2020 is the first year of harvest, with high expectation relatively to the production. It is an important mark in the history of the company that expects to sell the whole production. In this year it will be increased 2 more hectares of production, thus totalizing 6 hectares.



Year 3 - 2021

Relatively to 2021, the **Patmosphere** will be producing at its higher capacity, with 6 hectares and as well as the before year, it is expected to sell the whole production.

Year 4 - 2022

Regarding to the future of the company, the 2022 is an important year since the manager has to take important decisions about the future path to thrive.

In order to analyse how it is possible to maximize the profit of production the manager it will analyse and compare the continuation of partnership with cooperatives and the viability to export the production for the external markets as the Nordic in the first place.

Year 5 - 2023

The principal for the fifth year of the company is based in the decision of which path the company has to follow.

There are 2 scenarios for the next year consonant the decision.

Year 6 – 2024 - The path of GO

If the decision of the administration goes through “YES”, this sixth year will be organized as the follow sequence of events.

1st- Define the quantity to export.

2nd- Acquire the double of terrain of the necessary production. 3rd- Plantation placed any time between May and June.

Since the decision of investment to export will be taken in consideration in 2023, the company as to decide in this same year two important things:

The necessary quantity to export will be defined in a negotiation between the **Patmosphere** administration and the contacts that are interested in the Portuguese purple passion fruit.

Since the company has only 6 hectares of space, it's time to provide the acquisition of more land. This acquisition will be prepared thinking in the supposedly optimistic future, which leads to buy the double of necessary terrain to start the production.



This action allows the company to increase the production at any time if necessary, depends on the needs of the new customers.

The treatment process will occur in the early January 2023, thus allowing setting the production to May or June of the current year.

In the case if is not necessary to supply more quantity for the new markets, the strategy of the company will be redirected through the national market in association with the well-known cooperatives.

Year 6 – 2024 – The path of Partnership

If the decision of the administration is “NO”, this sixth year will be conducted as the same others years, except that with a perspective of growing the total production in the future.

This strategy is less risky, although is also less ambitiousness. The path to thrive in Portugal is easier for the company when compared with the internationalization, since the market channel is already known.

Based on that, a deeper research relatively to the necessity of new markets, as the case of the markets that use the purple passion fruit as a sub product will be conducted in order to understand how it works.

After the analysis based on the demand of the market as well as the conditions, there will be established contacts to promote new partnerships if **Patmosphere** sees a potential growing business in that area. The main objective is to find companies that use the purple passion fruit as a sub product, like Danone or Compal.

After the contacts and the necessary legal agreements, the **Patmosphere** will acquire the necessary quantity of terrain to produce and will start to cultivate this space.

The production will be exactly the same as the necessary quantity to supply the market.

This strategy as mentioned above is less aggressive but it is also less risky, which probably allows the company to growth with more stability while obtain more capital and know how to invest in a future opportunity in a foreign market.

To conclude, the **Patmosphere** will assume its contracts with the cooperatives for the stipulated time, thus avoiding any legal problems as well as it promotes is good brand name.



11. Marketing Mix

The product

The product is purple passion fruit. The production of this small fruit is aimed at meeting the needs and desires of consumers, both in quantity and quality. As such, in order to optimize the supply to the final consumer, attention should be centred on factors such as the quality of the production process, the brand and the packaging.

The quality process will be highlighted during the company's activity, since the best marketing that the company can present is the quality of its fruit. Within the quality process the control of plants and fruits is the priority of the activity. After its growth and consequent collection, the fruit will be stored in refrigerated chests that allowed its conservation until the moment in which they are transported. Its packaging consists in placing the fruits in only one layer, thus avoiding that they are superimposed on one another and deteriorate faster.

As for the brand and the packing in which it will be on sale, these packs will be made of white cardboard material with the company logo and a drawn image of the plantation, in order to appeal to consumers, the sense of organic production of the product.

12. Financial Planning

After consolidating the business idea and carrying out the strategic analysis and the Marketing Mix, the respective financial plan is then carried out, in order to analyse the economic and financial feasibility of the project under consideration.

The financing is the focal point for moving a theoretical project into a practical project, aiming at combining the costs inherent to the start of the operational activity, as well as all other associated costs that allow the project to progress.

The economic-financial analysis can be defined as a set of techniques designed to provide information on the economic situation (I), through the analysis of results and the factors that condition it, (ii) financial situation, by analysing the financial balance, and (iii) monetary situation, based on accounting and financial information, which reflects the activity of the company in one or more economic periods.

The financial plan was developed to provide economic and financial information for the implementation of **Patmosphere** from the year 2019 until the year 2024.



13. Company creation

13.1 Name, legal form and partners

The name of this new agricultural company of purple passion fruit production is **Patmosphere** Lda., whose legal form to adopt is company by quotas

The constituent partners of the company will be the promoter and one other private investor who is already determined and the totality of the share capital will be subscribed by both in equal form.

13.2 Writing and formalities

The creation of the company requires a prior registration of the name by which it will be designated. For this purpose, the constituent partners will apply to the Institute of Registries and Notaries, in order to obtain the certificate of admissibility of the name of the company duly approved through the National Register of Legal Persons (RNPC).

Following the registration granted by the RNPC, the constituent partners will go to "Company at the Hour" to elaborate the articles of association of the company and to register the company in the Registry of Commerce of Leiria. At the time of the creation of company, an Official Accountant will be indicated, who will deliver the declaration of commencement of activities at the Finance Department of Leiria.

Subsequently, within a maximum period determined seven days, the constituent partners will have to deposit the share capital in an account opened in the name of the company. For convenience, the capital will be deposited in a reference banking institution that ensures the best financial conditions, according to the operational needs of **Patmosphere**. Initially, the capital of the firm will be quantified at 50.000,00€, that will be divided in equal parts by each partner.

13.3 Functional organization and human resources

The initially structure of **Patmosphere** will be composed by the administration, and two others departments, engineering department and human resources department. Relatively to the productive work, it will be hired a company that will provide external services with



available workers to manage the agricultural operations.

