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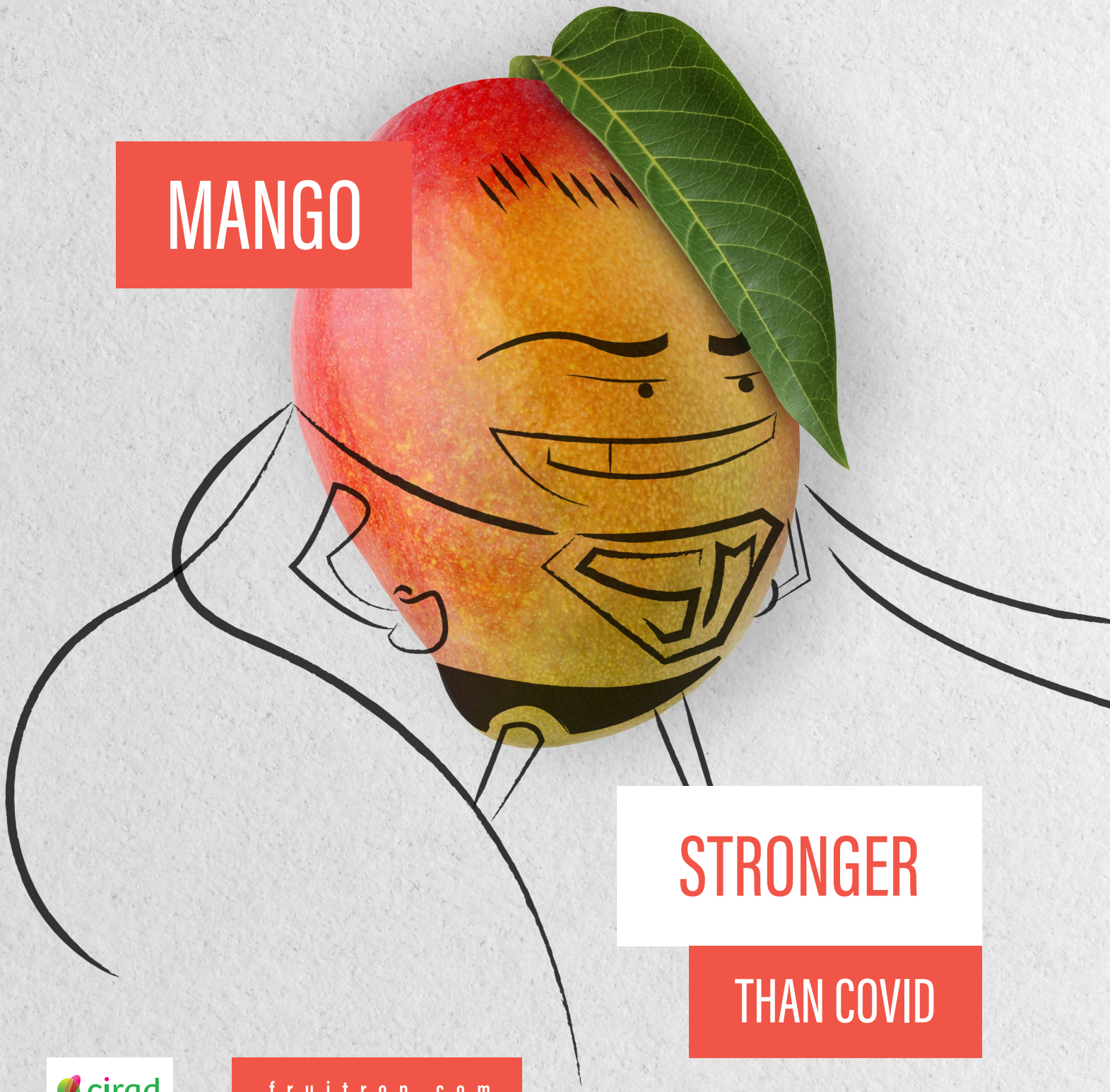

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Editorial

20 000 containers staring down from atop the Ever Given...

A 20 000-capacity container ship gets stuck in the sand of the Suez Canal, and the whole of world trade grinds to a halt. With the nearly post-pandemic world turning out to be even worse than the old one, this is the latest – and certainly not the last – demonstration that the days of happy, peaceful globalisation have gone. Was it ever real anyway? There is some debate over the benefits and beneficiaries of globalisation, with in particular the question of the phenomenal widening of inequality, or that of the negative impact on the environment. In any case many countries are seeing a great wave of scepticism or even defiance set in. It is true that the list of imbalances which this specialisation of national economies generates is long and bloody. And then following specialisation, globalisation has become the sole preserve of China. China and the other Asian dragons have amassed the production of just about everything consumed on the planet. The most recent and painful examples are of course due to the pandemic, with blackmail over the supply of protective masks, and the deindustrialised Europeans left to implore the Chinese to sell them this precious equipment. More recently, and in another sector, we can mention the tension over the electronic components that the world's factories (world here being a synonym for Asia) are drip-feeding out. This has had a dreadful psychological impact on the Old Continent and the USA. Declarations promising repatriation of manufacturing to the consumption markets put on a show for the media, at least. But in substance, nothing will change. Hence in view of this massive trend, the twists and turns in the story of the blockage of a sea route, even a major one, for a few days represent nothing more than an anecdote. Especially since China has time on its side. Indeed, it can wait for global warming to solve the problem by opening up the northern sea route, across the North Pole, which would reduce transport time between Asia and Europe by more than a quarter!

Denis Lœillet

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Banana supply in the EU27+UK in January 2021: on the slide.

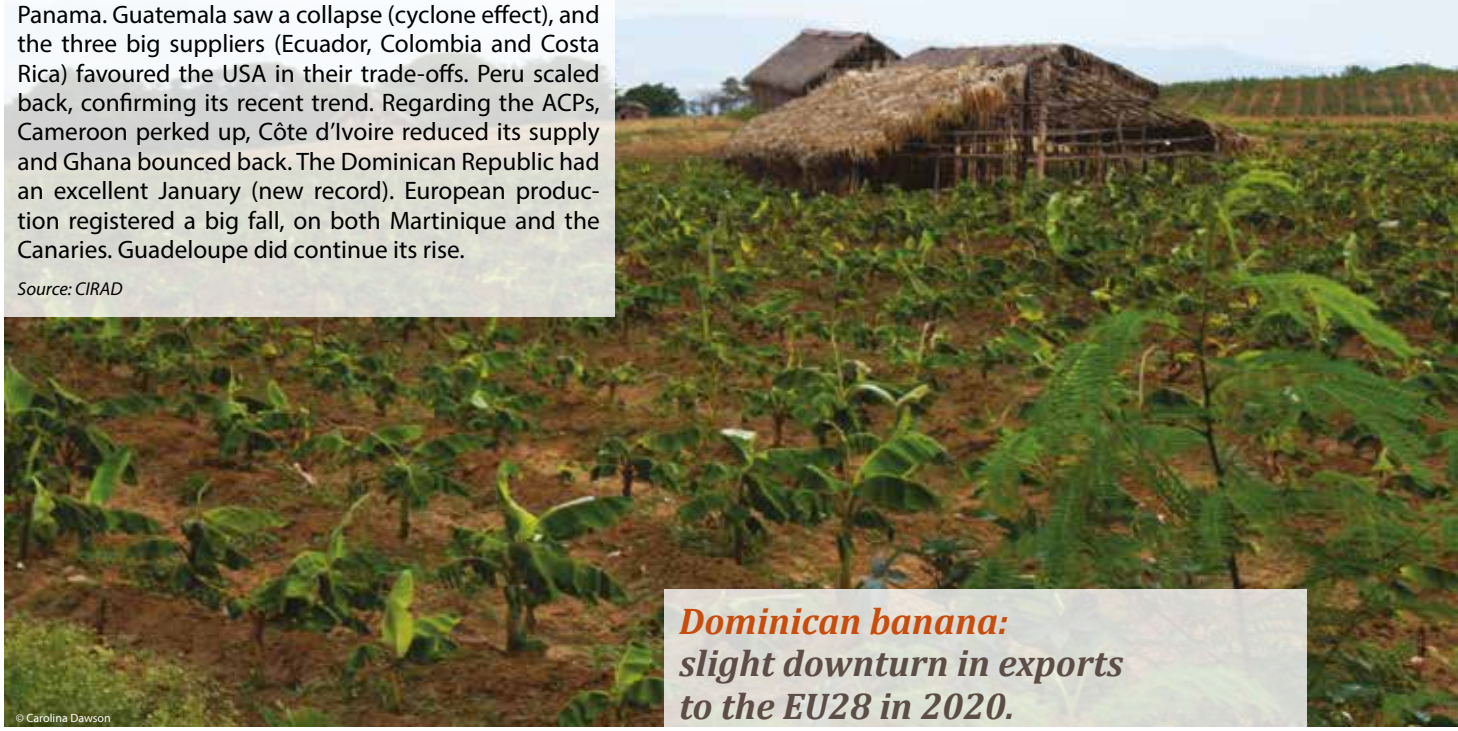
January 2021 brought a very marked downturn in the European market supply. According to our estimates (certain Member States including Poland have not disclosed their imports from third countries), the supply was approximately down 7 % in January 2021 (from January 2020). We need to go back to January 2017 to find such small volumes at the start of the year. Unsurprisingly, it is the dollar zone which dragged down the trend, with imports down from all origins except Panama. Guatemala saw a collapse (cyclone effect), and the three big suppliers (Ecuador, Colombia and Costa Rica) favoured the USA in their trade-offs. Peru scaled back, confirming its recent trend. Regarding the ACPs, Cameroon perked up, Côte d'Ivoire reduced its supply and Ghana bounced back. The Dominican Republic had an excellent January (new record). European production registered a big fall, on both Martinique and the Canaries. Guadeloupe did continue its rise.

Source: CIRAD

Banana – EU – Supply in January 2021*

000 tonnes	2019	2020	2021	2021/2020
Net supply	**566**	**589**	**548**	**- 6.9 %**
Total imports, incl.	**520**	**540**	**504**	**- 6.8 %**
MFN	428	450	413	- 8.4 %
ACP Africa	54	53	53	+ 0.9 %
ACP others	38	37	38	+ 1.3 %
Total EU production, incl.	**46**	**48**	**44**	**- 8.0 %**
Martinique	11	11	10	- 7.9 %
Guadeloupe	3	3	4	+ 37.3 %
Canaries	30	32	28	- 12.6 %

* provisional | sources: CIRAD, EUROSTAT (excl. EU local production)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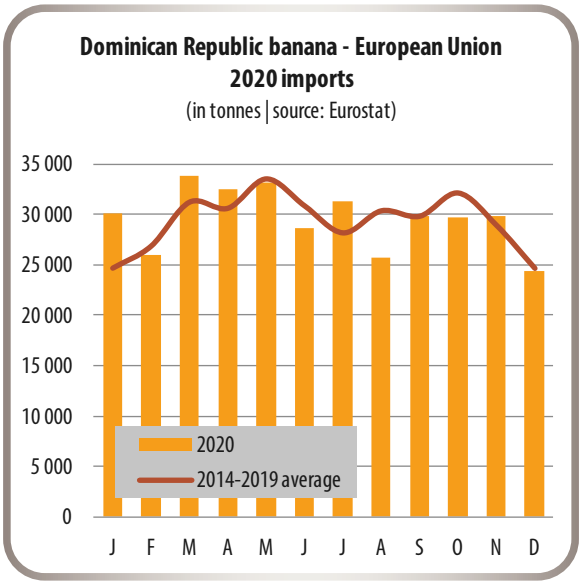
Dominican banana: slight downturn in exports to the EU28 in 2020.



