



The
Strawberry
and its farming industry
in Huelva (Spain)

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The natural conditions of the province of Huelva in the farming of strawberries, recognized by world specialists, explain to a large extent the extraordinary boom of the strawberry sector in this province. Especially in the southern area of Huelva, there are unique soil and climate conditions, as well as the availability of good quality water, which have resulted in a great expansion of this crop. This process has been accompanied by a high level of technology, distribution structures and commercial dynamism, which have placed the strawberry as the province's leading crop.

Today, **close to 150,000 tons of strawberry are produced annually in Huelva¹, which represents more than 65% of the national production of this fruit**, with a proven quality and, above all, during seasons of the year when there is no competition both in the domestic market and in the rest of Europe. The current 2018 strawberry

season began earlier than expected. By early as the first fortnight of last December 2017 the first production of this fruit was already available with a greater supply than in previous seasons, but as a result of the excess in supply, the initial prices were lower than those obtained in the two previous years.

The climate and its consequences

Everyone knows the influence that climatic conditions exert on the development of crops and in the case of strawberries and other red fruits it couldn't be otherwise. The existence of an extremely warm autumn 2017 causes the Huelva strawberry sector to replace around 10% of strawberry plants, which results in an increase in planting costs².

According to the latest report on the fruit made by the Price Observatory of the Regional Government of Andalusia, the impact of these temperatures has reached replacement figures of up to 25% of what was planted in some production areas of Huelva³.



Where does the Huelva strawberry come from?

The strawberry was not born in the Huelva countryside; its microclimate caused these small red fruits to travel from California, in Los Angeles, to adapt to the western Andalusian terrain. It was the Sevillian businessman Antonio Medina, who brought the first strawberry plants to Huelva in 1960 and is considered as the true precursor of their cultivation in Spain.

Since those modest beginnings, the arrival of spring today is celebrated by an approximate 17,000 acres dressed in white that hide millions of coloured specks of a delicious sweet tasting fruit⁴. **The strawberry season in the South of Spain goes from the end of January to the end of May, although the main period is from March 15 to April 15.**

There was a time when they were known as "fresones" [large strawberries], a name that had no other purpose than to differentiate the strawberries of Huelva from those of Valencia, which were smaller. One way or another and regardless of their name, the province is known as well for its ham, prawns, and this fruit, which is a natural source of

vitamin C and antioxidants, that grows from leafy creeping plants belonging to the genus "Fragaria," for its intense fragrance.

The world production of strawberry farming has multiplied by 4 over the last 40 years, increasing from 754,516 tons in the year 1961 to 3,175,464 tons in 2001⁵.

Europe is the area that has experienced the largest expansion of its production in the world. This great development is due in part to the increase in demand since strawberries are perceived as fruits with a high content of vitamin C, almost equivalent to that of citrus fruits and with great industrial potential.

Europe is the leading strawberry producer in the world⁶, with 1,489,262 tons (47.7% of world production), followed by North and Central America with 919,479 tons (29.4%) (29.4%).

The world harvested area of strawberry production was 228,555 hectares in the year 2001, of which 72.5% belong to Europe and only 12.6% to North and Central America.