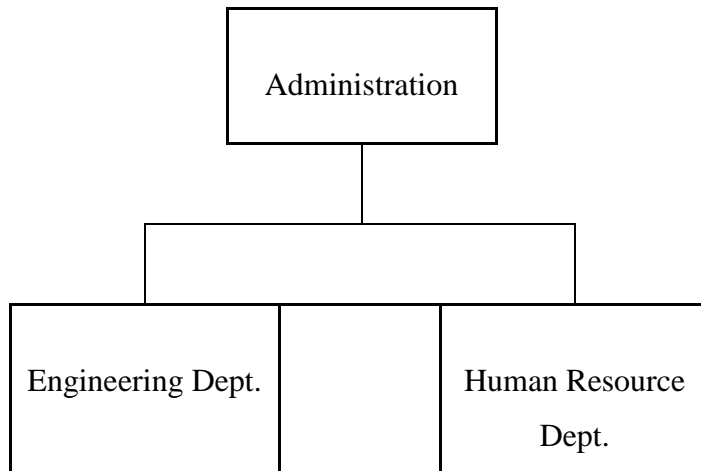


Figure 17 - **Patmosphere** structure

Source: Author

The administration is the organ to which all departments must report, since it holds the executive power and it's responsible for the planning, organization and direction of the company. The administration also has the responsibility to create the company ratios and analyse the financial health of company through the cost control of activity. This organ will be composed only by the promotor of the business.

The engineering department is represented by the other partner of the company, acknowledging his master's degree in agronomic engineering. This department is responsible for the control of the whole production activity and for any other activity directly or indirectly linked with the production.

Although the engineer has the function to make necessary contacts that promotes partnerships with cooperatives, thus helping the manager of the company regarding to some decisions.

The human resource department will as well integrate a person who holds schooling and proficiency in this area of activity. The principal tasks include the wage processing, planning and control of the holidays of the workers, reception of mail and the others necessary bureaucratic considerations.



13.4 Mission – Vision – Values

Mission

The **Patmosphere** mission consists in matching the real requirements of the clients and the markets, focusing in high quality in the necessary quantities that may share and enhance value for the intervenient parts.

Vision

The global strategic vision of **Patmosphere** is based in the necessity of answering the market's demand with quality and quantity, aiming to increase the search and interest for purple passion fruit in the Portuguese market through a sustainable agricultural system.

Based on that, it intends to contribute to the progress of the sector, generating value through the excellence in the quality.

Values

The values that embrace **Patmosphere** are the knowledge, ethic and sustainability.
Localization

The property where the company warehouse and the production will be placed is already owned by **Patmosphere**. This property was offered to the company by a partners' family member, which is no longer an investment the organization has to make.

However, the company will rent an office in Monte Redondo. The advantage of this option is lower cost at the beginning comparative with the construction of the headquarters.

The production will take place in a field near Monte Redondo, precisely in the lands of "Vale do Liz". This village is 20 km up north to the city of Leiria and is well located since the highway A17 crosses this region, meeting the A8 and A1.

The selected terrain contains an agricultural area around 6 hectares, that will be fully used later when it's time to expand the production area. The production will increase in the third year of activity, growing from four initial hectares to six hectares. The property is already flat and without trees, thus allowing the company to save time and money.



Figure 18 - **Patmosphere** crop and warehouse

Source: Google maps

The blue area assignable with the letter “A” is referred to the space where the company’s warehouse is located, as the letter “B” is the productive area.

13.5 Installation

Patmosphere’s facilities will incorporate the production unit and the corporation’s warehouse. Its surroundings will have an organized, careful and clean appearance, with a good presentation and maintenance of green spaces, including a car park

The construction of the company’s warehouse is not necessary since it is already placed a building in the Area “B”.

The warehouse will serve for a set of different things. It will be used to store and maintain the fruit until its shipping. It also has a kitchen furnished to provide necessary conditions for the workers that want to have their meals there. Male and female bathrooms assembled with showers and lockers to save personal items.

Regarding the area of production where the land is already flat due to its nature, the step to be taken in February 2019 is soil correction and subsequent fertilization for pH values between 5.5 and 6.0. Thus it is possible to improve the production conditions since the land will be fallow until the beginning of activity, scheduled for May 2019.

In April 2019 the assembly of the structure will begin, starting with the marking of the lines and opening of holes through an excavator so that the posts can be placed.



Figure 19 – infrastructure assembly

Source: Green Center

It is a fundamental operation so that the alignment of the plantation is as correct as possible, allowing a better sun exposure.

After it, there will be placed treated pine sticks for assembly of the 3.00-meter-high rows, drilled to a depth of 75 cm, leaving the upper branches of the plant with a maximum height of 2.25 m.

Once the posts have been installed, the next step is to put a grid of tutoring between the different posts, thus allowing the passion fruit to be supported and developed by the grid.



Figure 20 - Web support

Source: Green Center

Finally, in order to complete the assembly of the structure and to protect the plant from frost, metallic arches will be installed on the upper supports of the plantation, forming a semi-tunnel or low shelter, with a green mesh of 1.50 meters wide, suspending and protecting the culture, while allowing sunlight to pass through.



Figure 21- Green shade net and metallic arches

Source: Green Center

The installation of the irrigation system will be done by drop by drop with fertirrigation in tube with a watering hole of 30 cm in 30 cm, so as to wet not only the point where it is placed, but also the surrounding area through which the roots will extend. The water will be programmable saving time and allowing the necessary quantities of water.

The fertigation system as a complement to the irrigation system distribute the nutrients to the crop adequately and uniformly, considering the cycle of the plant.



Figure 22- Drip irrigation tubes and fertirrigation tubes

Source: Green Center

After all the assembly of the structure, the planting of the passion fruit will be placed in a straight line about 1.60m long and 2.50m apart between rows.

This way, the process of assembly and installation of the structure that will support the production of purple passion fruit is finished.



Figure 23 - Purple passion fruit production lines

Source: Green Center

13.6 Activity beginning

The business venture will start in January 2019, with the project management regarding to **Patmosphere Lda**. It will be conducted by the promotor that will as well be the manager of the company. The expected time is the whole year, since the promotor is enthusiastic and aware of the responsibility to deal with such a great project.

The acquisition of practical experience will be conducted by the two partners of the project that will focus in every detail required to make this project a successful business, thus it will also take the whole year.

The legal formalities about the creation of the company are planned to start in January. This also includes the name transfer of the properties where the business will set up from the old owners to the name of **Patmosphere Lda**.

In February the partners will start to search necessary assets, until the beginning of the activity. The plants will only be acquired near to production beginning.

Since the owners of this project wants to enhance the productivity, in February it will be hired an external company that provide specifics services related to the treatment of the soil. Basically, this includes a pre-preparation by adding some fertilizers and substracts.