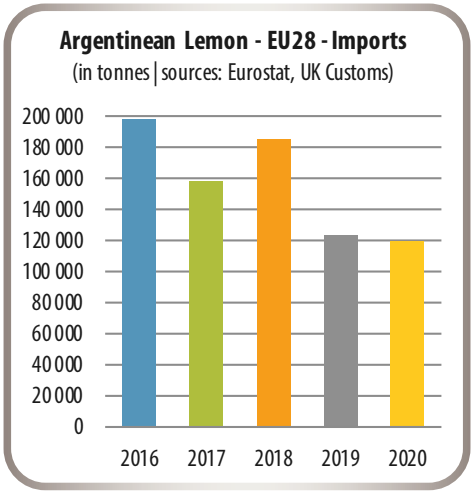
The Dominican Republic remained the main banana exporter in the ACP Caribbean zone, and the number one organic banana producer and supplier for the EC market. After two lean production years in 2017 and 2018, due to the transit of Cyclones Irma and Maria, 2019 marked the origin's production comeback, with volumes to the EU28 exceeding 365 000 tonnes. However, imports from the Dominican Republic dipped in 2020 by nearly 10 000 tonnes, dropping to 354 881 tonnes, i.e. a downturn of 3 % from 2019. While April provided a particularly good performance (+ 3 % on 2019), this can probably be linked to the consumption peak due to the Covid crisis and the implementation of lockdowns across Europe. However, the second half of 2020 was more disappointing, with in particular August down by 9 % on 2019, and October registering a drop of 16 %. On top of a particularly rainy season in the production zones (intense cyclone season), European demand was undermined by the implementation of health restrictions (lockdown, curfew), which continued to disrupt sales until the end of the year.

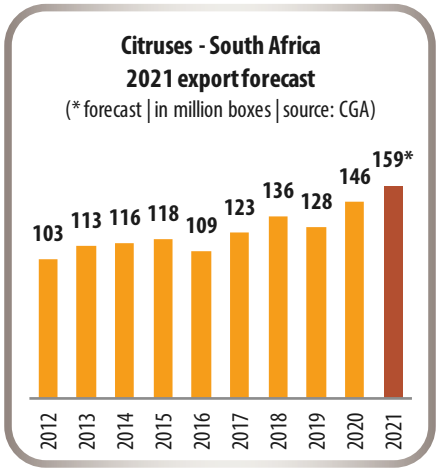
Source: CIRAD

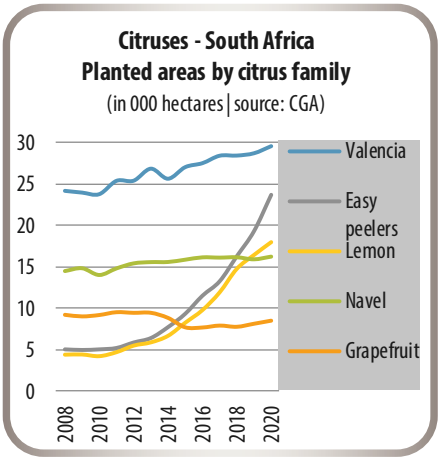
Argentinean lemon: production shortfall confirmed.

The Argentinean lemon campaign is set for a shortfall. According to the initial information, the 2021 harvest should register a downturn of around 25 to 30 %, because of unfavourable weather conditions (cold during blooming, followed by a dry period). Hence the harvest, after totalling 1.4 million tonnes in 2020, could be down to 1.02 million tonnes in 2021. Nonetheless, since the overall quality is set to be better than last year, the proportion aimed at the fresh export sector should maintain a good level. Regarding the situation in the EU27, which remains the leading Argentinean export market (119 000 t and 124 000 t in the past two seasons), negotiations are in progress with the European authorities to determine whether exports, suspended in July 2020, can resume. For now, no official decision has been communicated.

Source: CIRAD







Citruses – South Africa
2021 exports forecast

in million 15-kg boxes	2021	2021 compared to	
		2020	2017-2020 average
Easy peelers	30.5	29 %	71 %
Lemon	30.2	2 %	33 %
Total oranges	80.5	3 %	6 %
Navel	26.3	0 %	7 %
Valencia	54.2	5 %	5 %
Grapefruit	17.5	16 %	7 %
Total	**158.7**	**9 %**	**19 %**

Source: CGA

South African citruses: another record export season in prospect!

South African citrus exports should reach nearly 159 million 15-kg boxes, according to the CGA's initial estimate. This figure, up by nearly 13 million boxes on 2019, confirms the strong progress made by the South African citrus sector (average annual rise approximately 10 million boxes since 2016). This reflects the efforts made to win over new markers, and an increasingly rapidly expanding cultivation area, approaching 100 000 ha. The rate of expansion went from approximately 2 500 ha on average between 2011 and 2015 to approximately 5 000 ha on average between 2016 and 2019. It then reached a record level of close to 7 500 ha in 2020. Unsurprisingly, easy peeler exports should make the most significant rise again in 2021 (+ 30 %), to set a new record, thanks in particular to a new boom in late hybrid volumes (+ 42 %). This represents a shift, or even a groundswell, since the expansion in surface areas, already lively between 2014 and 2017, is constantly accelerating (+ 3 000 ha in 2018 and 2019, and + 4 400 ha in 2020). There is a surprise however for the lemon, with the export potential seeing only a marginal change (+ 2 %), despite massive planting too (1 900 ha on average since 2015, though on a downward trend). Nonetheless, it has set a new absolute record. Orange volumes to the international market should see slight rises for Valencia and Valencia like (+ 5 %), but remain stable for Navel. For this family, this figure is a good reflection of the cultivation area trends. Grapefruit exports should return to a higher level than in 2019, and 7 % above average, though without reaching the record levels of 2018 and 2013. The uprooting campaigns in the first part of the 2010s have given way to a hesitant replanting trend in recent years (+ 300 ha in 2019 and + 860 ha in 2020). This campaign of rapid expansion will lead to others. The long-term projection drawn up by the CGA predicts that the export potential should exceed 200 million boxes in 2026, and 250 million boxes in 2030. Will the markets open up in light of this production growth? The 2020 campaign showed some encouraging trends, with a real surge in shipments not only to the EU27+UK, but also to the Middle East, North America and Eastern Europe, in the particular context of a curtailed Argentinean campaign.

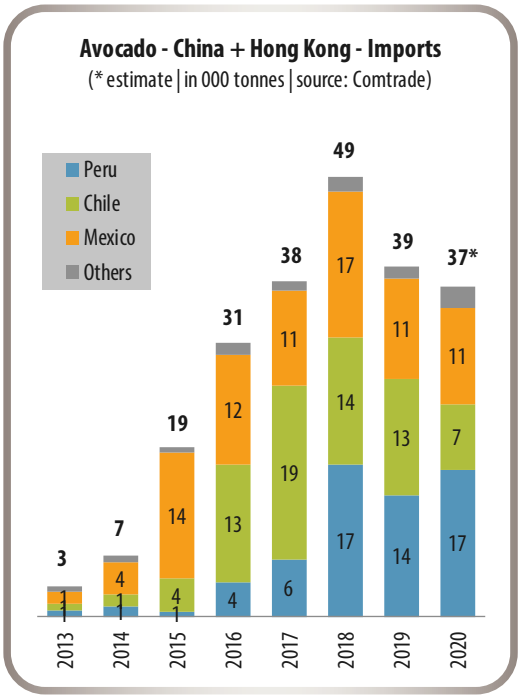
Sources: CGA, Comtrade

Chinese avocado market: first Californian container unloaded, and new export zones approved in Colombia.

The first Californian Hass avocado container was unloaded in China in mid-March 2021. California got the green light to export to the Middle Kingdom in April 2020. The fruit, shipped by Mission, is aimed at its local partner Mr. Avocado. While the transport time is not a major challenge (14 to 16 days at sea), customs duty on the other hand remains very high, since California does not have a preferential agreement (25 % tax). For its part, Colombia enjoys a number of production zones approved for export to China, which increased in early March 2021 (8 new high-altitude zones situated in the Departments of Antioquia, Valle del Cauca, Risaralda and Quindío).

After taking off with a bang in the mid-2000s, avocado imports by China and Hong Kong have levelled out at between 38 000 t and 50 000 t since 2017 (approximately 37 000 to 40 000 t in 2020, according to a provisional figure). The main suppliers are Peru, Mexico and Chile. According to Comtrade, Peruvian and Chilean avocados enjoy complete exemption from customs duty, while Mexican avocados are subject to 25 % taxation.

Sources: Mission Produce, Comtrade

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Avocado – EU27+UK
Hypothesis of supply at the start of April 2021

in 000 tonnes	2021	Comparison	
		2020	2019-2020 average
Peru*	282	+ 15 %	+ 37 %
South Africa	60	+ 10 %	+ 14 %
Kenya	40	- 10 %	0 %
Colombia "traviesa"	33	+ 25 %	+ 71 %
Others	16	0 %	- 12 %
Total	**431**	**+ 13 %**	**+ 31 %**

* All varieties, Hass estimated at 260 000 t
Professional sources

2021 counter-season avocado: a bumper campaign for the EU27+UK.

The supply to the European counter-season avocado market should be even bigger than in 2020. Unsurprisingly given the still very strong expansion dynamic in its surface areas, the Peruvian supply should see a considerable rise. As a reminder, it is what structures the summer market, with Peruvian avocados representing two-thirds of the EC's supply from April to October. According to ProHass, the Hass export potential, across all destinations, should be around 460 000 tonnes as opposed to 367 000 tonnes in 2020 (record increase of 26 %). Volumes aimed at the Old Continent should rise in more modest proportions, since certain alternative markets appear very open, such as the USA (78 000 t in 2020), Chile (25 000 t) and Asia (34 000 t). The programme is banking on 260 000 t of Hass exports to the EU27+UK, i.e. approximately a 15 % rise from 2020 (280 000 to 285 000 t across all varieties). The South African export potential, as fully aimed as ever at the EC market, should rise by approximately 10 % (16.5 million boxes, as opposed to 15 in 2020). Conversely, Kenya has smaller volumes than last season, despite rapidly expanding surface areas. We also need to reckon with Colombian fruit from the second bloom, volumes of which could be up by 20 to 30 % (approximately 26 000 t between April and September in 2020). Brazil, Tanzania and Mozambique will continue to offer a moderate top-up supply. Overall, the expected supply to the EU27+UK could see a rise of approximately 10 to 15 %.

Source: CIRAD

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Mancozeb as a banana treatment, the end of an icon

The European Union's revision of its phytosanitary regulations is a unique opportunity for the banana industry to reinvent itself. The threats weighing down on the use of mancozeb by the production and export sectors could shuffle the deck to such an extent that we could see a before and an after. Cirad brings you a detailed review of what this new world looks like.