Current strawberry production

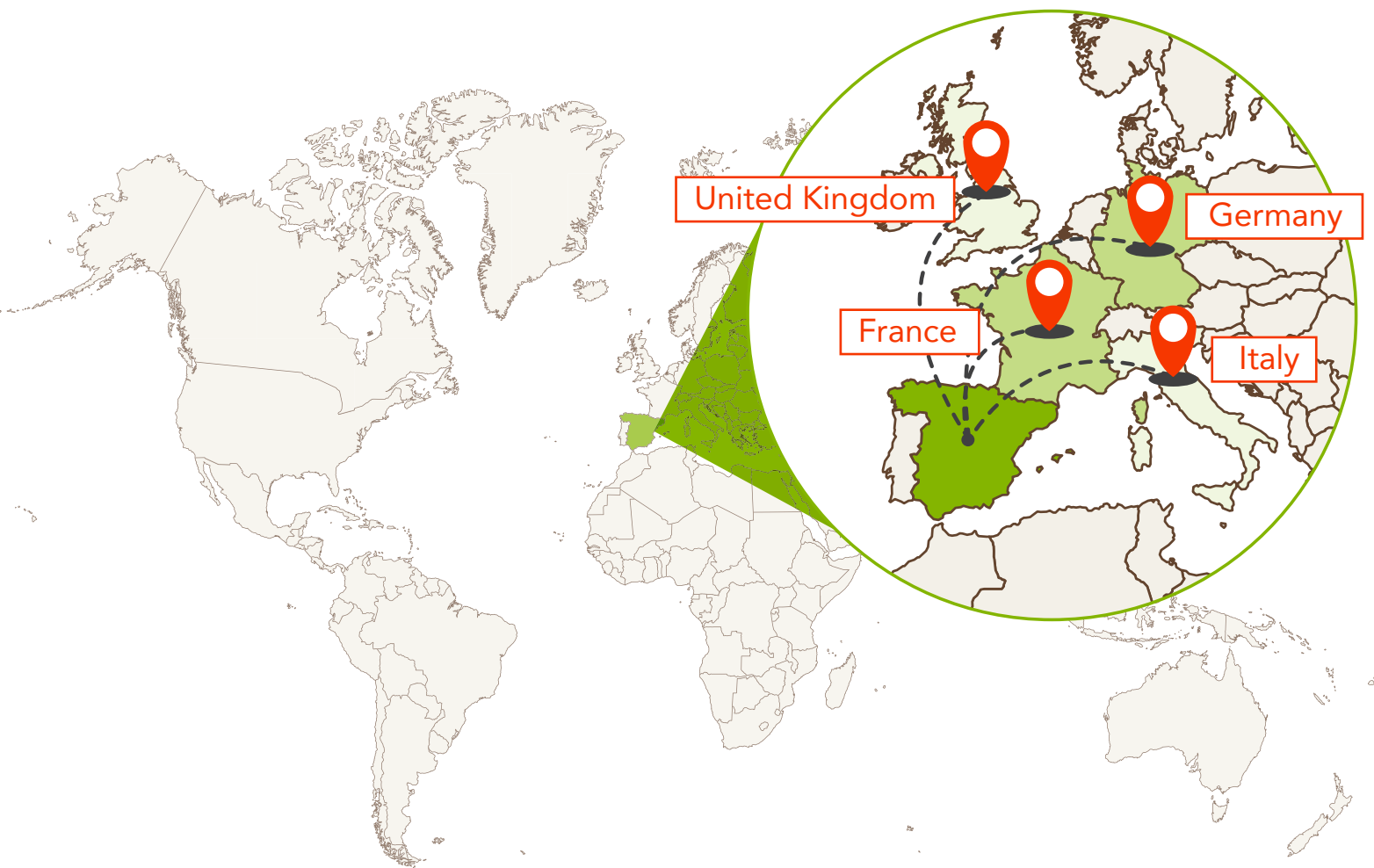
At the beginning of the year 2018, the initial price of first-class strawberries has decreased to 1.87 Euros per kilo⁷. This means 7.4% less than the prices obtained in the first week of 2017. In terms of prices, the dry weather of the last days of 2017 favoured their recovery, thus obtaining levels similar to those of the previous strawberry campaign. Specifically, the price was 3.2 euros on average per kilo at Christmas season.

It is worth mentioning that **nine out of ten Euros received by the Spanish trade balance corresponding to the sale of red fruits or berries in international markets come from Huelva.** For this reason, the work of strawberries producers must be recognized for their commitment to the excellence demanded by consumers.

According to the Association of Producers and Exporters of the Strawberry of Huelva, **Freshuelva, the outlook among producers for the 2017-2018 campaign, is expecting the stabilization of the area of strawberries at around 5,400 hectares⁸**, after years of continued decline in favour of other red fruits such as blueberries and raspberries.

Currently, the **national strawberries Primoris, Rábida and Rociera represent 30% of the production.** The president of **Interfresa states that the objective is to increase said percentage to 50% in 10 years.**





The figures of strawberries

Out of the total Spanish strawberry harvest, 90% is exported. Sales abroad have increased 15% over the last five years, standing at around 290,000 tons. **The main destinations for Spanish strawberries are Germany (30%) and France (20%)⁹.** During the last three years, the quota has grown to reach 90,000 tons. The **United Kingdom and**

Italy are next as favoured destinations.

The strawberry area has exhibited a tendency towards recovery over the last two seasons, while raspberries and blueberries have significantly grown over the last seven seasons.

Currently, 6,500 ha of strawberries, 2,400 ha of raspberries, 3,400 ha of cranberries and more than 200 ha of blackberries are planted¹⁰.

- ✓ **83%** of Spanish strawberries come from Huelva. The rest of the production comes from Aranjuez and Cantabria¹¹.
- ✓ The industry of strawberries in the country is formed by **400 companies**.
- ✓ Red fruits or berries generate **90,000 jobs**.