After the legal formalities it's time to establish the first's contacts with potential partners to improve the business successful. This action will be done with time and with any necessary detail to ensure a successful agreement.

The recruitment of the human resources starts in early January.

The last step before begin the production is the construction of the productive infrastructures. It includes the assembly of the productive area and others installations.

Thus, the activity is ready to start and thriving in a hopefully successful path.



ID	Task	Start	End	2019														
				Jan 4	Fev. 8	Mar. 12	Abr. 16	Mai. 20	Jun. 24	Jul. 28	Ago. 32	Set. 36	Out. 40	Nov. 44	Dez. 48			
1	Project management	01-01-2019	31-12-2019															
2	Acquisition of practical experience	01-01-2019	31-12-2019															
3	Company formation	07-01-2019	14-01-2019															
4	Acquisition of the land	16-01-2019	17-01-2019															
5	Assets acquisition	04-02-2019	30-04-2019															
6	Establish partnerships	04-02-2019	30-04-2019															
7	Recruitment of human resources	15-01-2019	20-01-2019															
8	Preparation of the soil	04-02-2019	30-04-2019															
9	Productive infrastructures	08-04-2019	27-04-2019															
10	Production begin	16-01-2019																

Chart 4 - Gant chart of **Patmosphere**

Source: Author

14. Patmosphere business conclusion

After the study of purple passion fruit and the whole characteristics of production, as well as the study of the market in which **Patmosphere** operates, it is concluded that its entry into the market is positive and should be taken into account since there is space for growth in production and consequent commercialization.

Although there is still little information available to the public about purple passion fruit, this project has brought together as much information as possible through various ways, both in terms of quantity and especially quality.

Regarding the financial analysis, the present investment project allows to conclude that the business is viable within 5 years, since the final values are positive.

Relatively to the NPV, there is a total of 323,444.00 €, with an IRR of approximately 40% and the Payback of the activity in the space of 4 years.

Thus, is concluded that the project at this time is profitable and is ready to bring profits to the investors who decide to embrace this challenge.



ANNEX



Annex 1 – assumption (5 years)

Currency unit	Euro
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Activity beginning	2019
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Average term of receipt (days / months)	30
Average term of payment (days / months)	30
Average term of stock (days / months)	2

VAT Tax - Sales	6%
VAT Tax – Service supply	23%
VAT Tax – Cost of goods sold and raw materials consumed	23%
VAT Tax - Supplies and external services	23%
VAT Tax – Investment	23%

Social Security Fee - entity – employees	23,75%
IRC rate	25%



Annex 2 – Sales

Rate change of prices	2019	2020	2021	2022	2023	2024
Years	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%

Table 1 - Rate change of prices

Sales	2019	2020	2021	2022	2023	2024
Quantity sold (KG)	-	40.000,00	61.200,00	63.036,00	64.927,00	66.875,00
Growth rate of sales	-	-	53%	3%	3%	3%
Unit price	-	4.20	4.41	4.3	4.86	5.11
TOTAL (KG)	-	168.000,00	269.892,00	291.888,00	315.677,00	341.405,00

Table 2 - Purple passion fruit Kg's sold

Sales	2019	2020	2021	2022	2023	2024
Sales volume	-	168.000,00	269.892,00	291.888,00	315.677,00	341.405,00
VAT 6%	-	10.080,00	16.194,00	17.513,00	18.941,00	20.485,00
TOTAL		178.080,00	286.086,00	309.401,00	334.618,00	361.889,00
Impairment loss 2%	-	3.562,00	5.722,00	6.188,00	6.692,00	7.238,00

Table 3 - Purple passion fruit sales volume



Annex 3 - Cost of goods sold & materials consumed

Consumed materials	Gross Margin	2019	2020	2021	2022	2023	2024
Purple passion fruit	70%	-	50.400,00	80.968,00	87.566,00	94.703,00	102.421,00
VAT		-	11.592,00	18.623,00	20.140,00	21.782,00	23.557,00
TOTAL		-	61.992,00	99.590,00	107.707,00	116.485,00	125.978,00

Table 4 - Cost of goods sold & materials consumed



Annex 4 - Supplies & external services

Supplies & external services	2019	2020	2021	2022	2023	2024
N° of months	12	12	12	12	12	12
Growth rate		3%	3%	3%	3%	3%

Table 5 - Growth rate of supplies & external services

Fixed & variable costs	Monthly value	2019	2020	2021	2022	2023	2024
Sub contracts	1.000,00	8.000,00	12.360,00	12.730,00	13.112,72	13.506,11	13.911,29
Specialized service	250,00	3.000,00	3.090,00	3.182,70	3.278,18	3.376,53	3.477,82
Honorary/fees	100,00	1.200,00	1.236,00	1.273,08	1.311,27	1.350,61	1.391,13
Cleaning service	50,00	600,00	618,00	636,54	655,64	675,31	695,56
Representation cost	200,00	2.400,00	2.472,00	2.546,16	2.622,54	2.701,22	2.782,26
Rent	500,00	6.000,00	6.180,00	6.365,40	6.556,36	6.753,05	6.955,64
Insurance	200,00	2.400,00	2.472,00	2.546,16	2.622,54	2.701,22	2.728,26
Communication	50,00	600,00	618,00	636,54	655,64	675,31	695,56
Electricity	400,00	4.800,00	4.944,00	5.092,32	5.245,09	5.402,44	5.564,52
Gas/fuel	130,00	1.560,00	1606,80	1655,00	1.704,65	1.755,79	1.808,47
Farmer tools	50,00	600,00	618,00	636,54	655,64	675,31	695,56
Office material	30,00	360,00	370,80	381,92	393,38	405,18	417,34
Maintenance	100,00	1.200,00	1.236,00	1.273,08	1.311,27	1.350,61	1.391,13
Pollinating Bees	20,00	240,00	247,20	254,62	262,25	270,12	278,23
TOTAL	3.060,00	32.960,00	38.068,80	39.210,86	40.378,17	41.598,81	42.846,77
VAT	23%	4.682,80	5.770,88	5.944,01	6.122,33	6.306,00	6.495,18
TOTAL		37.642,80	43.839,68	45.154,87	46.509,52	47.904,81	49.341,95

Table 6 – Fixed and variable costs



Annex 5 – Staff costs

Months	2019	2020	2021	2022	2023	2024
N° months	14	14	14	14	14	14
Annual increase	10%	10%	10%	10%	10%	10%