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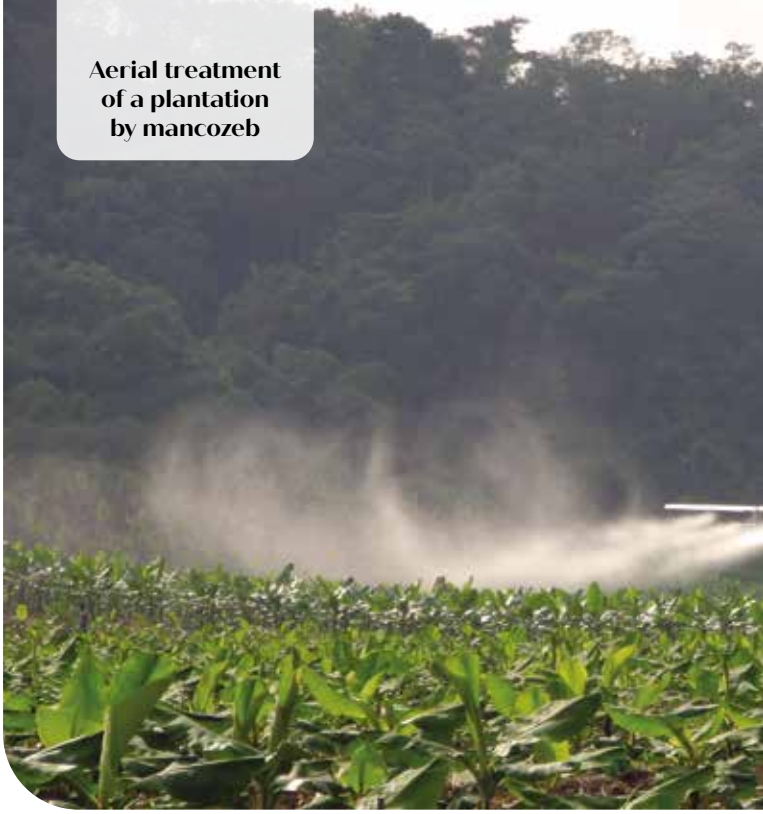
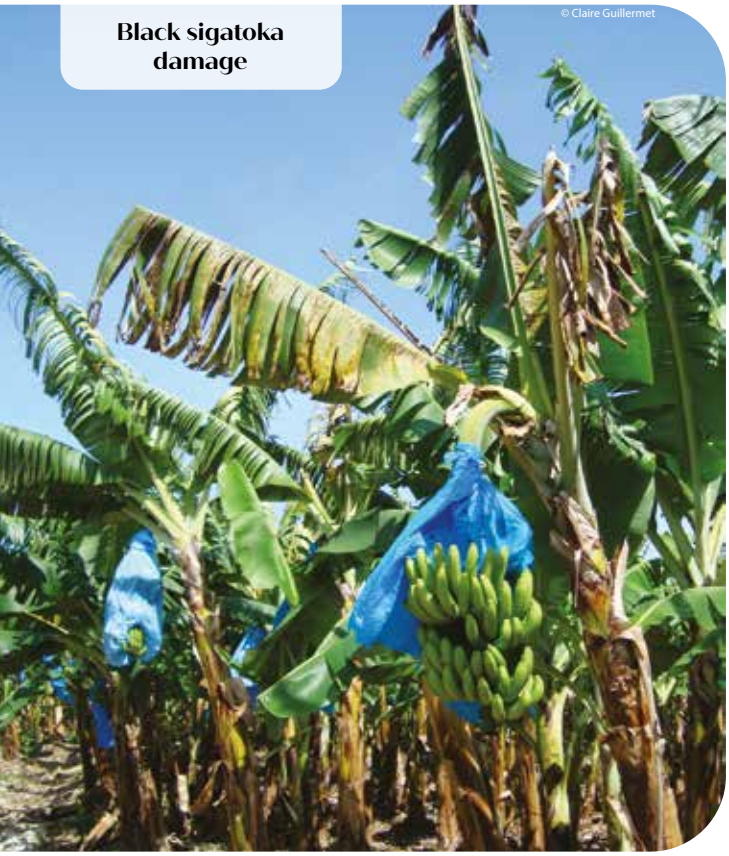


Aerial treatment of a plantation by mancozeb

Will intensive banana production survive the end of mancozeb use? That is the existential question which the banana world is currently asking itself, with marketing authorisation for mancozeb about to be withdrawn throughout the European Union in the coming months, thereby leading to a revision in the maximum residue limit (MRL) on banana imports into the EU – downwards, naturally. While the MRL level is not yet known at the time of writing, the majority of observers are leaning towards a figure reduced to the detection threshold. This issue may seem anecdotal to non-specialist eyes: yet this is not the case. Let's take a step back to identify the importance of this decision, longed for by some and dreaded by others.

Black sigatoka is a foliar disease of the banana plant, which affects all production zones, and means that all growers need to be engaged in a constant control campaign, at the risk of seeing both a collapse in productivity (less photosynthesis) and a potential reduction in lifetime (strong association between intensity of the disease, and green and yellow lifetime). There are two kinds of management methods: cropping techniques and chemical management. One of the foundations of cropping management is defoliation, which limits the development of the disease, and mitigates its effects on quality. Defoliation is a technical operation, and labour-intensive, which on its own does not guarantee a high yield and quality level. This technique is very widespread in the French West Indies, where chemical management is increasingly restricted.



Black sigatoka damage

© Claire Guillermet

Mancozeb-free banana cultivation?

Elsewhere, i.e. on the half a million hectares of export banana plantations, intensive chemical management is the rule. Underpinning this chemical strategy is mancozeb, a contact fungicide with a preventive action. It has an effective action on the disease, a relatively low cost and is simple to apply. The product is very widely used on a systematic basis. In this systematic management mode, mancozeb is the mainstay, often employed in more or less complex cocktails with other fungicides.

The success of this management is based above all on managing the treatment logistics: the treatment products and equipment. Managing these logistics ensures good control of the disease, and minimises the risks on fruit yield and quality: it is a good insurance system! Regardless of the climate conditions (e.g. humidity), the season (wet or dry), the development stage of the disease, etc., mancozeb is sprayed from the air. The aim is to provide maximum protection on the newly sprouting leaves (approximately one new leaf per week in tropical zones), to keep as many leaves active or productive upon harvesting.

There are also systemic products which supplement use of contact fungicides (mancozeb). These include triazoles or benzimidazoles (see table). Mancozeb has a TFI (see "phytosanitary treatment frequency indicator") ranging from 20 to more than 50.

Refraining from using such an effective weapon poses a problem for all growers targeting the European market. Either they think about managing the pesticide residue level on arrival of their fruit into Europe, and hope for the best; or they refuse to take the risk of residue being detected on the fruit, and need to change their practices. In the first case, the "business as usual" approach, if the regulations do not force them to change, their customers– the distributors - will. They are set to ban use of a compound which is prohibited in Europe (as of 31 January 2021), regardless of the authorised MRL.

The road to perdition: all-chemical

In the second case, a change in practices, a number of pathways open up. One solution could be to continue with the all-chemical method, replacing mancozeb with its cousins: systemic phytosanitary products. There is a long list of systemic fungicides: triazoles, benzimidazoles, SDHI, morpholines, pyrimethanil or even dodine. Some of these fungicides are already more or less doomed by the appearance of resistance in the fungus (see table). For those who were involved in the FRAC working group on the banana (Fungicide Resistance Action Committee – https://www.frac.info/), there is no doubt over rising resistance – which leaves growers with a simple choice to roll back the clock decades by using the notorious dithiocarbamates, the best known of which is mancozeb! Except that the EU's ban on mancozeb and other dithiocarbamate group contact fungicides (maneb, zineb) means that use of contact fungicides to manage black sigatoka is doomed. Thiram (another carbamate) and chlorothalonil have already been withdrawn from the European regulations. More generally, all this is also symptomatic of a really unhealthy way of doing things, with phytosanitary firms combining two functions: advice and sales. That is why in certain countries (e.g. in France since 2021), the regulations have stipulated a separation of these two functions.

And aside from fungal resistance, there is also the effectiveness of these products being too low to build a disease management strategy which is as effective. Use of a 100 % mineral oil strategy (used in the organic segment) is not feasible either, due to insufficient effectiveness under excessively wet conditions, even with weekly application. Which leaves us with good old copper and sulfur, but their effectiveness is low unless they are applied at enormous doses, which are incompatible with air-spraying practices, not to mention the regulations.

Difference between systemic fungicides and contact fungicides

Once applied to a plant or the soil, fungicides either remain on the surface of the plant, or penetrate into the plant. So there are two distinct major fungicide groups:

1. **contact (or surface) fungicides,** which are not absorbed by the plant. When a contact fungicide is applied, the droplets spread over the leaf, but do not penetrate inside it. So leaves that emerge after application are not protected, and the fungicide is washed out by the rain, and sometimes deactivated by the sun;

2. **systemic or penetrant fungicides,** which are absorbed by the plant. When a systemic fungicide is applied, the droplets spread over the leaf, and penetrate inside it. After penetration, the fungicides circulate inside the plant. Plant protection is often longer-lasting with this type of fungicide.

The phytosanitary Treatment Frequency Indicator (TFI)

The phytosanitary treatment frequency indicator (TFI) is an indicator for tracking use of phytopharmaceutical products (pesticides) on a farm or group of farms. The TFI represents the number of reference doses used per hectare in the course of a crop campaign. This indicator can be calculated for a set of plots, a farm or a territory. It can also be divided into major product categories (herbicides, fungicides, insecticides and acaricides, or other products). The TFI enables growers to gauge their progress in terms of reducing the use of phytopharmaceutical products. It also enables them to position their practices in relation to those of the territory, and identify possible improvements.

Source: https://agriculture.gouv.fr/indicateur-de-frequence-de-traitements-phytosanitaires-ift

Plan A, since there is no plan B

Faced with what appears to be a complete technical impasse, the only way out is a complete change in practices. Except that the new world opening up to growers is in no way a marginal adjustment, but a genuine revolution. In every case, this will lead to less effective management of the disease (and therefore of the consequences described above on fruit lifetime) and to an explosion in management costs. So growers need to contemplate and anticipate a complete change in their way of thinking.

One of the strategies could consist in combining tailored cropping practices and biological warning systems: treatment is applied at the right time, in a coordinated manner, on a production area scale, alternating between treatment products to avoid them becoming ineffective due to adaptation by the fungus. More technology, more risks and less effective disease control! Needless to say, organising all that right across the industry will be easier said than done.

This takes us inexorably toward the most disruptive scenario: varietal change. We can now obtain varieties with tolerance or resistance, especially to black sigatoka, by conventional cross-breeding. As proof, the Pointe d'Or® (or Cirad 925) was the first of its kind to be grown intensively (in the FWI) and marketed in Europe (more specifically in France). Unfortunately, the trade was not ready to accept a genuine disruption to its way of working. Since although the catalogue of resistant or at least tolerant varieties will expand in the short or medium term, the downstream segment remains fixated on the absolute standard: the venerable and indispensable Cavendish variety. Everything is organised, created, adapted and standardised in relation to this benchmark. From price to transport temperature, from box shape to ripening protocol, from agricultural practices to modes of trading, all of the world's industries are hostage to the very thing that has sustained them for more than six decades.

Crop management by defoliation

They will need to get over this Stockholm syndrome, which leads them to reject change, and want any varietal innovation in the industry to fail. We would venture to say that the mancozeb case will genuinely put the issue back on the agenda. The other sanitary issue worrying the sector, the arrival of tropical race fusarium wilt, points to the same conclusions: a different banana world is not only possible but essential, both for the long-term future of the sector and its sustainability (see articles in FruiTrop 265, pages 124 to 129 and FruiTrop 266, pages 20 to 25).

In every case, this is the price to pay sooner or later for production industries across the world to be able to implement their agro-ecological revolution, accompanied as they will be by the downstream segment adapting its practices (including commercial and marketing) and its infrastructures to this renewed banana market. Beyond the new constraints, it is a historic opportunity for the industry to regain added value (more segmentation), but also to distinctly improve its social and environmental ratings. Time to take up the challenge! ■

Luc de Lapeyre, Thierry Lescot and Denis Lœillet, Cirad
luc.de_lapeyre_de_bellaire@cirad.fr
thierry.lescot@cirad.fr ; denis.loeillet@cirad.fr

Summary table of substances used in banana black sigatoka management

Mode of action	Molecule	First used	Product effectiveness	Current loss of effectiveness or in progress due to fungus adaptation	Authorised by the EU (Appendix 2)
Systemic	Triazole	1980s	+++	Medium risk, but very generalised	yes
	Benzimidazole	1970s	++	Very high and generalised risk	yes
	Strobilurin	Late 1990s	++	Very high and generalised risk	yes
	SDHI	Early 2010s	+	Very high risk, apparently emerging	yes
	Morpholine	Mid-1980s	+	Low risk	yes
	Pyrimethanil	Late 1990s	+	Medium risk	yes
	Dodine	2000s	+	Medium risk	yes
Contact	Mancozeb and dithiocarbamates in general (maneb, zineb)	1960s	+++	no	no
	Thiram (carbamate)	1960s	+++	no	no
	Chlorothalonil	Late 1960s	+++	no	no
	Copper, sulfur		+	no	yes
Other action	Mineral oil	1960s	+	no	yes

Source: Cirad

World Musa Alliance (WMA) : in the starting-blocks

The arrival of tropical race 4 fusarium wilt in Colombia in August 2019 went down in the banana world like an electric shock: in the absence of any treatment to control it, the disease poses a risk of complete failure for contaminated zones. There are preventive measures, which are essential for the future of production. Yet the fact remains that more sustainable solutions will need to be found in the long term. As with other crops, the varietal route should be among those favoured. Genetic improvement of banana plants is however a highly complex business given its biology (for example, sterility of species cultivated for international trade), and also the very low investment in research and development enjoyed by the banana. The route of non-conventional improvement, via genome editing, represents an opportunity, though European regulations classify this route as GMO, and the reputational risk among consumers should not be ignored.

