



IFEAT FOCUS STUDY TOUR TO SPAIN 2023

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INTRODUCTION

For some the number thirteen is unlucky. Initially this could have been the case with IFEAT's 13th Study Tour – this time a Focus Study Tour (FST) to Spain to study the lemon sector (FST-SL). The tour was first mooted in 2018 but had to be postponed several times because of the COVID pandemic. The oversubscribed tour eventually took place between 26th February and 1st March 2023 and was a great success. The FST-SL was a

new concept from the previous 12 IFEAT Study Tours in that it was of shorter duration, lower cost, centred on one location, and aimed to appeal to younger, less senior, participants from IFEAT Member companies.

IFEAT, with Sofia Llach as Chair of the Local Organising Committee, organised the tour with AILIMPO (Spanish Lemon and Grapefruit Interprofessional Association), based in Murcia, southern Spain. This is a

dynamic trade association, bringing together all the stakeholders in the Spanish lemon sector - growers, packers, and processors to represent both nationally and internationally the complex interests of the lemon sector. During a three-day period, the FST-SL provided an overview of the Spanish lemon sector with visits to lemon orchards – both traditional and organic – as well as packing and processing operations alongside detailed briefings and discussions on the sector.



SUNDAY 26TH FEBRUARY

On Sunday 26th February some 32 IFEAT Members met up in Murcia, the centre of the main Spanish lemon growing region. Participants were from 23 different countries, with an age range of over fifty years, and holding a wide range of positions within the F&F sector, but all of whom were involved in essential oils. Nevertheless, in the short period together they bonded very well and life-long friendships and business relationships were nurtured.

On arrival AILIMPO and the sponsoring Spanish companies had provided a superb sustainable backpack containing briefing documents, programme details, company brochures, and a selection of gifts. Early arrivals took a three-hour guided walking tour of Murcia providing many insights into the rich cultural heritage of the city and the region. In the early evening there was a Welcome Reception and cocktails at which the delegates were able to acquaint themselves with each other as well as meet up with representatives of AILIMPO and the eight companies to be visited during the tour.

MONDAY 27TH FEBRUARY

An Overview of Spain's Lemon Industry
The first full day of the FST-SL began with a PowerPoint presentation by the Director of AILIMPO, Jose-Antonio Garcia, on Sustainability and Global Strategy of the Spanish Lemon Industry. This excellent and wide-ranging lecture provided an overview of the global lemon sector, and Spain's key role as a major global lemon supplier. Spain has a

long tradition in lemon production, predominantly supplying fresh lemons, with processing a relatively recent phenomenon. Processing continues to play a subsidiary role, but it was stressed that its role is vital in maintaining the sector's sustainability by facilitating the utilisation of fruit that cannot be sold into the fresh market. Lemon processing guarantees the viability of the producer and means a long-term guarantee for processing.

In 2022 global lemon production was estimated at 6.50 million metric tonnes (MMT) of which 4.14 MMT was sold as fresh and 2.36 MMT was processed. Spain produced 1.22 MMT from 50,412 hectares (ha) of lemon orchards (an estimated 14.4 million lemon trees), of which 10,229 ha is organically certified. Organic production has been growing rapidly over the past decade and accounts for a fifth of Spanish production, it was felt that this is unlikely to continue and organic production and demand is unlikely to exceed a fifth

of production. In part this is because of the recent global economic downturn and rising inflation which have reduced demand for organic products.

Overall lemon plantings have increased in recent years and AILIMPO estimates that total Spanish production could rise by 37% by 2026 to 1.8 MMT. The respective qualities of the two major lemon varieties, namely Fino, which produces from September to April, and Verna, which produces from May to July were discussed. Unlike other major lemon producers, Spain can harvest lemons throughout most of the year.

Spain processes between 25 - 30% of production and is the world's second largest producer of lemon oil after Argentina. Spain's oil production has shown a small decline in recent years, due in part to ongoing droughts. Spanish cold pressed lemon oil production in 2021 was estimated at 1,453 MT – some 14% of estimated global production of 10,340 MT.



WELCOME RECEPTION

The presentation highlighted the considerable efforts being made by the lemon industry to facilitate greater sustainability by reviewing the three pillars of economic, social, and environmental factors. Successful and sizeable investments are being made into organic production, reduced carbon and water footprint, as well as biodiversity - all leading to considerable improvements in the lemon sector's sustainability. One of the key takeaways from the presentation was the severe shortage of water faced by the agricultural sector in southern Spain. It was estimated that water accounts for a quarter of lemon production costs, and major investments are being made in conserving and utilising water resources as efficiently as possible. The water footprint of lemon in Spain was calculated at 271 m³/MT which is considerably lower than water utilisation for all the other major fruits.