Table 7 - Annual wage increase

Staff	2019	2020	2021	2022	2023	2024
Administration	1	1	1	1	1	1
Engineering	1	1	1	1	1	1
Human resource	1	1	1	1	1	1

Table 8 – Number of employees

Monthly income		2019	2020	2021	2022	2023	2024
Manager		850,00	935,00	1.029,00	1.131,00	1.244,00	1.369,00
Engineer		850,00	935,00	1.029,00	1.131,00	1.244,00	1.369,00
Human Resource		750,00	825,00	908,00	998,00	1.098,00	1.208,00
TOTAL (year)		34.300,00	37.370,00	41.503,00	45.653,00	50.219,00	55.241,00
Other expenses with staff							
Charge social security							
Staff	23.75%	8.14,25	8.875,38	9.856,96	10.842,59	11.927,01	13.199,74
Accident insurance job	5%	1.715,00	1.887,00	2.075,00	2.283,00	2.511,00	2.762,00
Food allowance	110,00	3.960,00	3.960,00	3.960,00	3.960,00	3.960,00	3.960,00
Training		1.500,00	1.500,00	1.500,00	1.500,00	1.500,00	1.500,00
Total (others expenses)		15.321,00	16.307,00	17.392,00	18.585,00	19.898,00	21.342,00
Total (staff cost)		49.921,00	54.337,00	59.195,00	64.539,00	70.417,00	76.883,00

Table 9 - Total staff cost



Annex 6 – Investment

Investment per year	2019	2020	2021	2022	2023	2024
Tangible fixed assets						
Production equipment	15.000,00					
Passiflora Edulis	30.000,00	3.000,00	18.000,00	4.500,00	4.500,00	4.500,00
Logistic equipment	11.000,00					
Total of tangible fixed assets	56.000,00					
Total of investment	56.000,00					
VAT	12.880,00	690,00	4.140,00	1.035,00	1.035,00	1.035,00
TOTAL	68.880,00	3.690,00	22.140,00	5.535,00	5.535,00	5.535,00

Table 10 - Total of investment

Accumulated values	2019	2020	2021	2022	2023	2024
Tangible fixed assets						
Production equipment	15.000,00	15.000,00	15.000,00	15.000,00	15.000,00	15.000,00
Passiflora Edulis	30.000,00	33.000,00	51.000,00	55.500,00	60.000,00	64.500,00
Logistic equipment	11.000,00	11.000,00	11.000,00	11.000,00	11.000,00	11.000,00
Total of tangible fixed assets	56.000,00	59.000,00	77.000,00	81.500,00	86.000,00	90.500,00
TOTAL	56.000,00	59.000,00	77.000,00	81.500,00	86.000,00	90.500,00

Table 11 - Investment accumulated values

Depreciation and amortization rates	
Production equipment	20,00%
Passiflora Edulis	20,00%
Logistic equipment	25,00%

Table 12 - Depreciation and amortization investment rate



Depreciation and amortization	2019	2020	2021	2022	2023	2024
Total	11.950,00	12.550,00	16.150,00	17.050,00	14.200,00	6.900,00

Table 13 - Depreciation and amortization value per year

Accumulated depreciation and amortization	2019	2020	2021	2022	2023	2024
Tangible fixed assets	11.950,00	24.500,00	40.650,00	57.700,00	71.900,00	78.800,00
TOTAL	11.950,00	24.500,00	40.650,00	57.700,00	71.900,00	78.800,00

Table 14 - Accumulated depreciation and amortization value

Balance sheet values	2019	2020	2021	2022	2023	2024
Tangible fixed assets	44.050,00	34.500,00	36.350,00	23.800,00	14.100,00	11.700,00
TOTAL	44.050,00	34.500,00	36.350,00	23.800,00	14.100,00	11.700,00

Table 15 - Balance sheets values of depreciation and amortization



Annex 7 – Working Capital

Working capital needs	2019	2020	2021	2022	2023	2024
Treasury reservation	2.000,00	2.000,00	2.000,00	2.000,00	2.000,00	
Clients		14.840,00	23.480,00	25.783,00	27.885,00	30.157,00
Inventory		280,00	450,00	486,00	526,00	569,00
Estate	4.391,00	1.993,00	3.128,00	2.446,00	2.546,00	2.651,00
TOTAL	6.391,00	19.113,00	29.419,00	30.176,00	32.956,00	35.377,00

Table 16 - Working capital needs

Working capital resources	2019	2020	2021	2022	2023	2024
Suppliers	3.137,00	8.819,00	12.062,00	12.851,00	13.699,00	14.610,00
Estate	1.219,00	1.341,00	1.475,00	1.622,00	1.785,00	1.963,00
TOTAL	4.356,00	10.160,00	13.537,00	14.474,00	15.484,00	16.573,00

Table 17 - Working capital resources

Necessary working capital	2019	2020	2021	2022	2023	2024
TOTAL	2.035,00	8.953,00	15.882,00	16.242,00	17.473,00	18.804,00

Table 18 - Necessary working capital

Investment in working capital	2019	2020	2021	2022	2023	2024
TOTAL	2.035,00	6.918,00	6.928,00	361,00	1.230,00	1.331,00

Table 19 - Investment in working capital



Annex 8 – Financing

Financing	2019	2020	2021	2022	2023	2024
Investment	58.035,00	9.918,00	24.928,00	4.861,00	5.730,00	5.831,00
Safety margin	5%	5%	5%	5%	5%	5%
Necessity of investment	60.900,00	10.400,00	22.200,00	5.100,00	6.000,00	6.100,00

Table 20 - **Patmosphere** total financing per year

Source of financing	2019	2020	2021	2022	2023	2024
Cash flows		19.362,00	67.635,00	74.168,00	80.250,00	85.737,00
Capital	50.000,00					
TOTAL	50.000,00	19.362,00	67.635,00	74.168,00	80.250,00	85.737,00

Table 21 - Sources of financing



Annex 9 – Income Statement

Income Statement	2019	2020	2021	2022	2023	2024
Sales and services		168.000,00	269.892,00	291.888,00	315.677,00	341.405,00
CGSMC		50.400,00	80.968,00	87.566,00	94.703,00	102.421,00
Supplies and external services	32.960,00	38.069,00	39.211,00	40.387,00	41.599,00	42.847,00
Staff cost	49.921,00	54.337,00	59.195,00	64.539,00	70.417,00	76.883,00
Impairment of debts		3.562,00	5.722,00	6.188,00	6.692,00	7.238,00
EBITDA	-82.881,00	21.632,00	84.797,00	93.208,00	102.266,00	112.016,00
Depreciation / amortization expense	11.950,00	12.550,00	16.150,00	17.050,00	14.200,00	6.900,00
EBIT	-94.831,00	9.082,00	68.647,00	76.158,00	88.066,00	105.116,00
Results before taxes	-94.831,00	9.082,00	68.647,00	76.158,00	88.066,00	105.116,00
Income taxes				14.764,00	22.017,00	26.279,00
ROI	-94.831,00	9.082,00	68.647,00	61.394,00	66.050,00	78.837,00