CONTACT:

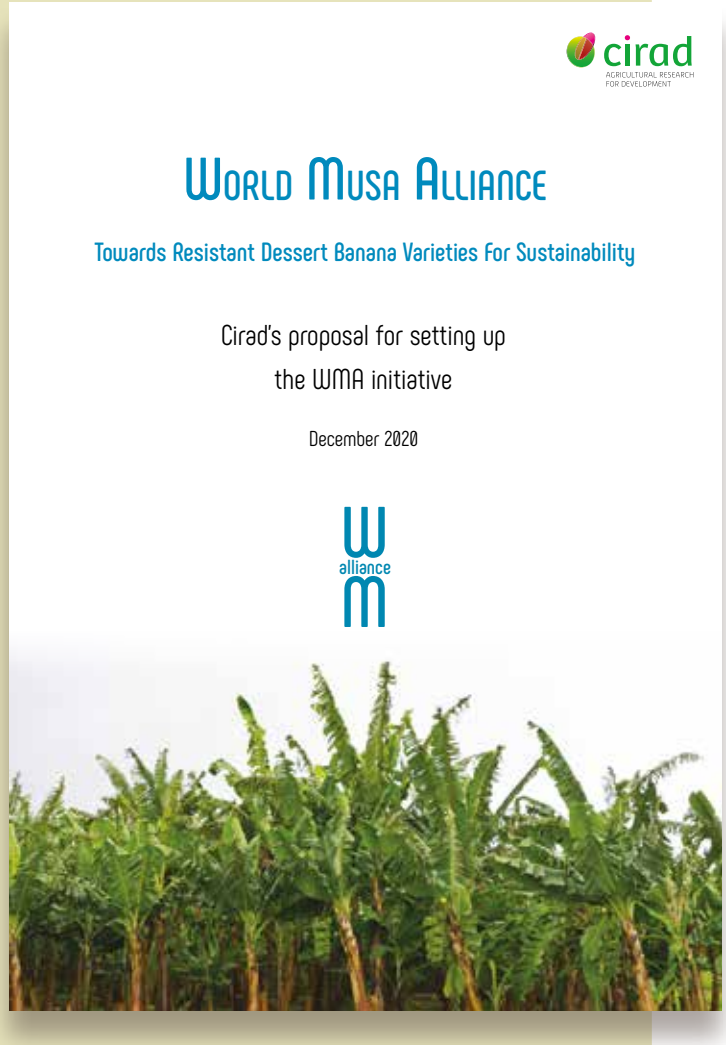
denis.loeillet@cirad.fr

Tel. 33 6 76 21 13 18

Banana and Plantain Industry Correspondent
CIRAD
TA B26/C
34398 MONTPELLIER CEDEX 5
France

So are we in a deadlock? While genetic improvement by conventional cross-breeding is difficult, knowledge and experience have progressed in recent years, and resistant varieties have been obtained. The challenge is now to bring together in these new varieties resistance to TR4, but also to other diseases, and in particular black sigatoka, while retaining very good agronomic and technological qualities (transportability and preservability of the fruit in particular, and taste quality). One of the conditions for addressing this challenge very probably lies in the ability to create an agile innovation dynamic, bringing together the industry and research players. This is the strategy proposed by the World Musa Alliance initiative (WMA).

This initiative proposes organising precompetitive research & development, by bringing together the means and know-how of the private operators of the banana industries with those of the research teams, with the aim of creating and selecting dessert banana varieties resistant to TR4 and other diseases. The operational phase of the project will begin in the 2nd half of 2021. The founding members of WMA will test on a multi-location basis a set of varieties already available, using the Cirad creation and selection platform (Guadeloupe). Some of these varieties have already shown a good response in particular to TR4 (Australian bananas, no.59, August 2020, pages 20 et seq.). So watch this space…

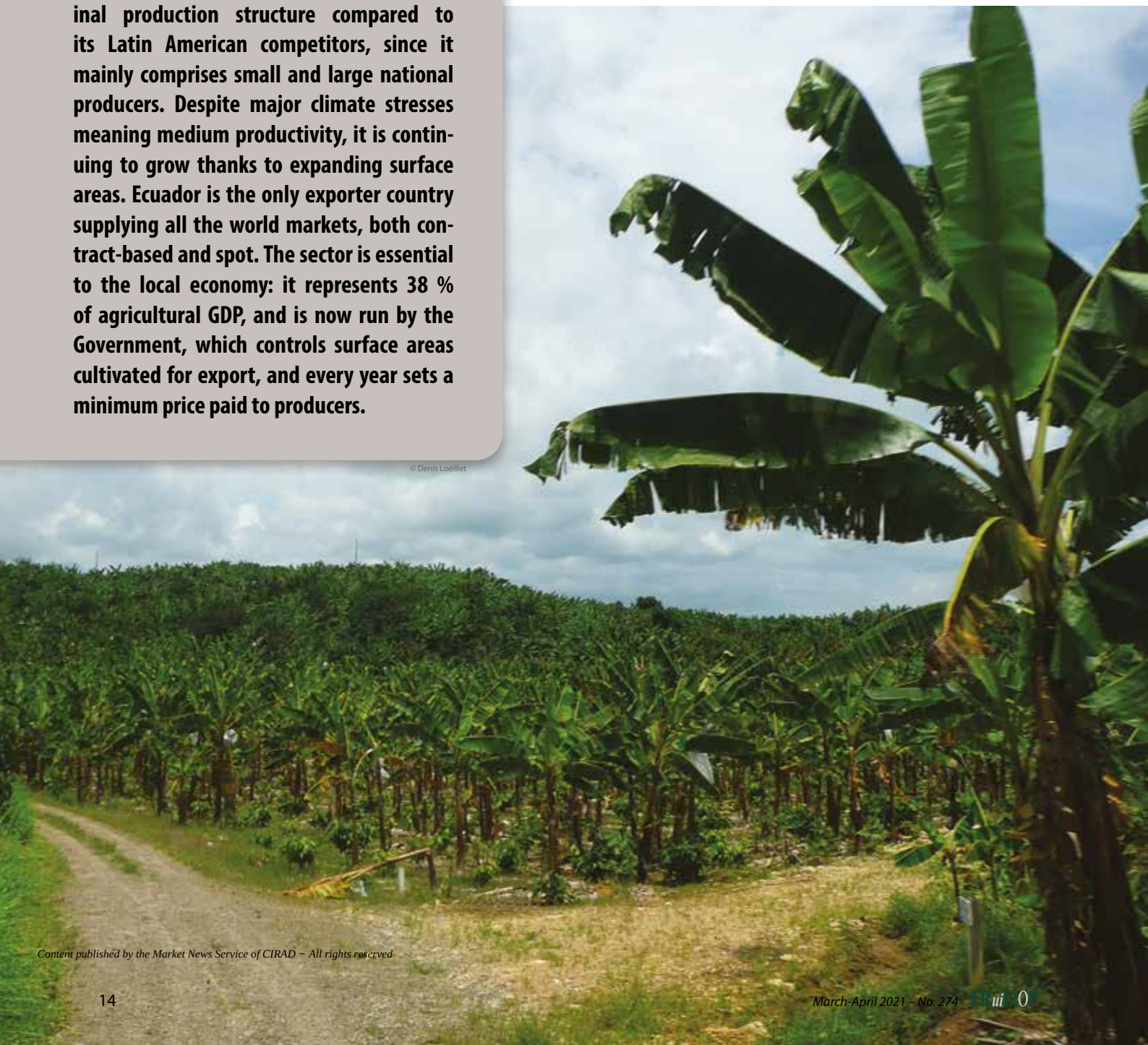


Producer country file

The banana in Ecuador

by Noémie Cantrelle, Carolina Dawson

With annual exports in excess of 6.5 million tonnes, Ecuador dominates the international banana trade. It has a rather original production structure compared to its Latin American competitors, since it mainly comprises small and large national producers. Despite major climate stresses meaning medium productivity, it is continuing to grow thanks to expanding surface areas. Ecuador is the only exporter country supplying all the world markets, both contract-based and spot. The sector is essential to the local economy: it represents 38 % of agricultural GDP, and is now run by the Government, which controls surface areas cultivated for export, and every year sets a minimum price paid to producers.



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Banana
Ecuador

Location

While the Ecuadorian Ministry for Agriculture recorded an official export banana cultivation area of just over 180 000 ha (see Ley del Banano inset), surface areas in production are apparently around 200 000 ha nowadays. The production zones are concentrated on volcanic soils, mainly situated on the edge of the Cordillera in the mid-West of the country. The three main production centres are the Los Ríos, Guayas and El Oro regions, with 35 %, 27 % and 25 % respectively of the banana planted area. In Los Ríos and Guayas provinces, the climate is wet and the average rainfall between 12 and 15 mm/year, enabling these production zones to do without irrigation. Most of the soils are alluvial, with a high fertility level, and rich thanks to the presence of volcanic ash. Despite the tropical latitude, the climate conditions are limiting during part of the year (cold and high cloudiness) due to the cold Humboldt current. In addition, the proximity to still active volcanoes may have serious consequences on the plants (ash deposits limiting photosynthesis, or abrasive ash). In the southernmost region, El Oro, which packs in more than 45 000 ha, i.e. 24 % of the country's banana surface areas, the climate is much drier, which means that irrigation is required, but it does limit the development of fungal diseases such as black sigatoka. This is the region that accommodates most of the country's organic production surface areas (approximately 8 000 ha) and Fairtrade surface areas (7 000 ha).


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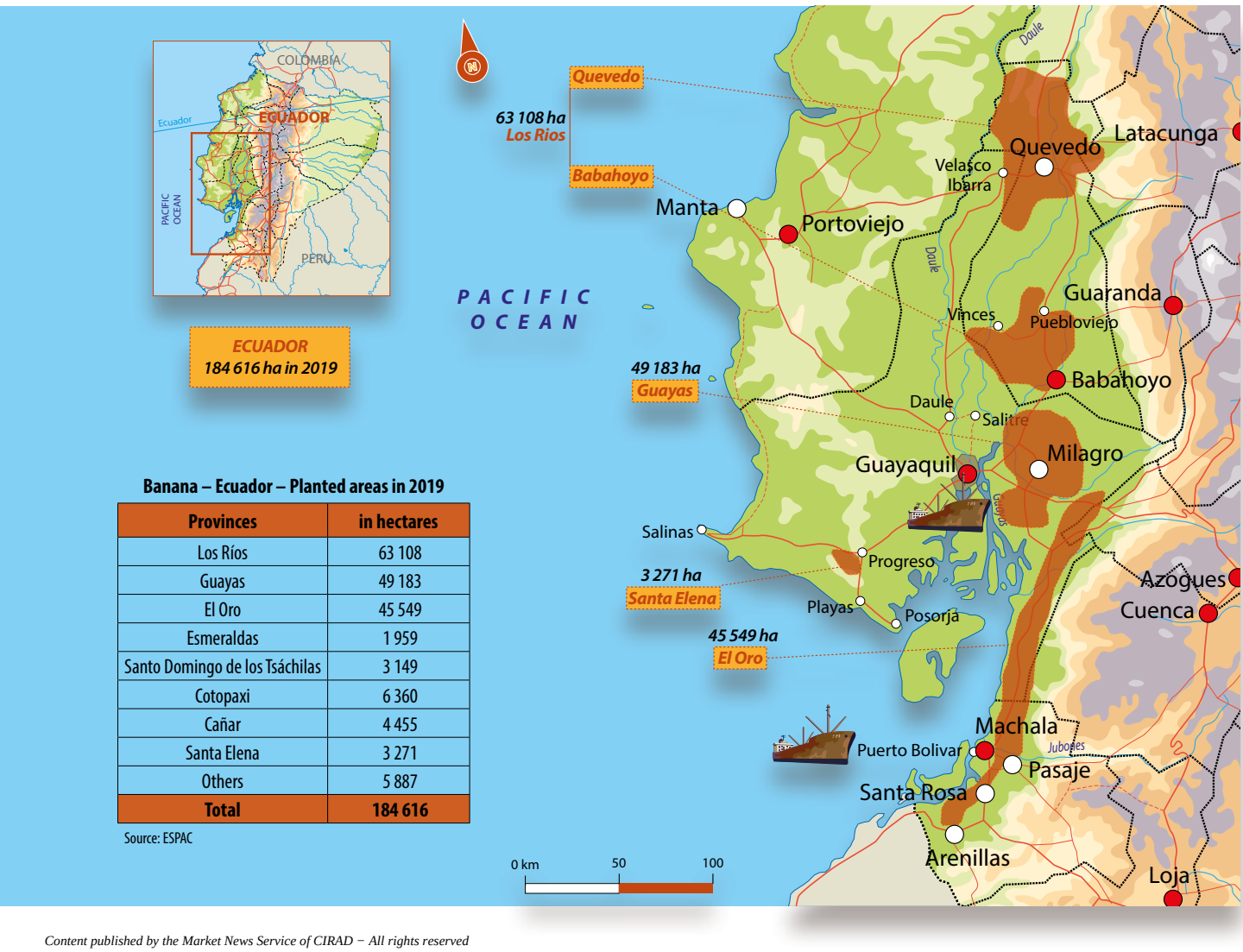