Plastic in the spotlight within the crop

For the farming of strawberries, it is necessary to create a stable growing environment that adapts to the requirements of this crop so that the fruit reaches a better result and the highest possible quality of the harvest. The use of specific agri-plastics is necessary for that purpose and the companies of the **Armando Álvarez Group** are one of the main references in this field.

Armando Álvarez Group was founded in 1964 and is the largest Spanish transformer of polyethene plastic film. It comprises a series of high-quality companies that complement each other with an extruded volume of about 300,000 tons and a turnover of about 700 million euros¹².

Starting in 1977, the Group expanded its original business beyond the region of Cantabria with the purchase of

the companies Reyde SA and Reyervas SA. The company's current position as a leader in the sector was achieved step by step with the strategy of buying companies to complement the main lines of products of the Group. The takeover of the companies accelerated over the last two decades with the incorporation of Silvalac SA, Industrias Gráficas Castells SA, Plásticos Vanguardia SA, Rafia Industrial SA, Solplast SA, Sotrafa SA and Macresac SA.

Mulching with plastic

Plastic mulching stands out among the materials that are used today for the cultivation of strawberries, which exerts a remarkable influence on the microclimate in which plants grow:

- ✓ humidity
- ✓ temperature
- ✓ gaseous exchange
- ✓ soil structure



Plastic films are waterproof, so the water that evaporates from the ground condenses on the inside of the plastic and by gravity it is restored back to the ground, preserving its moisture.

The mulching favours the heating of the soil and achieves an advance of the flowering and ripening, aside from keeping the fruit away from the ground. In the strawberry area of Huelva, **the most highly used plastic type is 120-gauge black polyethene.** The black colour of the plastic prevents the development of weeds.

Facilities for crop protection: Greenhouses and Spanish-tunnels

The farming of strawberries in a protected environment achieves maturation in an earlier time frame, this aspect being much more beneficial than the case of other fruit species because a significant price increase is achieved, which compensates the cost of the tunnel structures.

The tunnel provides protection from unfavourable weather conditions for four months. The yield per hectare in a

protected cultivation system is always greater than what is obtained in open air. The precocity, as well as the production obtained per hectare, depends on the shape and dimensions of the structure as well as the type of plastic material used for the cover.

A microclimate is created inside the tunnel with a combination of mulch films and tunnel covers. The thermal equilibrium, and therefore the temperature obtained in the interior, depends on the difference between the heat taken during the day by the greenhouse effect, which is greater in proportion to the volume of air stored. The heat losses are due to the conduction of the materials and to the irradiation, being proportional to the ratio of the outer surface per unit of surface covered, and inversely proportional to the volume of the tunnel.

A wider hoop/arch favours the best use of the greenhouse effect, whereby, between certain limits, the ripeness of the fruit takes place sooner as the tunnel enlarges.



Micro-tunnels

These are small tunnels, **with a height of 50-80 centimetres and a width from the base of 60-90 centimetres.** Their structure is constructed on a wire frame of around 7 millimetres of diameter, placed at two meters or more from each other, that supports the plastic film that will be extended over them. In the strawberry area of Huelva, the plastic that is most commonly used in greenhouses is the 300-gauge EVA copolymer for a high thermal effect.

These tunnels of smaller dimensions generally have a **lower yield than the typical Spanish tunnel or High-tunnels since**, apart from having a lower greenhouse effect in relation to the large tunnels, there is a remarkable drop in the temperature in the crop area closer to the sides of the tunnel. This temperature differential inside the tunnel is not so appreciable in the central part of the crop where loss in productivity is not significant. Despite their lower performance, these small-tunnels continue to be used, due to their low cost, the ease of construction of the plastic framework and ropes or threads, fast installation, and the low resistance they offer to the wind.

High-tunnels

These are **tunnels of large dimensions, where it is possible to perform all the farming work inside.** The shapes and dimensions of the arches are diverse, but the tendency is to follow the elliptical shape, to facilitate the run-off of rainwater and offer sufficient wind resistance.

The dimensions of the **tunnels are different according to the areas, but generally, the width at the base varies from 4 to 6 meters.** The height in the centre of the tunnel varies between two to three meters and the length of the tunnel does not exceed 60-100 meters to allow good ventilation. For the coverage of the Spanish tunnels in the strawberry area of Huelva, the types of plastic that are usually used are the 600-gauge transparent thermal polyethene and the 600-gauge transparent EVA copolymer.