Table 22 - **Patmosphere** income statement



Annex 10 – Project's cash flow

Project's cash flow	2019	2020	2021	2022	2023	2024
Operating results	-71.123,00	6.812,00	51.485,00	57.118,00	66.050,00	78.837,00
Depreciation and amortization	11.950,00	12.550,00	16.150,00	17.050,00	14.200,00	6.900,00
TOTAL	-59.173,00	13.362,00	67.635,00	74.168,00	80.250,00	85.737,00
Investment/disinvestment cash flow	-2.035,00	-6.918,00	-6.928,00	-361,00	-1.230,00	-1.331,00
Operating cash flow	-61.208,00	12.443,00	60.707,00	73.808,00	79.019,00	84.406,00
Investment/ disinvestment in fixed capital						
Fixed capital	-56.000,00	-3.000,00	-18.000,00	-4.500,00	-4.500,00	-4.500,00
Free cash-flow	-117.208,00	9.443,00	42.707,00	69.308,00	74.519,00	79.906,00

Table 23 - **Patmosphere** Project cash flow



Annex 11 – Financing plan

Funds origin	2019	2020	2021	2022	2023	2024
Cash flow generation	-82.881,00	25.194,00	90.518,00	99.396,00	108.958,00	119.254,00
Share capital	50.000,00					
Total of origins	-32.881,00	25.194,00	90.518,00	99.396,00	108.958,00	119.254,00
Funds application						
Fixed capital investment	56.000,00	3.000,00	18.000,00	4.500,00	4.500,00	4.500,00
Working capital investment	2.035,00	6.918,00	6.928,00	361,00	1.230,00	1.331,00
Profit tax					14.764,00	22.017,00
Total of application	50.035,00	9.918,00	24.928,00	4.81,00	20.494,00	27.848,00
Annual treasury balance	-90.916,00	15.276,00	65.590,00	94.535,00	88.464,00	91.406,00
Treasury balanced accumulated	-90.916,00	-75.641,00	-10.051,00	84.485,00	172.949,00	264.355,00

Table 24 - **Patmosphere** financing plan



Annex 12 – Provisional Balance

	2019	2020	2021	2022	2023	2024
Asset						
Non-current asset	44.050,00	34.500,00	36.500,00	23.800,00	14.100,00	11.700,00
Tangible fixed assets	44.050,00	34.500,00	36.500,00	23.800,00	14.100,00	11.700,00
Current asset	6.391,00	15.552,00	20.135,00	99.729,00	183.741,00	270.331,00
Inventory		280,00	450,00	486,00	526,00	569,00
Clients		11.278,00	14.557,00	10.312,00	5.721,00	756,00
Estate and others entities	4.391,00	1.993,00	3.128,00	2.446,00	2.546,00	2.651,00
Cash and bank deposits	2.000,00	2.000,00	2.000,00	86.485,00	179.949,00	266.355,00
Total of asset	50.441,00	50.052,00	56.485,00	123.529,00	197.841,00	282.031,00
Equity						
Paid-up capital	50.000,00	50.000,00	50.000,00	50.000,00	50.000,00	50.000,00
Reserve		-94.831,00	-85.749,00	-17.102,00	44.292,00	110.341,00
Net income of period	-94.831,00	9.082,00	68.647,00	61.394,00	66.050,00	78.837,00
Total of equity	-44.931,00	-35.749,00	-32.898,00	94.292,00	160.341,00	239.178,00
Passive						
Non-current passive	-	-	-	-	-	-
Current passive	771,00	4.053,00	4.447,00	5.268,00	7.295,00	26.228,00
Suppliers	3.137,00	8.819,00	12.062,00	12.851,00	13.699,00	14.610,00
Estate and others entities	1.219,00	1.341,00	1.475,00	16.386,00	23.801,00	28.242,00
Loans obtained	90.916,00	75.641,00	10.051,00	-	-	-
Total passive	95.272,00	85.801,00	23.588,00	29.238,00	37.500,00	42.852,00
Total passive + equity	50.441,00	50.052,00	56.485,00	123.529,00	197.841,00	282.031,00

Table 25 - Patmosphere balance



Annex 13 – Project evaluation

Project evaluation	2019	2020	2021	2022	2023	2024
Free cash flow Equity	-117.208,00	9.443,00	42.707,00	69.308,00	74.519,00	79.906,00
Risk-free interest	0,25%	0,26%	0,28%	0,29%	0,30%	0,32%
Market risk premium	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Discount rate	2,25%	2,26%	2,28%	2,29%	2,30%	2,32%
Factor rate	1	1,023	1,046	1,070	1,094	1,120

Table 26 - **Patmosphere** project evaluation

Cash flow	-117.208,00	9.235,00	40.833,00	64.783,00	68.086,00	71.353,00
Cash flow accumulated	-117.208,00	-107.974,00	-67.141,00	-2.358,00	65.728,00	137.080,00

Table 27 - **Patmosphere** cash flow accumulated

Evaluation (5years)	
NPV	323.444,00
IRR	39,55%
Payback period (years)	4

Table 28 - **Patmosphere** evaluation



Annex 14 – Indicators

Economic indicators	2019	2020	2021	2022	2023	2024
Business growth rate	-	-	61%	8%	8%	8%
Net sales profitability	-	5%	25%	21%	21%	23%

Table 29 - **Patmosphere** economic indicators

Finance indicators	2019	2020	2021	2022	2023	2024
ROI	-188%	18%	122%	50%	33%	280%
Asset profitability	-188%	18%	122%	62%	45%	37%
Asset turnover	0%	336%	478%	236%	160%	121%
ROE	212%	-25%	209%	5%	41%	33%

Table 30 - **Patmosphere** finance indicators

Financial indicators	2019	2020	2021	2022	2023	2024
Financial autonomy	-89%	-71%	58%	76%	81%	85%
Solvability	53%	58%	239%	423%	528%	658%