Banana – Ecuador – Planted areas in 2019

Provinces	in hectares
Los Ríos	63 108
Guayas	49 183
El Oro	45 549
Esmeraldas	1 959
Santo Domingo de los Tsáchilas	3 149
Cotopaxi	6 360
Cañar	4 455
Santa Elena	3 271
Others	5 887
Total	**184 616**

Source: ESPAC

Banana
Ecuador

History

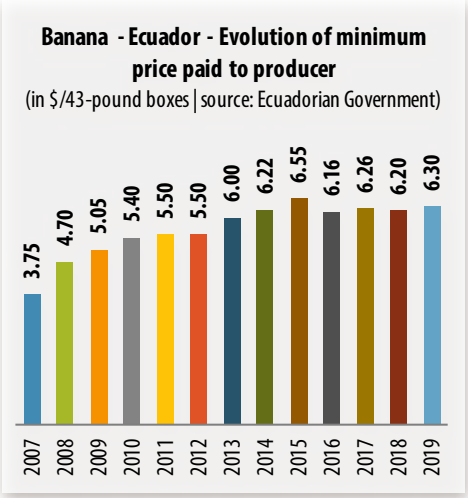
Ecuador, the world number one banana exporter, is paradoxically one of the most recent big Latin American producer countries. It was only following the cacao crisis in the late 1940s that banana surface areas started to progress. The context was buoyant due to growth in world banana demand and limited competition from other Latin American countries, hard hit by Panama disease. Given the country's favourable pedoclimatic conditions and the profitability of the banana, many local producers of all sizes, plus the United Fruit Company, made massive investments in this crop. Surface areas boomed, especially in the coastal zone (from 23 000 ha in the early 1950s to 125 000 ha in 1965), to the point that the movement was locally dubbed "banana fever". From the 1960s, the country hoisted itself up into the leading pack of world exporters, already controlling approximately a quarter of trade. This dynamic was abruptly interrupted in the latter half of the 1960s, with the spread of Panama disease and yellow sigatoka. The gradual conversion to Cavendish lost Ecuador its position on the world market, at a time when its Central American competitors were resurgent after resolving their sanitary problems. The sector stagnated until the mid-1980s, with the emphasis switching to players which had been able to invest in a more intensive production system, more concentrated in terms of both cultivation area and geography, in the Departments of Los Ríos and Guayas. The banana industry boomed during the period 1985-1995, driven by a governmental plan (Ley de fomento bananero) and growth in world demand. Cavendish surface areas doubled, and yields increased, enabling Ecuador to become the world number three producer. Surface areas were up to 140 000 ha by the end of the 1990s, and continued to progress gradually until 2007, reaching nearly 160 000 ha. Today, the dessert banana cultivation area is more than 200 000 ha.

The Ley del Banano

The Ecuadorian government is the only one in the world to have implemented strict regulations for the banana industry with a view to controlling export production and marketing. These were reformed in 2011, with 13 articles.

Article 1 sets the minimum price per box paid to producers. No sales should be made below this price, at the risk of severe penalties. The minimum price is reviewed annually. In 2007, it was set at $3.75 per box, and then revalued, peaking at $6.55 in 2015. Since then, it has dropped back, fluctuating from year to year at around $6.20. In 2021, while the annual average price was set at $6.25, for the first time four minimum prices were set for four variable periods of the year: it will be at its height at the start of the year (weeks 1 to 16: $6.60) and at its lowest in the autumn (weeks 33 to 42: $4.5).

The government also set the number of hectares dedicated to export. At present, any new export banana plantation not approved by the State is prohibited, and anyone cultivating or attempting to market fruit from non-official plots shall be subject to sanctions. These regulations also promote the implementation of contracts between producers, exporters and other intermediaries. They also contribute to the implementation of a support policy, which in particular takes the form of useful investment for the sector (improvements to the road network, irrigation and drainage systems, cable-ways, development of ports). This has significantly boosted the expansion of surface areas and development of the industry across the country. Nonetheless, this law does have its detractors, who are advocating the liberalisation of the sector, and campaigning to abolish the "Ley del Banano", to make the sector more competitive on the world market.

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Banana
Ecuador

Production

Despite strict governmental regulations and an average productivity of around 35 t/ha, lower than that of its competitors, Ecuadorian production has seen constant growth thanks to expanding surface areas in all regions, and to very gradual improvement in productivity (renewal of plots, investment in fertility). The seasonality of production is dependent on the temperatures, with a high production period from December to April-May, and a low production period from September to November.

In the Guayas and Los Ríos zone, while the plantations are on the large side (mostly more than 100 ha) and high-tech, the production system has had to be adapted to the climate constraints. For example, the planting density does not exceed 1 300 plants/ha, or even 1 500 plants/ha, i.e. the lowest densities in the world. Although irrigation is unnecessary because of the high rainfall, there are drains installed on the plots to facilitate run-off during spells of heavy rain. The wet climate is favourable to the development of fungal diseases such as black sigatoka, management of which has become very intense in recent years in certain zones. Hence there are approximately 50 to 60 treatments per year for these two production zones. The relatively high occurrence rate of extreme weather, such as the floods during the rainy season or during the recurrent El Niño/La Niña phenomena, as well as ash raining down from the volcanoes of the Cordillera, also regularly push down productivity. Despite the regulatory and climate constraints, surface areas in cultivation are continuing to expand in both these regions. In Los Ríos, the main production region, surface areas increased by 8 % between 2016 and 2019, reaching 63 108 ha in 2019. Similarly, in Guayas, surface areas continued to rise by 3 % between 2016 and 2019, to reach 49 180 ha.

In the El Oro zone, the production structure comprises mainly small producers, but there are also some medium and large operators. The climate conditions are drier, making management of black sigatoka simpler (just 20 treatments per year on average), as well as enabling the development of organic banana cultivation. Conventional and organic crops coexist in this region, but the increase in organic surface areas seems to have peaked. The proximity to conventional production and the risk of cross-spraying are limiting the growth of this mode of production. In this region, the production density is slightly higher than in other zones, but the agronomic performances are no better. The yields are still lower than in Los Rios and Guayas, since the producers are mainly smallholders, lacking the means to make technical investment. As in other regions, surface areas have continued to expand, going from 43 165 ha in 2016 to 45 549 ha in 2019, i.e. + 6 % in three years.

Organic banana production has made huge progress in the past five years, through the conversion or extension of surface areas. It is estimated that Ecuador has an organic-planted total of more than 11 000 ha, with surface areas still in the process of conversion, making this country the world number two producer behind the Dominican Republic, still the leader in organic production.

Thanks to large-scale water works, a new mainly organic production zone has been developed in recent years: the Santa Helena Peninsula zone, near Salinas. Its area has literally boomed, with 3 200 ha in production on initially virgin land. It is apparently medium or large groups which have gradually set up there, including a French group. The climate is mostly dry (though less so than in the El Oro zone), and there is a rainy season from December to May.

Ecuador is also the world number one plantain banana exporter. The main production zone is situated in Santo Domingo province, and as with the dessert banana, the production structure comprises smallholders.


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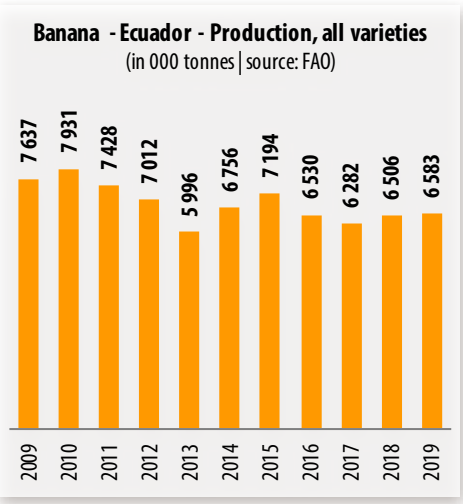
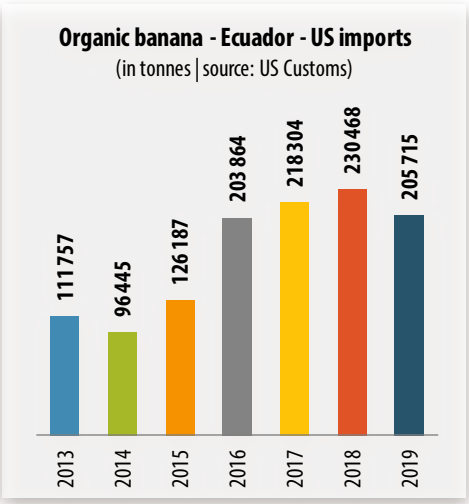




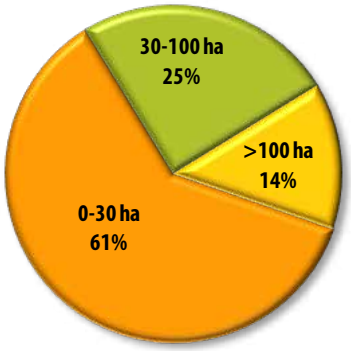
Organisation

The production sector comprises a range of more than 8 500 producers, with 5 000 smallholders, grouped into more than 300 cooperatives. The export sector is increasingly fragmented: of the 200 listed export companies, the top ten, primarily comprising national groups and a few foreign ones, control approximately 46 % of the supply, and the market share of the top five was 70 % in 2000. Ecuador stands out from its Latin American neighbours for the near-absence of US multinationals in the production structure. However, recently some large foreign groups have tried to get established in Ecuador.

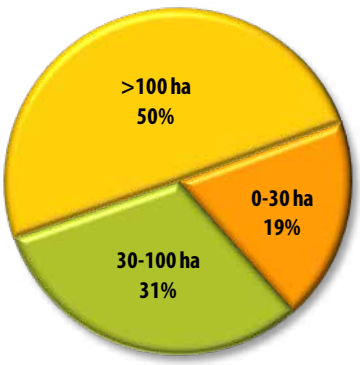
While for a really long time Ecuadorian exports were dominated by three big groups, the national groups Noboa (Bonita) and Wong (Reybanpac), and the US multinational Dole (Ubesa), in recent years the balance has shifted. Noboa group, long the number one Ecuadorian exporter, has literally come apart in the past decade following numerous tax evasion scandals, and now represents less than 2 % of the country's exports. The subsidiary of Dole, Ubesa, has thus become the country's number one exporter, with a market share of more than 11 %. The Wong group (Reybanpac, Favorita brand) remains in second position, with 6.7 % of exports, while the emerging group Frutadeli holds third position with 5.22 %. Note that the Chiquita subsidiary accounts for less than 1 % of exports.

The exporters market their own production or procure from local producers of all sizes, grouped in associations and cooperatives. There are two exporter associations present in Ecuador: AEBE, which brings together 70 % of exporters, and ACORBANEC, which brings together approximately 30 % of players. It is currently estimated that the banana sector provides approximately 300 000 people with direct jobs.