The presentation was followed by a Q&A session in which all the delegates became aware – probably for the first time - of the concept of "grey water" i.e., the volume of water required to dilute pollutants so they become harmless.

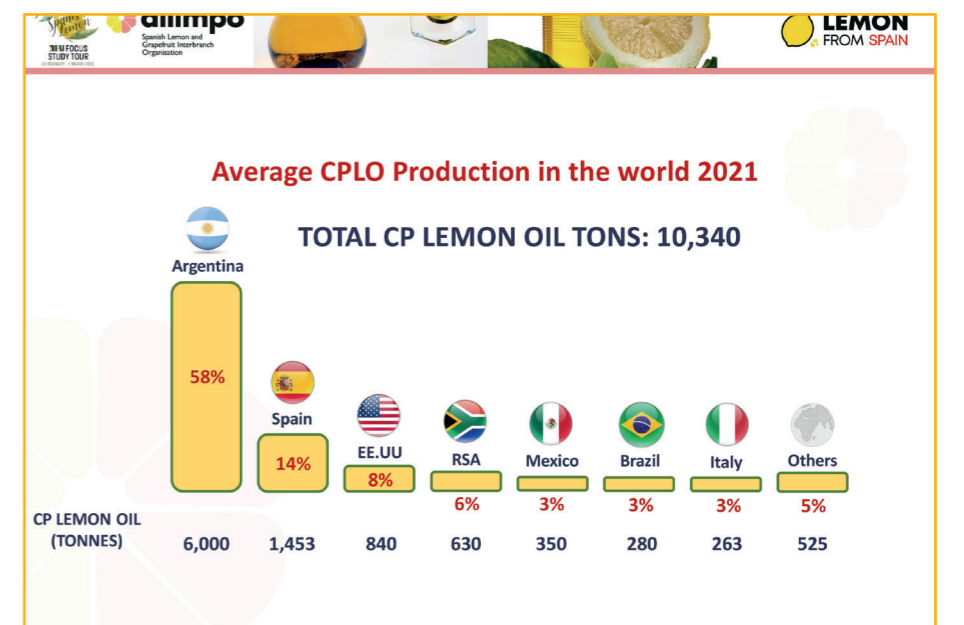
VISITS TO LEMON ORCHARDS

Then followed visits to two lemon orchards, one conventional and one organic. Everyone was surprised by the level of investment at each operation, as well as the research being undertaken to achieve higher yields and greater sustainability. Tremendous efforts are being put into conserving and optimising the use of water and energy. Every single drop of water is considered precious and considerable efforts are being made to collect it and use it as efficiently as possible. This includes water catchment reservoirs, evaporation preventions, intelligent underground sensors monitoring water needs, intelligent weather station monitors, etc.

Finca El Aguilucho grows lemons conventionally on 75 ha. There are 16,700 lemon trees of the Fino and Verna varieties, planted in 1997. Walking around the farm, the traditional production and integrated pest management methods were described in detail. Humidity probes are strategically placed at root level throughout the farm to measure the moisture content of the soil. These data are then used to regulate the amount of irrigated water provided.



AILIMPO PRESENTATION





Various certification schemes, including GlobalGAP, GRASP, and Global Nurture have been adopted to ensure high quality production. The climatic conditions on the farm were described as ideal. However, at the time of the visit, the sun was shining brightly but the unusually strong wind and resultant "wind chill" meant that delegates felt very cold – a situation that continued throughout most of the day. Certainly, the hot coffee and food break overlooking the valley below and the mountains in the distance was very much appreciated!

- The investment in water collection and the creation of a 600,000 m³ reservoir, which was then covered with photovoltaic panels. These not only reduced evaporation during the very hot weather experienced in southern Spain but provided energy to pump water to the top of the nearby hill. This was then gravity fed down through underground pipes.
- A sophisticated irrigation system was established with sensors throughout the farm measuring the amount of water and nutrients required for the lemon trees.
- Some 22 ha of greenhouse shading has been established for the Verna variety, which enabled the harvesting season to be extended, as well as fruit quality and yields to be increased.
- Insect hotels to assist biodiversity.
- Research work is being undertaken, including an innovative EU-funded project with plant sensors and humidity probes to analyse the lemon trees and provide the exact amount of water needed. This not only ensures excellent quality fruit but is environmentally friendly by minimising the amount of water and nutrients used.
- Alongside high investments in growing and irrigation, all the lemons are picked to ensure high quality fruit, since hand picking is done by ripeness and size. The delegates were given the opportunity to practise their (lack of) manual harvesting skills!