Table 31 - **Patmosphere** financial indicators

Liquidity indicators	2019	2020	2021	2022	2023	2024
Current liquidity	0,07	0,18	0,85	3,41	4,90	6,31
Reduced liquidity	0,07	0,18	0,83	3,39	4,89	6,30

Table 32 - **Patmosphere** liquidity indicators

Business risk indicators	2019	2020	2021	2022	2023	2024
Gross margin	-32.960,00	79.531,00	149.714,00	163.935,00	179.375,00	196.137,00
Operational leverage	35%	876%	218%	215%	204%	187%
Financial leverage	100%	100%	100%	100%	100%	100%

Table 33 - **Patmosphere** business risk indicators



Bibliografia

- Aguiar-Menezes, E. L.; Menezes, E. B.; Cassino, P. C. R.; Soares, M. A. Passion fruit. In: Peña, J. L.; Sharp, J. L.; Wysoki, M. (Ed.). Tropical fruit pests and pollinators: economic importance, natural enemies and control. Nova York: CAB International, 2002. p. 361-390.
- Andrade, Cláudia Santos; Palha, Maria da Graça; Nunes, Ana Paula; Reis, L. Gerson. 2005. Tecnologias de produção. In *Manual do Morangueiro* (Palha *et al.*, 2005). Projeto PO AGRO DE&D n.º 193 - Tecnologias de produção integrada no morangueiro visando a expansão da cultura e a reconquista do mercado. INIAP/EAN, Oeiras, 128 pp.
- Avillez, F., Silva, F., Trindade, C., Avillez, F., Salema, J. and Pereira, N. (2006). Análise de Investimentos – Manual Técnico. 1st ed.
- Barros, H., 1995. Análise de Projectos de Investimento. Lisboa: Edições Sílabo.
- Barros, C., 2007. Avaliação financeira de projectos de investimento. Lisboa: Escolar editora.
- Barros, H., 2008. Análise de projectos de investimento. Lisboa: Edições Sílabo.
- Bastos, M. (2006). Processamento Mínimo de Frutas.
- Bhat, R., & Paliyath, G. (2015). Fruits of tropical climates: Dietary Importance and Health Benefits. In: Caballero, B., Finglas, P.M., & Toldrá, F. (Eds). Encyclopedia of Food and Health, Elsevier, Kidlington, pp.144-149. ISBN: 978-0-12-384947-2.
- Brealey, R. A. & Stewart, C. M., 2003. Principles of Corporate Finance. 7ª edição ed.
- Borges L., 2009 Análise de Cenários: Como avaliar a expansão do seu negócio Boston: McGraw-Hill/Irwin.
- Brandão, A. L. S.; São José, A. R.; Boaretto, M. A. C. Pragas do maracujazeiro. In: São José, A. R. (Ed.). A cultura do maracujá no Brasil. Jaboticabal: Funep, 1991. p. 136-168.
- Branzanti, E. C.. 1989. *La fresa*. Mundi-Prensa, Madrid, 386 pp.
- Carvalho, S., Stenzel, N. and Auler, P. (2015). Maracujá-Amarelo Recomendações técnicas para o cultivo no Panamá.



- CE, 2007. Comissão Europeia. Reforma do setor das frutas e produtos hortícolas. 11 pp. (URL: http://ec.europa.eu/agriculture/capreform/fruitveg/infopack_pt.pdf, acessado a 05/02/2018).
- Chitarra, F. & Chitarra, B., 1990. Pós-colheita de frutos e hortaliças: Fisiologia e manuseio. s.l.:Lavras.
- Costa, A., Costa, A., Ventura, J., Fanton, C., Lima, I., Caetano, L. and Santana, E. (2008) Recomendações técnicas para o cultivo do maracujazeiro. Vitória.
- C. M. Menzel, D. W. Turner, V. J. Doogan & D. R. Simpson. (2015). Root shoot interactions in passionfruit (*Passiflora* sp.) under the influence of changing root volumes and soil temperatures.
- Dhawan, K., Dhawan, S. & Sharma, A. 2004. *Passiflora*: A review update. *Journal of Ethnopharmacology* 94: 1-23
- Emechebe AM, Mukiibi J (1976) *Nectria collar* and root rot of passion fruit in Uganda. *Plant Disease Reporter* 60, 227-231
- Fadini, M. A. M.; Santa-Cecília, L. V. C. Manejo integrado de pragas do maracujazeiro. *Informe Agropecuário*, v. 21, n. 206, p. 29-33, 2000
- Femenick, T. (2015). Conceitos fundamentais sobre custos.
- Ferrão, J. E. M., 2002. *Fruticultura tropical: espécies com frutos comestíveis*. Volume III ed. Lisboa: Instituto de investigação científica tropical.
- Ferreira, R. (2015). *ABC do Empresário: O que é o cash flow*.
- Fischer, I. H.; Kimati, H.; Rezende, J. A. M. Doenças do Maracujazeiro. In: Kimati, H.; Amorim, L.; Rezende, J. A. M.; Bergamin Filho, A.; Camargo, L. E. A. (ed.) *Manual de Fitopatologia*. 4.ed. São Paulo: Agronômica Ceres, 2005. v. 2., p. 467-474.
- Fischer, I. and Rezende, J. (2008). *Diseases of Passion Flower (Passiflora spp.)*.
- Fox, Jr.; F. A.; Sherer, T.; Slack, D. C.; Clarck, L. J. *Arizona Irrigation Scheduling – Azsched ver. 1.01 – Users Manual*. The University of Arizona/Cooperative Extension/Agricultural and Biosystems Engineering, 1992. 36 p.



Gioria, R.; Bosque, G.G.; Rezende, J.A.M.; Amorim, L.; Kitajima, E.W. Incidência de viroses de maracujazeiro na Alta Paulista – SP e danos causados pelo Passion fruit woodiness virus. *Fitopatologia Brasileira*, v.25,p.182-189, 2000.

Gitman & Madura, 2003. *Administração Financeira: Uma abordagem gerencial*. s.l.:Pearson.

Góes, A. Doenças fúngicas da parte aérea da cultura do maracujá. In: Simpósio Brasileiro sobre a Cultura do Maracujá, 5., 1998, Jaboticabal. *Anais...* Jaboticabal: FUNEP, 1998. p. 208-216.

Gomes, V. (2011). *Avaliação de Projectos de Investimento: Elaboração de um Estudo de Viabilidade Económico-Financeira*.