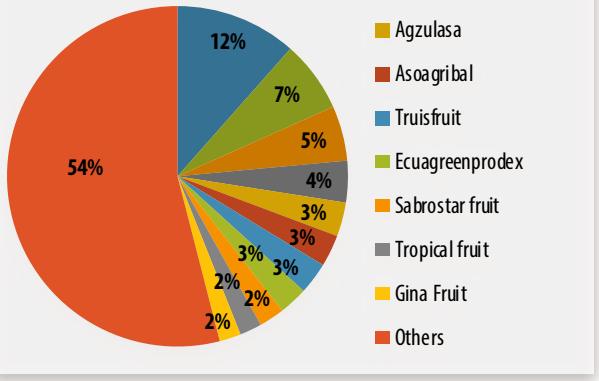
Banana - Ecuador - Breakdown of number of producers by farm size (source: ESPAC, 2019)



Banana - Ecuador - Breakdown of total areas by farm size (source: ESPAC, 2019)



Banana - Ecuador - Main export companies in 2019
(volume share I source: Acorbanec)



Banana
Ecuador

Exports

Banana exports play an essential role in the local economy, and represent nearly 38 % of agricultural GDP and 3 % of national GDP. The banana sector is one of the country's main currency providers, after oil and prawns. Ecuador dominates the world banana trade, with constantly growing exports, which peaked at around 6.5 million tonnes in 2019. It is the only country to serve absolutely all the international markets (Europe, USA, Russia, Asia, Middle East, Mediterranean, South & Central America and Oceania). The bulk of the export supply is controlled by high-tech national producers (such as Wong or Noboa), unlike the other dollar zone countries.

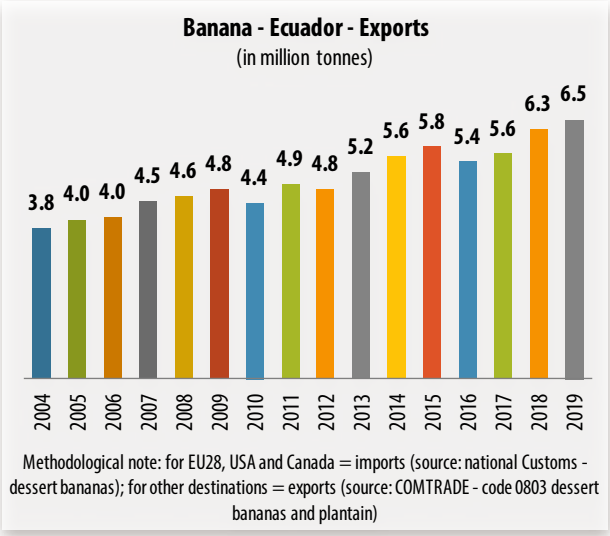
While its main outlets remain the EU and Russia, with 1.4 and 1.6 million tonnes respectively in 2019, followed by the USA with 790 000 tonnes, some new destinations have made big progress since 2016. Hence exports have gone up by 1 million tonnes over the past five years, to in excess of 2.5 million tonnes in 2019.

In particular, exports to Asia (China) have boomed since 2016 (+ 57 %), peaking at around 600 000 tonnes in 2019. Nonetheless, Ecuador remains restricted to a top-up role for local Chinese production. In addition, the Philippines are the region's main supplier, and in recent years competition from nearby origins (Vietnam, Malaysia and Laos) has increased.

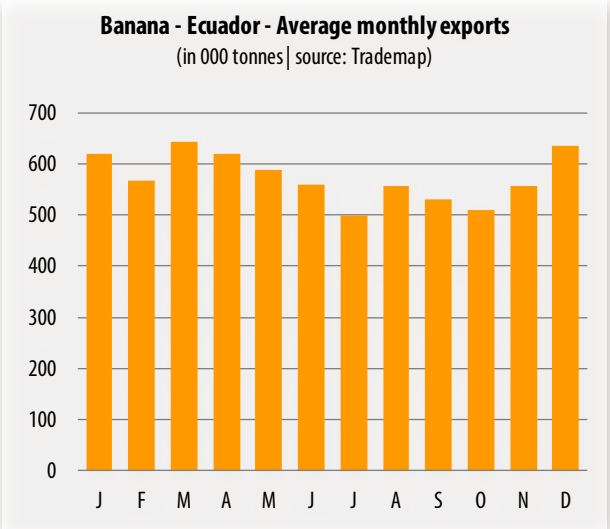
While exports to the Middle East have also increased threefold in five years, setting a record of 770 000 tonnes in 2019, this zone's countries, deemed to be ardent spot market customers, remain fairly dependent on geopolitical trends independent of the banana sphere. The 2020 Covid crisis partly revealed the weaknesses of these markets, which saw their imports fall drastically.

Furthermore, while conventional banana exports to the US market have stagnated at around 790 000 tonnes for a few years, organic banana exports have literally boomed. From barely 100 000 tonnes in 2013, they surged through the 200 000-t mark in 2017. Total Ecuadorian organic banana exports are continuing to progress, and were around 480 000 tonnes in 2019, according to local Customs, i.e. + 20 % on 2017. The Fairtrade certified banana (excluding organic/Fairtrade) has also seen a rise, going from 50 000 tonnes in 2015 to 130 000 tonnes exported in 2019, i.e. 19 % of world Fairtrade banana trade.

While the contract system has tended to progress over the past decade, with around 70 to 80 % of export volumes, the proportion of spot sales still remains high. In particular, following the good performances of the spot market in 2018 and 2019, contract sales have tended to subside, representing only around 60 % of export volumes in 2021.



Methodological note: for EU28, USA and Canada = imports (source: national Customs - dessert bananas); for other destinations = exports (source: COMTRADE - code 0803 dessert bananas and plantain)



Banana
Ecuador

Logistics

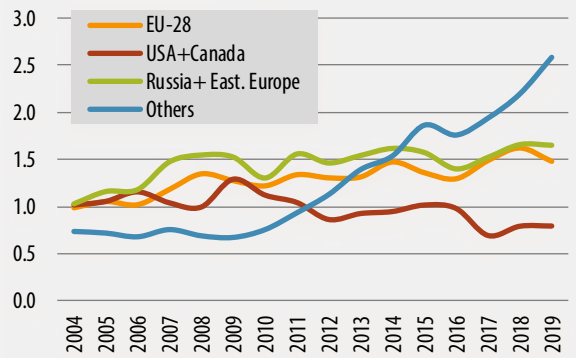
Nearly three-quarters of exports are made via the port of Guayaquil, situated around forty kilometres inland on the Río Guayas, and less than 150 km from the main production areas of Guayas and Los Ríos. The shipping service to the port of Guayaquil has improved thanks to the modernisation of the terminals, with more and more shipping lines calling there. The rest of the volumes pass via Puerto Bolivar, situated 200 km further south, near the production zones of El Oro (less than 50 km). Just recently (August 2020), the new peninsular banana port of Posorja, situated 65 km from Guayaquil, began to ship some small volumes. The road infrastructures have also been improved in recent years.

In 2017, Ecuador signed trade agreements for a preferential customs rate with the EU, becoming eligible in 2020 for a customs duty of €75/tonne. However, the freight cost remains a brake because of the high price entailed by transit via the Panama Canal.

Banana – Ecuador – Sea freight

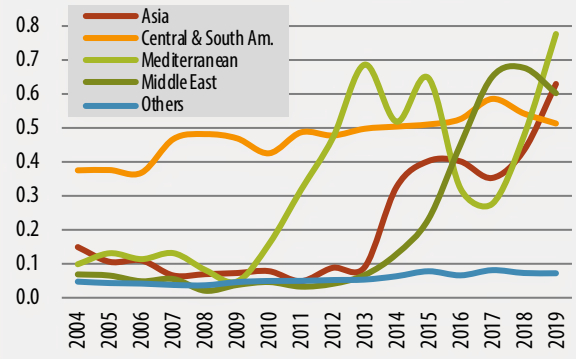
Port of destination	Transit time
Miami	10-13 days
Newark	12-17 days
Algesiras	19-23 days
Hamburg	18-21 days
Rotterdam	15-19 days
St. Petersburg	22-24 days
Yokohama	26-39 days
Istanbul	33-39 days
Tripoli	31-37 days
Shanghai	27-35 days

Banana - Ecuador - Exports by destination
(in million tonnes)



Methodological note: for EU28, USA and Canada = imports (source: national Customs - dessert bananas); for other destinations = exports (source: COMTRADE - code 0803 dessert bananas and plantain)

Banana - Ecuador - Exports by destination
Breakdown of other destinations (in million tonnes)



Methodological note: for EU28, USA and Canada = imports (source: national Customs - dessert bananas); for other destinations = exports (source: COMTRADE - code 0803 dessert bananas and plantain)

Lime

A report by
Anselme Cléron
Carolina Dawson
Eric Imbert

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Lime
World market

Limitless potential?

by **Anselme Cléron**, Cirad
anselme.cleron@cirad.fr

The world lime market has made considerable progress over the past ten years, with an annual growth rate of 7 %, going from 474 000 tonnes in 2010 to 904 000 tonnes in 2020. So much so that since 2016, the international lime trade has been bigger than the grapefruit trade. While the frenzy for this product seems a long way from flagging, the working base of the sector's professionals remains astonishingly narrow, with just two main supplier countries, Mexico and Brazil, and two importer markets, the USA and Europe.

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USA, the world number one import market

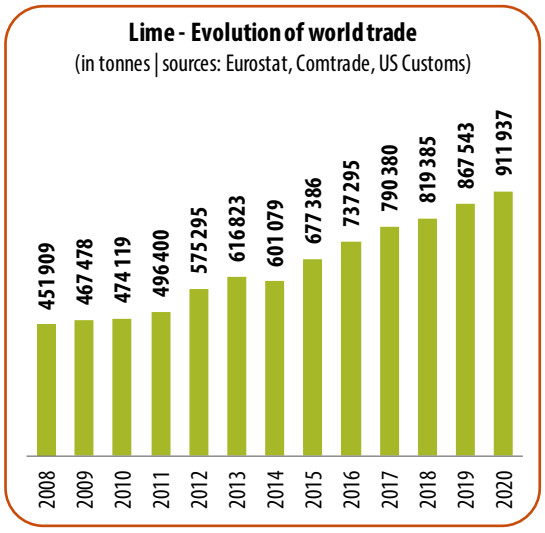
Since the signature of the North American Free Trade Agreement (NAFTA), the US lime market has seen frenetic growth. American lime imports have doubled since 2010, peaking at 708 000 tonnes in 2020 (as opposed to 355 000 t in 2010). Hence in 2020, the USA took in 79 % of the world trade. With 98 %, Mexico remains the USA's top supplier. Nonetheless, Colombian shipments have registered a big rise since 2013, reaching a significant level of 12 200 tonnes in 2020.

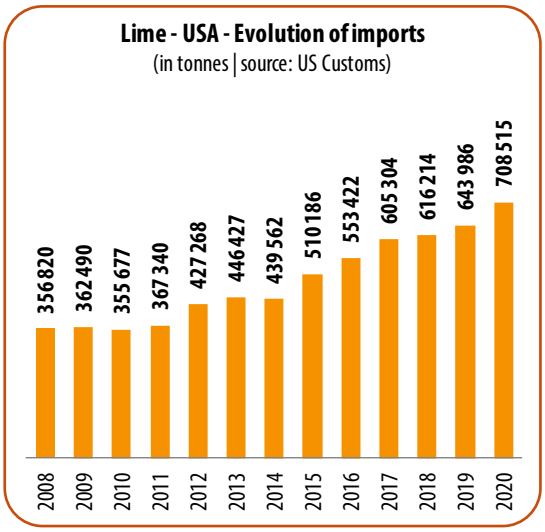
Meanwhile, the consumption dynamic is not slacking off either: quite the reverse, it has picked up in recent years. In 2020, annual average consumption per capita broke the 2.15-kg barrier, i.e. double the figure ten years previously. The dietary culture of the rapidly growing Hispanic population is playing a key role in this growth. The Latin American community, which represents 18 % of the total population, i.e. 49 million inhabitants, reportedly consumed 10 kg/capita in 2020. In addition, the Asian community, which totals 16 million individuals, represents another big lime consumer.