Keep up the latest news!

During the last campaign, 5,800 hectares of strawberries were planted in the province of Huelva, 8% less than the sowing of the previous season¹³. For the third consecutive year, the area of strawberries planted in the province fell again in favour of the cultivation of other berries such as raspberries and blackberries, but mainly cranberries, which experienced the highest growth (30% more) since their market price is higher.



However, the manager of the second-tier cooperative of Huelva, Onubafruit, Francisco Sanchez, predicts "a change of trend a few years from now," assuring that strawberries "will give us satisfaction in the future with increasing prices", while "it will be impossible to maintain the profitability of the cranberry" because "the market will not be able to undertake the current planting rate". Therefore, he states that "abandoning strawberry farming is a mistake", since "the market is capable to admit more than 5,800 hectares of strawberry".

Onubafruit is the largest producer of berries in Europe¹⁴, with a production of:

- ✓ 30 million kilos of **strawberries**
- ✓ 10 million kilos of **raspberries**
- ✓ 12 million kilos of **cranberries**
- ✓ 500,000 kilos of **blackberries**

Currently, **73% of strawberries planted in Palos de la Frontera, Moguer, Lepe and other municipalities in the province of Huelva, pay licenses to American universities** according to the latest report prepared by Servifapa, a study service attached to the Regional Government of Andalusia. Thus, for every 1,000 plants, the nurserymen pay out 20 euros in royalties¹⁵.

New varieties

he process of obtaining a variety begins with the crossing of two varieties with desirable characteristics, and that union is called an individual. **The firm Fresas Nuevos Materiales (FNM), carries out 80 to 90 crossings every year, resulting in 8,000 to 10,000 new individuals**¹⁶.

Then they are selected according to precocity, tolerance to diseases, firmness, colour, and sugar level.

Each year 180 families are evaluated, out of which only 25 families pass to the second year. The varieties obtained are examined under different production situations and on an even larger scale in fields of shareholder farmers. Currently, the national strawberries of Primoris, Rábida and Rociera represent 30% of the



production. The president of Interfresa states that the objective is to increase said percentage to 50% in 10 years¹⁷.

Challenges for the future

A technical conference was held recently, where a thorough analysis of the current water situation in the province of Huelva was made, stating that there is sufficient guarantee of this substance, but the region requires the urgent execution of large hydraulic works already planned by the Local Government.

According to forecasts, the demand for irrigation water, in addition to doubling by 2021 will increase to 387.5 cubic hectometres in 2033.

Today, agriculture accounts for 70% of consumption, occupying an area of almost 40,000 hectares¹⁸.

In terms of advances in the management of strawberry farming and berry irrigation, irrigation programming based on weather forecast contributes to

saving water and optimizing its use. The soil of Huelva requires fertigation since it is poor and needs the stimulation of nutrients, but it is important to measure the conductivity and the pH. every day. On the other hand, the cranberry is very demanding in terms of fertilizers and irrigation, although there are not as many references available as there are in relation to the strawberry.

Boosting the national market for blackberries, raspberries and cranberries is one of the great challenges.

Only 5% of the production of these berries in Huelva remains in the domestic market¹⁹.

The national consumption of strawberries represents between 18 and 20% of the production. And this percentage is significant because just a few years ago, almost 90% was destined for export²⁰. This registered increase, between 8 and 10 points, has been due to the quality of the fruit that is being offered to the consumer and to the

promotion and use of the new varieties of strawberries in the plantations. All this has meant that the Spanish consumer has returned to consider the strawberry of Huelva as a reference in the market.

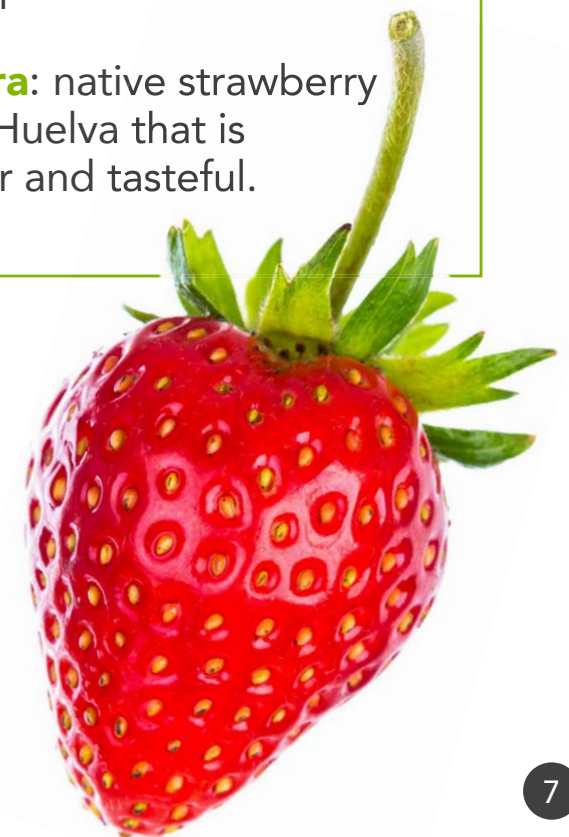
There is no perfect strawberry, however, the one that convinces and draws the attention of consumers is attractive to the eye and tasteful, that is red and sweet.