EL AGUILUCHO

Finca Comarza, produces organic lemons on 220 ha of organic lemon groves, growing the three varieties of *Eureka*, *Fino*, and *Verna*. The vital importance of water conservation and irrigation became apparent as a range of topics and issues were discussed. These included:

- The high investment undertaken to clear the land and develop high-tech lemon production.
- The vital importance and severe shortages of water, which can account for up to a quarter of the cost of lemon production.



COMARZA ORGANIC FARM



COMARZA FARM



LEMON ORCHARDS

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WE CARE

OUR GREEN CITRUS WORLD

SUSTAINABILITY PLAN-TARGET 2030

FARM SUSTAINABILITY ASSESSMENT



citrus essential oils

citrus natural Juices

citrus juices concentrate

bespoke products

available organic UE ORGANIC



AGRUMARIA CORLEONE

Sicilian Citrus Products



SHADING VERA LEMONS



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LEMON PACKING OPERATIONS

The final visit of the day was to a packing operation of The Natural Fruit Company, a third-generation family-owned company producing and packing both conventional and organic citrus products. The company cultivates more than 2,500 ha with 3,500 partner growers, and 60% of its own farms are organic. It

annually processes some 130,000 MT of lemons, of which 30,000 MT are organic. It sells large quantities of fresh lemons internationally, many in small consumer packs, to European supermarkets. The operation can annually package 85,000 MT, has 2,000 MT of cold storage capacity and 1,500 MT of de-greening capacity. The operation was described in detail, stressing the sustainability aspects,

which included the water-use control and re-use, the PV installation, the natural gas system, and the compressed air use. This was one of the eight NFCs packing operations and the company has a total annual packing capacity of 400,000 MT of fruit, obtained from both its own and associated farmers, has over 2,500 employees, and has been growing quickly. <https://thenaturalfruit.com>



EXPLAINING IRRIGATION SYSTEM AND NUTRIENT ADDITION



HAND HARVESTING LEMONS



THE NATURAL FRUIT COMPANY'S PACKING OPERATIONS
Photos courtesy of F D Copeland & Sons Ltd.



TUESDAY 28TH FEBRUARY

Tuesday was devoted to lemon processing with five major processing companies opening their operations. Most of them are family operations and each delegate was able to visit two of the companies. Each company introduced their operations followed by delegates being shown the flow of lemons through their plant from arrival through washing and sorting, processing, further refining, concentration, and packaging the oil and other products. Visits were made to the companies' laboratories, quality control and testing facilities, and some companies showed the innovative research being undertaken to produce a wide range of citrus end products.

Citricos de Murcia (Cimusa) is part of the family-owned Dallant Group, has over 40 years' experience, and now processes over 40,000 MT of citrus fruit each year, mainly lemons. It produces a range of citrus products, mainly lemon juices, orange juices, and essential oils, which are available in a wide range of packaging options from jerrycans to bulk containers. Primafiori lemons account for 80% and Verna lemons 20% of lemons processed. A video was shown of the company's range of operations and alongside its presence in Europe, Dallant has established subsidiaries in emerging markets including

Morocco, Egypt, Türkiye, and Peru. www.dallant.com/cimusa/

Citromil is a family-owned company and one of Spain's leading lemon processing companies, processing approximately 50,000 MT annually and exporting 90% of its production. As with the other processing plant visits, delegates followed the fruit's flow through the plant from its arrival through washing and sorting, then processing and packaging of the oil and other products. Finally, visits were made to the company's laboratories, where quality control and testing are undertaken. Some of the equipment seen during the Citromil visit included Exzel and JBT citrus juice and oil extractors, an oil distillation unit, and an essence oil recovery system. Almost all the fruit comes from local suppliers and the company was the first to begin processing organic lemons. The company has invested in reducing its environmental impact and carbon footprint. www.citromil.net

Fruit Tech Natural (FTN) is part of the AMC Natural Drinks Group, a third-generation family-owned company with annual turnover of more than €1.7 billion that is growing rapidly. The company is the European leader and an international benchmark in innovation, research, development, and production of natural drinks supplying many of Europe's leading supermarkets. FTN is a world leader in fruit and vegetable squeezing

and processing and adding value, often using its own unique patented technology. Moreover, it is a fully vertically integrated operation with the highest sustainability and ethical standards, processing more than 300,000 MT each year. Several presentations were made including one by the Director of AMC Innova, the Innovation, Science and Sustainability Division made up of more than 150 scientists and technologists covering a wide range of strategic areas, including market research, trends and consumers, fundamental scientific research into nutrition, sustainability and new technologies, and product development.