Lime – United States – Imports from main supplier countries

in tonnes	2015	2016	2017	2018	2019	2020
Mexico	504 994	547 482	594 958	600 959	628 945	691 998
Colombia	2 270	3 374	5 680	8 688	9 732	12 267
Others	410	113	2 675	5 619	3 775	3 572
Guatemala	2 512	2 454	1 992	948	1 534	678
Total	**510 186**	**553 422**	**605 304**	**616 214**	**643 986**	**708 515**

Source: US customs





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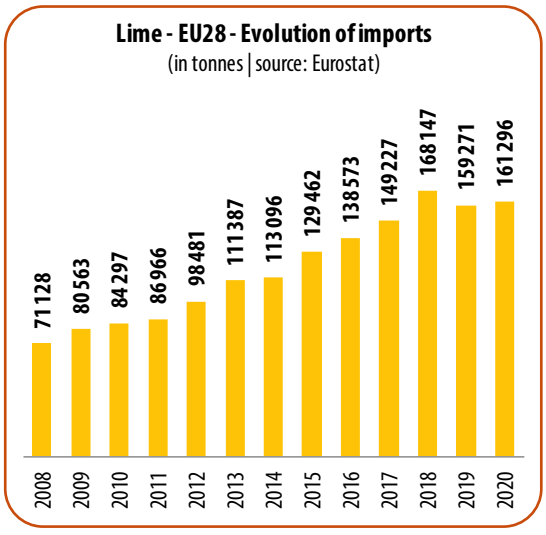
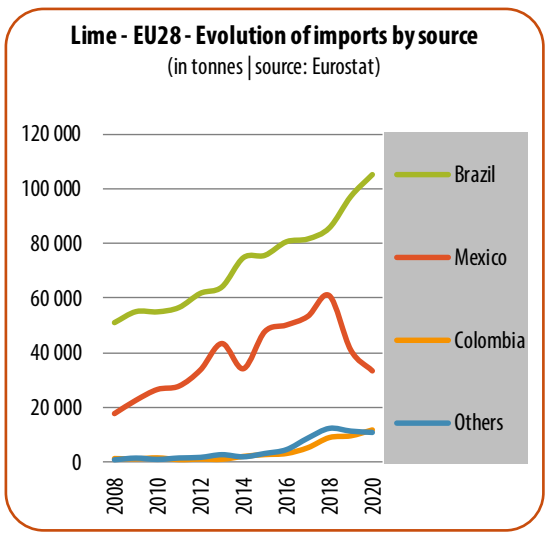




Toward diversification of lime supply and uses

Europe, although a long way behind the US market, remains the second biggest lime import market. With imports of just over 161 000 tonnes in 2020, volumes have nearly doubled in ten years. While the supply is more diverse than in the USA, 86 % still comes from the giants of the world trade - Brazil (65 %) and Mexico (21 %). However, for some years now, the lines have been shifting. Colombia, the number three market supplier, which accounted for barely 1 000 tonnes in 2010, has achieved a rapid rise, now holding 7 % of the European market supply (11 700 t in 2020).

Meanwhile, in the past two years, Mexico has tended to disengage somewhat from the EC market. This has benefitted Brazil, which cannot export to the USA, but whose fruit quality has intrinsically improved in recent years. While the cosmetic quality of the Brazilian lime has become more uniform, it is above all its taste quality which has come to the fore. The lime has long harnessed the "cocktail" effect, its use in alcoholic drinks making a big contribution to its spread. However, increased summer consumption has been less marked in recent years, and has revealed another use of the lime, which is tending to replace the lemon in cooking and detox diets.

Hence the lime has gradually left the small exotics section, and joined the citruses section. Furthermore, despite sometimes being known as the "green lemon", its coloration is tending to become less important than its juice content. As such, the stabilisation of volumes in the past two years, when the health crisis has led to the closure of the commercial catering sector (restaurants, bars, nightclubs, etc.) in Europe for the most part of 2020, points to a gradual loss of seasonality in consumption, characterised by a proliferation in uses.

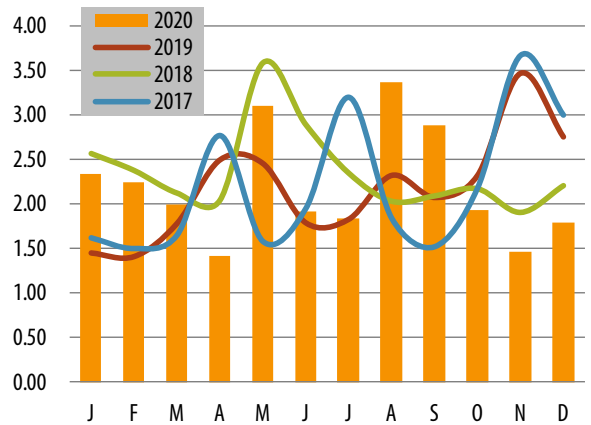
European market marked by high volatility

Besides the quality aspect, the Brazilian lime is increasingly asserting itself on the European market thanks to exporters' greater flexibility to supply on an annual contract basis. The European market is subject to high price volatility, as it is highly sensitive to variations in supply and demand (import price range extending from €4 to €15 per 4.5-kg box). Faced with Mexican production which remains highly fragmented, and with many exporters revising prices daily, while demanding guaranteed minima – which contributes to increasing market stability – Brazilian producers are holding their own by promoting loyalty through contracts priced for the medium term.

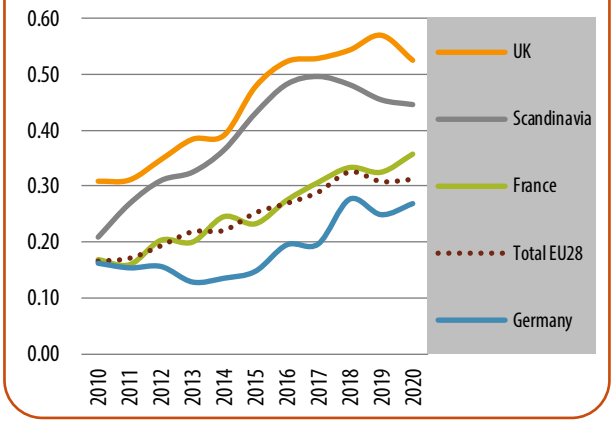
However, this volatility is also linked to the Brazilian and Mexican production calendars, which, although partially complementary, are not always in line with consumption. Hence prices can fluctuate very suddenly in periods of high demand (historically from May to September and during the end-of-year festivities). Conversely, prices are generally at their lowest between February and April, when Brazilian production is at its highest and European demand remains moderate.

To cope with these vagaries, we have seen an increasing move toward contractualisation of the sea-freight lime market, with the air-freight lime now preferred as a top-up solution when the overall supply falls, for example in the case of climate problems at the production stage. Nonetheless, some specialist distributors are continuing to provide specific air-freight programmes for the top-end segment. The impact of import price volatility is not expressed on the same scale on the wholesale market as in the supermarket sector. As with the avocado market, big increases in import price are passed on with the same force to the wholesale stage, while contract-based prices with the supermarket sector players increase more moderately. That is why, given the unpredictability of the market, it remains in the hands of exotics specialists and sector category managers, who have a long-standing experience on this market.

Sea-freight lime - France - Monthly wholesale price
(in €/kg | source: RNM)



Lime - EU28 - Evolution of consumption
Main markets
(in kg/capita | source: Eurostat)



Consumption potential still under-exploited in Europe

European consumption remains a long way behind the USA. While it nearly doubled between 2010 and 2019, going from 0.17 kg to 0.31 kg per capita and per year on average, there is still some way to go to reach the US market's 2 kg figure. Even more worrying, while US annual average consumption is rising, the EU's has stagnated since 2017. While the United Kingdom, the top European consumer (0.57 kg/capita in 2019), can boast continued growth of approximately 6 % per year, for the other driving forces of European consumption, France (0.32 kg) and Germany (0.27 kg), the rise has been less marked over the last three years. Scandinavia has even seen a decline since 2017, with 0.45 kg.

However, the margin for growth remains enormous. This stagnation could be due to the downturn in Mexican imports into Europe in recent seasons, which are tending to refocus on the US market, while other suppliers such as Brazil and Colombia have registered a constant rise since 2017. Furthermore, the increase in imports in 2020, despite the closure of the catering sector imposed by the Covid-19 pandemic, would seem to indicate that demand is still dynamic, and that lime uses should continue to diversify ■

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LIME

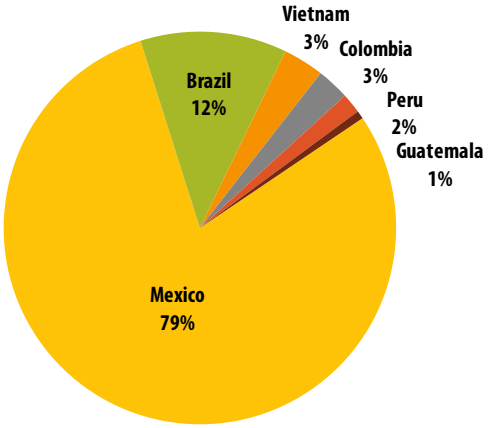
Production & Exports

© Guy Bréhinier

LIME - Top 10 producer countries	
000 tonnes	2018-19
Brazil	1 506
Mexico	1 325
Iran	650
Egypt	345
Colombia	305
Peru	286
Thailand	152
Guatemala	126
Venezuela	75
Pakistan	71

Sources: FAO, ministries of Agriculture, professionals

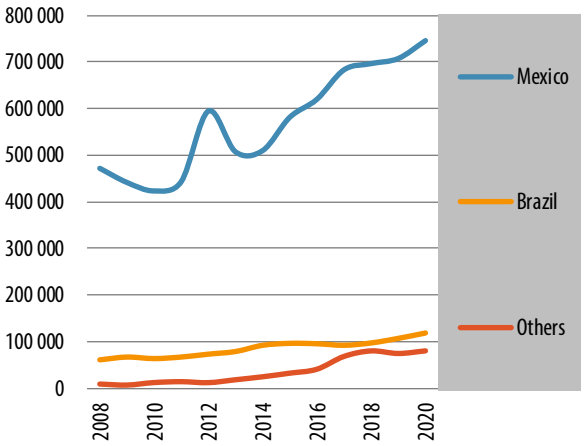
LIME - 2019 world main exporters
(sources: Comtrade, Eurostat)



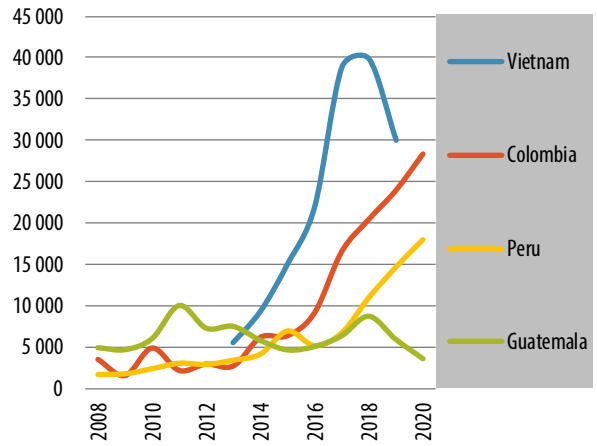
LIME – Main exporter countries							
tonnes	2014	2015	2016	2017	2018	2019	2020
Mexico	510 213	581 825	620 523	683 948	697 260	708 293	746 617
Brazil	92 301	96 632	95 748	92 393	97 502	107 601	119 427
Vietnam	9 337	15 034	21 947	38 757	39 803	29 981	20 000*
Colombia	6 178	6 375	9 143	16 517	20 407	23 900	28 305
Peru	4 181	6 977	5 203	6 745	11 012	14 702	18 037
Guatemala	5 826	4 703	5 108	6 371	8 679	5 938	3 800*

* estimates I Source: Customs

LIME - Evolution of exports in main exporter countries
(in tonnes | sources: Comtrade, Eurostat)