In the imperfection of the fruit is the seal of quality, since if all strawberries were equal, they would seem unreal. Today, many farmers are no strangers to derogatory comments about the current taste of the fruit around food markets and large areas, comments that long for the delicious fruit of a few decades ago.

For this reason, some crop farms such as Freshuelva have joined the Green Commitment campaign of the regional Government of Andalusia through which the so-called zero waste integrated production is developed to eliminate

the chemical materials that were used for disinfection like methyl bromide and to introduce other techniques such as the biological control: Introducing controlled insect predators that eliminate bug infestations such as the red spider that attacks the strawberry. These measures are in addition to the research and production promoted by Freshuelva from new less insipid varieties, such as the candonga that has more sugar but is less productive, or the rociera, a native strawberry from Huelva that is smaller and tasteful.

- ✓ **Candongga:** has more sugar but is less productive.
- ✓ **Rociera:** native strawberry from Huelva that is smaller and tasteful.



What should be considered for the farming of red fruits in Huelva?

Cranberries require soils with a pH. between 4.3 and 5.5. Additionally, the soil must have good drainage to allow a high oxygen content and facilitate the development of the fruit. Besides, cranberries do not stand heavy clays, since it hinders their growth. They are very resistant to cold and the best irrigation system is drip feed.

Sales at a loss

On the opposite side is the reality experienced with sales at a loss of this fruit in large areas. **The good situation in terms of exports contrasts with what happens in other areas of Spain.** However, and to prevent the events that took place last year, the Interprofessional **Association of Andalusian Strawberries (Interfresa)** has already announced that is controlling market prices to report attempts of price dumping that would be extremely harmful for the



continued development of the strawberry value chain in 2018.

Conclusions

There are several agricultural markets that must face a series of challenges in 2018 and the farming of strawberries in the town of Huelva, Spain, is no exception. For example, it is necessary to strengthen the levels of excellence achieved to continue being a reference in Europe and the rest of the world. Competition in new varieties, shifts in consumer trends and control in costs of production are part of the difficulties that lay ahead.

The expansion of strawberry cultivation has evolved thanks to a high level of investment in technology, distribution structures and commercial dynamism, which have turned the strawberry into the province's main crop.

In the last five years, the production of this fruit in Spain has grown by 1.5%, reaching 355 million euros, according to Interfresa data for 2014.

Out of this production, 90% is exported to other countries, mainly to France and Germany. Sales abroad increased an average of 15% over the last five years. Further increasing these figures will depend on hard work involving the plastic industry, fertilizers, and the uncontrollable climate conditions.

Among the materials that stand out for the farming of strawberries, plastic mulching prevails, not only as an influence on the microclimate in which plants grow but also in the case of chemical soil disinfection. In the case of Greenhouses and Spanish-tunnels, these structure provide a protected and stable environment for the cultivation of these soft fruits, however, their recent goal is to establish new technologies that will allow berry producers to strengthen the fruit quality standards throughout the duration of the season.

In terms of varieties, **the firm Fresas Nuevos Materiales (FNM), carries out 80 to 90 crossings every year, resulting in 8,000 to 10,000 new individuals,** which are selected according to precocity, tolerance to diseases, firmness, colour, and sugar level. In this way, producers seek to establish varieties that can be competitive

and liked by consumers. **There are about 25 varieties that could venture into the Spanish market and that would, in some way, impact the rest of Europe.**

Currently, the national strawberries **Primoris, Rábida and Rociera represent 30% of the production.**

Today, **400 companies constitute the strawberry industry in Spain, which in turn generate 90,000 jobs.** If Spain continues to increase its production, not only would it strengthen its privileged position in Europe as the leading producer of red fruits, but it would also enter new export markets to compete with other major producers such as the United States, Mexico, and Chile.