The professionalism of the company was very impressive. Following a short corporate introduction there was a tour of the state-of-the-art factory where fruit was being processed. Equally impressive were the laboratories including the innovation lab where over 50,000 samples are created each year from 600 FTN natural ingredients (e.g., juices, pulps, oils, macro-antioxidants) for a variety of industries including pharma, drinks, confectionery, and dairy. Remarkably some 400 new products annually are launched in 70 countries, many of them innovative, distinctive, and sustainable. The visit ended with a detailed presentation on the many sustainability and ethical initiatives of the AMC Group followed by a Q&A session. www.fruitechnatural.com

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FTN - FRUIT TECH NATURAL
with some new natural beverage products

Miguel Parra e Hijos - the Lemon King - is a family company founded 75 years ago and a leader in lemon processing. It produces a wide range of natural and organic products including NFC (not from concentrate) juices, concentrates, pulps, essential oils, and aromas (e.g., dewaxed lemon oil, essence, d'limonene, comminutes, peel extract concentrates, and dried lemon peel). It has its own organic lemon plantation with three lemon varieties facilitating production throughout the year, as well as traceability. As with the other companies, there was a range of certifications ensuring highest quality and environmental standards were met. www.lemonking.com

Riverbend España, founded in 1989, processes conventional and organic citrus fruits producing a wide product range including NFC direct juices, concentrated juices, cells, essential

and distilled oils, and other semi-elaborated products for the food and beverage industries. Weekly essential oil production is 6-8 MT, mainly CP oil to which has been added distilled lemon oil. <https://riverbend.es>

ENTERTAINMENT AND GASTRONOMY

While the FST-SL focused on the economic and technical aspects of the lemon industry, there was also an excellent introduction to local gastronomy – with lemon playing a key role. Catering and entertainment during the tour were at an extremely high standard, starting with the tapas and drinks at the Welcome Reception. During the farm visits we first enjoyed freshly brewed coffee with croissants and other pastries. At the second farm we enjoyed a paella show lunch created by a well-known chef Sebastián López where delegates enjoyed a range of paellas in the open

air with stunning views over the valley below – the only downside being the exceptional cold wind which no-one had anticipated.

Master Chef Experience: Masters of Lemon from Spain. On Monday evening we visited the Estrella de Levante Tasting Room for an amazing evening with Arnau Paris, who had won the 9th edition of the Spanish TV Masterchef series. The delegates were split into five teams that competed in the production of a starter, main course, and dessert, often with a lemon theme. This was followed by a cocktail and buffet meal created by Rodi Fernandez, owner of the Taülla Restaurant.

Tuesday evening saw a superb closing dinner at the Michelin starred **Alma Mater Restaurant** by chef Juan Guillamón, who created an ad-hoc menu with a lemon focus.

CONCLUSIONS

During three intensive days the FST-SL gave participants many insights into the lemon supply chain, visiting farms, packing, and processing plants. It provided participants with a detailed knowledge of the lemon business model in Spain and all the processes involved from growing lemons, harvesting, processing to obtaining lemon oil and other products - and illustrated the considerable effort, love, and passion involved. Participants also learnt about sustainability, organic production, climate change, water conservation, and production trends, past, present, and future. They had a lot of fun, made friends, networked, and established many contacts for the future.

This was another outstanding IFEAT Study Tour from an educational, networking, and entertainment perspective. Together IFEAT and

AILIMPO had organised an excellent programme. Within the space of just three days, we learnt a great deal about the Spanish lemon sector, had lots of fun, and met a great group of people and companies.

In a detailed post tour questionnaire almost everyone rated each company visit as a "5" on a scale of 1 (poor) to 5 (excellent). Similar ratings were given to AILIMPO's presentation on the Spanish lemon sector and its sustainability as well as the overall organisation, evening meals, and entertainment. Every delegate's comment was very positive and included a range of superlatives including:

- amazing experience, had fun and met a group of great people
- wonderful, beautiful event
- absolutely fantastic

- lots of learning and excellent organisation
- extraordinarily enlightening and fun
- memorable experience
- incredible first entrance into the wider world of essential oils
- a true eye opener
- how wonderful and rich Murcia and the region are in terms of industry, nature, culture, and gastronomy
- nothing but praise and awe for the organisers
- such a wonderful, well organised and fruitful FST

The first IFEAT Focus Study Tour was a great learning experience as well as being both enjoyable and unforgettable. Two further Study Tours are planned in 2024. Visit www.ifeat.org for more information.



1. RIVERBEND ESPAÑA, S.A. FACILITIES



2. PAELLA LUNCH



3. MASTERS OF LEMON
The Winners



4. CLOSING DINNER
Alma Mater Restaurant