Gontijo, G., Zandonade, M. and Pinto, L. (1990). *Cultivo do Maracujá - Informações básicas do cultivo*.

Grant, R. M., 1995. *Contemporary Strategy Analysis: Concepts, techniques, applications*. 2^a edição ed. Cambridge: MA Blackwell.

Infeld, J. A.; Silva, J. B. da. Somas térmicas da duração da fase vegetativa do arroz irrigado. (*Oryza sativa*. L.). In Congresso Brasileiro de Agrometeorologia, 5., 1987, Belém-PA. *Anais...* Belém: SBA, 1987. p. 160-161

Joy, P. and Sherin, C. (2007). *Diseases of Passion Fruit (Passiflora edulis): Pathogen, symptoms, infection, spread & management*.

Junqueira, *et al.*, 2006. Reação da doença e produtividade de um clone de maracujazeirozedeo propagado por estaquia e enxertia em estacas herbáceas de passifloras silvestres. *Revista Brasileira de Fruticultura*, pp. 97-100.

Junqueira, N. T. V., 2005. Potencial de Espécies Silvestres de Maracujazeiro como Fonte de Resistência a Doenças. Embrapa - Maracujá: germoplasma e melhoramento genético, pp. 143- 158.



Junqueira, N.T.V.;Teixeira, R.V.R.; Nascimento, A.C.; Sharma, R.D. Controlo das principais doenças do maracujazeiro no cerrado. Brasília: Embrapa Cerrados, 1999b 5 p. (Embrapa Cerrados. Comunicado Técnico, 8).

Kliemann, H.J.; Campelo Júnior, J.H; Azevedo, J.A. de; Guilherme, M. R.; Genu, P. J. de C. Nutrição mineral e adubação do maracujazeiro. In: HAAG, H. P. (Ed.). Nutrição mineral e adubação de fruteiras tropicais. Campinas: Fundação Cargill, 1986. p. 247-284.

Lima, A., Filho, H., Fancelli, M., Borges, A. and Sanches, N. (1994). A cultura do Maracujá.

Lima, A., Noronha, A., Borges, A., Cardoso, C., Ritzinger, C., Barbosa, C., Costa, D., Filho, H., Fancelli, M., Cunha, M. and Sanches, N. (2006). A cultura do Maracujá. 3rd ed.

Lucas, A. A. T. Resposta do maracujazeiro-amarelo (*Passiflora edulis* Sims var. *flavicarpa* Deg) a lâminas de irrigação e doses de adubação potássica. 2002. 88 p. Dissertação (Mestrado) – Escola Superior de Agricultura “Luiz de Queiroz”, Universidade de São Paulo.

Madeira, B. (2013). Maracujá Roxo (*Passiflora edulis*) | Portal Agronegócios.eu. [online] Agronegocios.eu. Available at: <http://www.agronegocios.eu/noticias/maracuja-roxo/> [Accessed 10 Apr. 2018].

Manica, I. Fruticultura tropical: maracujá. São Paulo: Agronômica Ceres, 1981. 151 p.

Marques, A., 2006. Concepção e análise de projectos de investimento. Lisboa: Edições Sílabo

Martins, D. P.; Carvalho, A. J. C. de; Bernardo, S.; Monnerat, P. H. Produtividade do maracujazeiro amarelo (*Passiflora edulis* Sims var. *flavicarpa* Deg.) em função das lâminas totais de água. In: Congresso Brasileiro de Engenharia Agrícola, 27., 1998, Poços de Caldas. Anais... Poços de Caldas, 1998. v. 2, p. 214-216

Meletti, L. M. M., 1995. Maracujá: Produção e comercialização. Campinas, IAC. Meletti, L.

M. M., 1996. Maracujá: Produção e comercialização. Campinas, p. 158. Meletti, L. M. M.,

2015. Irrigação. Globo Rural



Menzel, C. M.; Simpson, D. R. Effect of continuous shading on growth, flowering and nutrient uptake of passion fruit. *Scientia Horticulturae*, Amsterdam, v. 35, n. 1/2, p. 77-88, Apr. 1988.

Miguel, A., 2006. Avaliação de projectos de investimento. Lisboa: Edições Lidel.

Morton, J. F. (1987). *Fruits of warm climates*, Winterville: Creative Resource Systems Inc. 320-328.

Mota, F. S. *Meteorologia agrícola*. 7. ed. São Paulo: Nobel, 1986. 376 p. Neves, J., 2002.

Avaliação de empresas e negócios. s.l.:McGraw Hill.

Nogueira, N. (2009). *Analisar projectos: O VAL a TIR e o Payback*

Olita, A. F. *Os métodos de irrigação*. 11. ed. São Paulo: Nobel, 1984. 267 p.

Oliveira, J. C., 2002. Comparação entre o comportamento do maracujá roxinho do Quênia (*passiflora edulis sims*) e de outros três genótipos de maracujá na região norte de São Paulo. São Paulo, Anais.

Oliveira, J. C. & Ruggiero, C., 2005. Espécies de maracujá com potencial agronómico. *Maracujá: Germoplasma e Melhoramento Genético*, pp. 143-158.

Oliveira, Z. P. *A cultura do maracujazeiro: práticas de cultivo*. Maceió: Empresa de Pesquisa Agropecuária de Alagoas, 1989. 25p. (Empresa de Pesquisa Agropecuária de Alagoas. Circular técnica, 1).

Petry, R. D., Reginatto, F., de-Paris, F. (2001). Comparative pharmacological study of *Passiflora alata* and *Passiflora edulis* leaves. *Phytotherapy Research*, 15, 162- 164.

Peruch, L., Colariccio, A. and Schroede, A. (2011). Sintomas e controle das principais doenças do maracujazeiro.

Picanço, M.; Gonring, A. H. R.; Oliveira, I. R. Manejo integrado das pragas. In: Bruckner, C. H; Picanço, M. C. (Ed.). *Maracujá: tecnologia de produção, pós-colheita, agroindústria, mercado*. Porto Alegre: Cinco Continentes, 2001. Cap. 8, p. 189-242.



Phelps RH (1991) Identification and control of leaf and fruit disease of passion fruit at Orange grove. Technical Report, Caroni Research station 23, 78-80.

Phillips, J., 2004. Project Management Professional. s.l.:Elsevier.

Pinto, P. H. D. *et al.* Reação de progênies de maracujá-azedo a septoriose (*Septoria passiflorae* Sydow). Bioscience Journal, Uberlândia, v. 22, n. 2, p. 61-67, maio/ ago. 2006.

Piza Jr CT (1994) Moléstias fúngicas do maracujazeiro. In: São José AR (Ed) Maracujá – Produção e Mercado, Universidade Estadual do Sudoeste da Bahia, Vitória da Conquista, BA, pp 108-115

PIZA JÚNIOR, C. T. A cultura do maracujá na região sudeste do Brasil. In: SIMPÓSIO SOBRE A CULTURA DO MARACUJÁ. Jaboticabal, 1998. Anais... Jaboticabal: UNESP, 1998. p. 20-45.

Rau, P. (n.d.). Encha o seu jardim de maracujás. [online] Sapo LifeStyle. Available at: <http://lifestyle.sapo.pt/casa-e-lazer/dicas-e-decoracao/artigos/encha-o-seu-jardim-de-maracujas> [Accessed 2 Apr. 2018].

Rebelo, M. (2012). Maracuja Roxo (*Passiflora edulis* Sims). [online] gojiberries. Available at: <http://gojiberries.blogs.sapo.pt/14062.html> [Accessed 12 Jan 2018].

Rezende, J.A.M. Doenças de vírus e micoplasma do maracujazeiro no Brasil. In: São José, A.R. (Ed.) Maracujá: produção e mercado. Vitória da Conquista: UESB, 1994. p.116-125

Rodríguez, C. (2010). Comparative analysis between cholupa and gulupa. Boletín informativo, 01, 27.

Rossetto, C. J.; Cavalcante, R. D.; Crisi Jr., C.; Carvalho, A. M. Insetos do maracujazeiro. São Paulo: Instituto Agronômico, 1974. 12p. (Instituto Agronômico. Circular, 39).

Ruggiero, C.; São José, A.R; Volpe, C. A.; Oliveira, J.C. de; Durigan, J.F.; Baumgartner, J.G.; Silva, J.R.W.; Nakamura, K.; Ferreira, M.E.; Kavati, R.; Pereira, V. de. P. Sampaio, et & al, 2007. Regional climate change. Geophys.



São José, A., Lima, A., Conceição, A., Cardoso, C., Angel, D., Brito, E., Passos, H., Bittencourt, L., Fancelli, M., Bomfim, M., Pires, M., Santos, M., Rosado, O., Hojo, P. and Pereira, R. (2011). Maracujá: avanços tecnológicos e sustentabilidade

São José, A. R. *et al.* Maracujá práticas de cultivo e comercialização. Vitória da Conquista: UESB/DFZ, 2000.

Santos, Z.F.A.F.; Costa, J.M. da. Pragas da cultura do maracujá no Estado da Bahia. Salvador: EPABA, 1983. (EPABA. Circular Técnica, 4).

Santos, A., Santos, L., Gomes, M. and Albuquerque, R. (2008). Gestão de custos.

Sato, G.S., Martins, V.A., & Bueno, C.R.F. (2007). Análise exploratória do perfil do consumidor de produtos minimamente processados na cidade de São Paulo. *Informações Econômicas*, 37: 62-71.

Schotsmans, W. C., Fischer, G. (2011). Passion fruit (*Passiflora edulis* Sim.). *Postharvest biology and technology of tropical and subtropical fruits*, 4, 501. Ed: Elhadi Yahia, Querétaro University, Mexico.

Silva, 1999. Matodos de aplicação de cloreto de cálcio pós-colheita na conservação do maracujá. Brasil: Faculdade de ciências agronômicas.

Silva, B., Silva, A. And Pagiuca L. (2014) Cultivo protegido – Em busca de mais eficiência produtiva.

SILVA, R. (n.d.). Polinização artificial na cultura do maracujazeiro-amarelo.

Silva, A. G. A.; Gonçalves, C. R.; Galvão, D. M.; Gonçalves, A. J. L.; Gomes, J.; Silva, M. N.; Simoni, L. Quarto catálogo dos insetos que vivem nas plantas do Brasil, seus parasitas e predadores. Rio de Janeiro: Ministério da Agricultura, 1968. Parte II, tomo 1, 622p.

Sousa, V. F. de; Folegatti, M. V.; Coelho Filho, M. A.; Frizzzone, J. A. Distribuição radicular do maracujazeiro sob diferentes doses de potássio aplicadas por fertirrigação. *Engenharia Agrícola e Ambiental*, Campina grande, v. 6, n. 1, p. 51-56, 2002.



Torres FJ (1983) Doenças do maracujazeiro (*Passiflora edulis* f. *flavicarpa* Deg.), no Planalto da Ibaipada, EPACE, Ceará, Fortaleza, 7 pp (Comuni- cado Técnico, 11)

Trento, E., Sepulcri, O. and Morimoto, F. (2011). Comercialização de frutas. Legumes e verduras.

Urashimia, A. S. Aspectos fenológicos do maracujazeiro amarelo (*Passiflora edulis* Sims. var. *flavicarpa* Den.). Botucatu: FCA-UNESP, 1985. 83 p.

Vasconcellos, M. A. S.; Cereda, E. O cultivo do maracujá-doce. In: SÃO JOSÉ, A.R. (Ed.). Maracujá: produção e mercado. Vitória da Conquista: DFZ/UESB, 1994. p. 71-83.

Vasconcellos, M. A. S.; Duarte Filho, J. Ecofisiologia do maracujazeiro. Informe agropecuário, Belo Horizonte, v. 21, n. 206, p. 25-28 , 2000. Maracujá: produção e mercado. Vitória da Conquista: DFZ: UESB, 1994. p. 71-83.

Volpe, C. A. Fenologia dos citros. In: Seminário Internacional e Citros, 2., 1992, Bebedouro. Anais... Campinas: Fundação Cargill, 1992. p. 107-120

Watson, D.P. and Bowers, F.A.I., 1965. Long days produce flowers on passionfruit. Hawaii Farm Sci., 14: 3-5.

Zibadi, S., Watson, R. R. (2004). Passion fruit. Evidence Based Integrative Medicine, 1, 183-187.

Zibadi, S., Farid, R., Moriguchi, S., Lu, Y., Foo, L. Y., Tehrani, P. M., Ulreich, J.B., & Watson, R.

R. (2007). Oral administration of purple passion fruit peel extract attenuates blood pressure in female spontaneously hypertensive rats and humans. Nutrition Research, 27: 408 -416.

Zunido, A. and Magalhães, G. (2006). Análise Financeira de Projectos de Software (VAL, TIR e PRI).