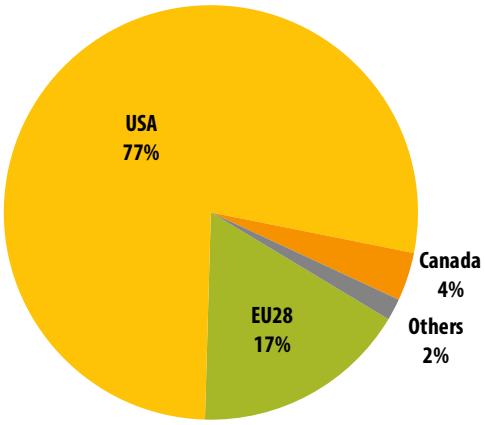
LIME - Evolution of exports in "other" exporter countries
(in tonnes | sources: Comtrade, Eurostat)



LIME

Imports

LIME - World main import markets in 2020
(sources: Comtrade, Eurostat)



LIME – UNITED STATES – Main supplier countries							
tonnes	2014	2015	2016	2017	2018	2019	2020
Total	**439 562**	**510 186**	**553 422**	**605 304**	**616 214**	**643 986**	**708 515**
Mexico	432 547	504 994	547 482	594 958	600 959	628 945	691 998
Colombia	2 973	2 270	3 374	5 680	8 688	9 732	12 267
Guatemala	3 974	2 512	2 454	1 992	948	1 534	678
Others	67	410	113	2 675	5 619	3 775	3 572

Source: Customs

LIME – CANADA – Main supplier countries							
tonnes	2014	2015	2016	2017	2018	2019	2020
Total	**41 692**	**29 050**	**39 549**	**29 392**	**28 799**	**57 794**	**34 393**
Mexico	39 781	28 305	39 061	28 606	27 170	55 969	33 164
Brazil	1 911	745	488	786	1 629	1 825	1 229

Source: Customs

LIME – EUROPEAN UNION – Main supplier countries							
tonnes	2014	2015	2016	2017	2018	2019	2020
Total	**113 096**	**129 462**	**138 573**	**149 227**	**168 147**	**159 271**	**161 296**
Brazil	74 717	75 570	80 502	81 538	85 551	97 006	104 925
Mexico	34 313	47 931	50 300	53 494	61 044	41 091	33 508
Colombia	2 016	2 676	3 077	5 223	8 979	9 616	11 796
Vietnam	1 031	1 669	2 524	4 101	5 639	5 636	5 240
Peru	300	522	633	932	1 369	2 225	2 488
Guatemala	715	1 094	1 537	2 657	4 496	2 857	2 049
Honduras	-	-	-	577	462	130	691
Morocco	4	-	-	63	74	287	411
S. Africa	-	-	-	163	112	109	131
Dom. Rep.	-	-	-	136	156	149	42
Israel	-	-	-	343	266	165	16

Source: Customs

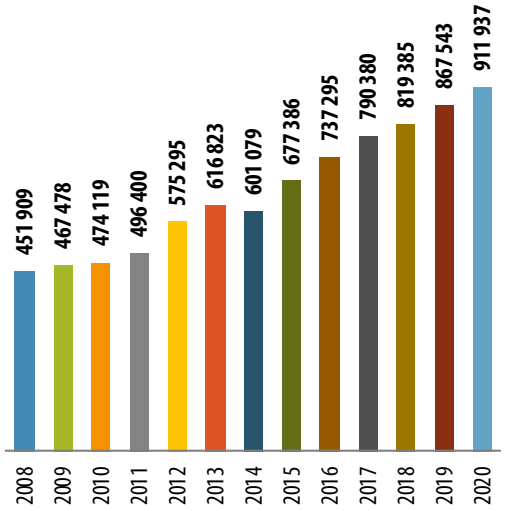
LIME – RUSSIA – Main supplier countries							
tonnes	2014	2015	2016	2017	2018	2019	2020
Total	**4 042**	**6 393**	**3 368**	**3 785**	**3 872**	**4 275**	**5 855**
Brazil	2 402	4 273	1 091	1 049	1 333	2 186	3 436
Mexico	1 640	2 120	2 277	2 736	2 539	2 089	2 419

Source: Customs

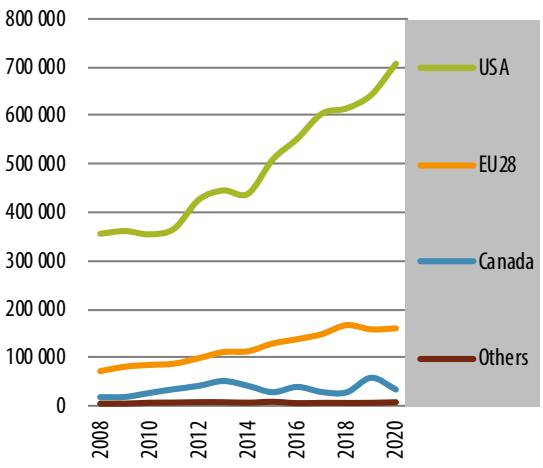
LIME – JAPAN – Main supplier countries							
tonnes	2014	2015	2016	2017	2018	2019	2020
Total	**2 687**	**2 295**	**2 383**	**2 672**	**2 353**	**2 218**	**1 878**
Mexico	2 687	2 295	2 383	2 672	2 353	2 218	1 878

Source: Customs

LIME - Evolution of world trade
(in tonnes | sources: Eurostat, Comtrade, US Customs)



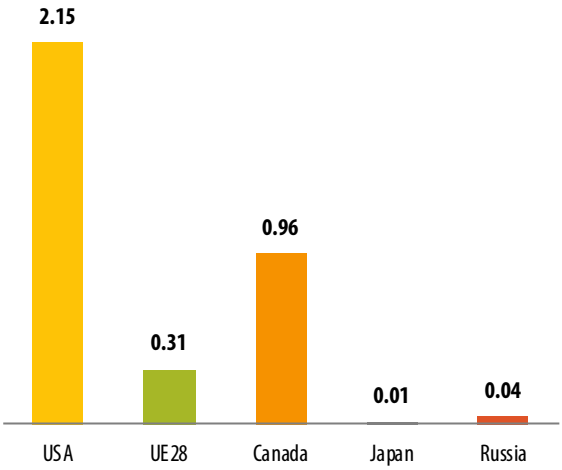
LIME - Evolution of imports by main destination markets
(in tonnes | sources: Comtrade, Eurostat, US Customs)



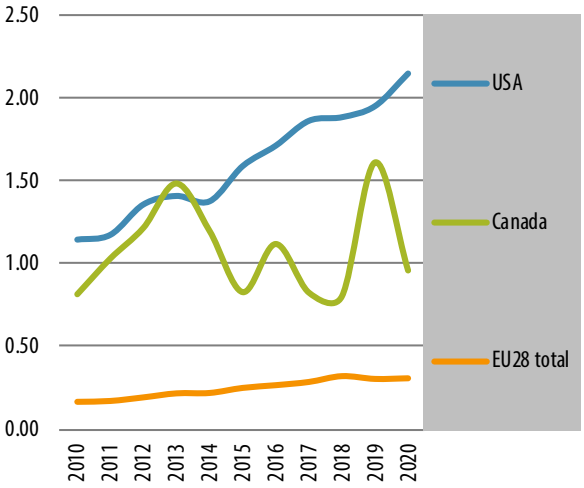
LIME

Consumption

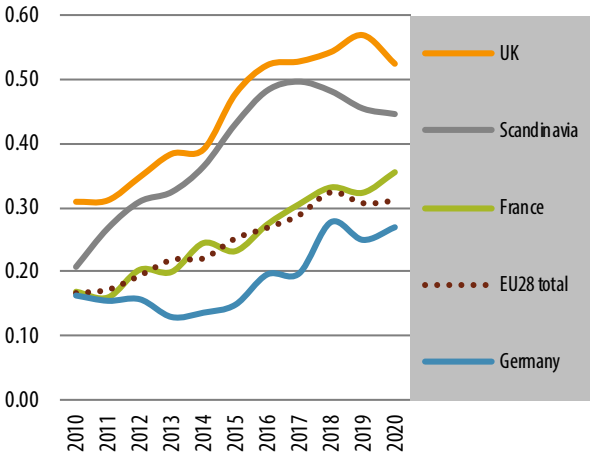
LIME - 2020 consumption on the main importer markets
(in kg/capita | sources: Comtrade, Eurostat)



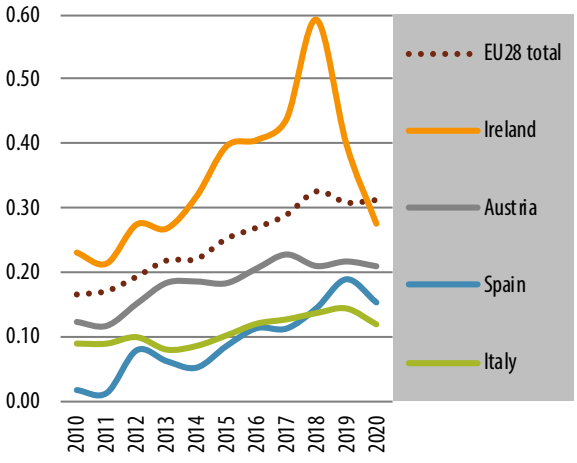
LIME - Evolution of consumption on main markets
(in kg/capita | sources: Comtrade, Eurostat, US Customs)



LIME - Evolution of consumption on the EU28 main markets
(in kg/capita | source: Eurostat)



LIME - Evolution of consumption on the EU28 minor markets
(in kg/capita | source: Eurostat)



Producer country file

The lime in Mexico

by Eric Imbert

In the space of four decades, Mexico has built the world's number one Tahiti lime export industry, with volumes available on the international market reaching 750 000 t in 2020. Nonetheless, the sector, concentrated in the Veracruz region, is struggling to modernise both in terms of its production base and its commercial organisation. Nonetheless, it is continuing to make rapid progress, thanks to growing demand from its main outlet, the US market.

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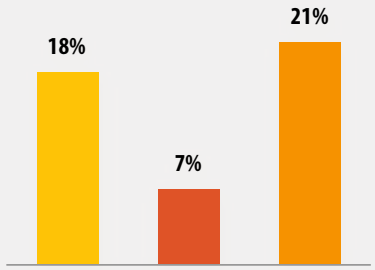
History

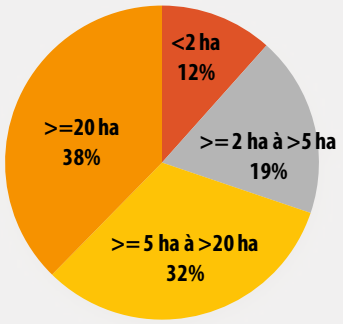
A massive industry built in less than 50 years

The lime and other citruses were introduced into Mexico a long time ago, probably in 1518 by the Juan de Grijalva expedition from Cuba, i.e. shortly after Christopher Columbus brought citruses to the New World. The key lime, *Citrus aurantifolia*, is rooted in the country's culture and gastronomy, to the point of being known internationally as the "Mexican lime". Conversely, cultivation of the Tahiti lime or Persian lime (*Citrus latifolia*) is a much more recent development, although this variety's cultivation area already exceeds that of *Citrus aurantifolia*. The first major plantations were set up in the 1970s in the Veracruz region (Martínez de la Torre) to meet demand from the Coca Cola group, which was seeking raw materials derived from lime processing. As the derivatives did not meet the quality criteria expected by the multinational, producers seeking a new market switched to fresh lime exports to the neighbouring USA. This outlet saw rapid development from the 1980s and especially the 1990s, thanks to two chance events: the closure of the US borders to the Mexican variety lime from Colima for health reasons in 1982, and then the gradual disappearance of Floridian production following the 1989 frost and Hurricane Andrew in 1992. The implementation of the free trade treaty between Mexico and the USA from 1994 boosted this movement. The progress of this market has enabled Mexico to build the world's number one Tahiti lime export industry, with volumes placed on the international market of approximately 750 000 t in 2020.

Persian lime - Mexico - Average rate of irrigated orchards by state
(source: SIAP 2019)



Lime and lemon - Mexico - Breakdown of planted areas by farm size
(source : INEGI 2017)



Persian and Mexican limes – Mexico – Production and exports

	Persian lime	Mexican lime	Sources
Production	1 325 000 t	1 204 000 t	SIAP 2019
Planted areas	99 500 ha	95 500 ha	SIAP 2019
Exports	717 000 t	29 800 t	Customs 2020
World market share	79 %		Customs 2020


© Thierry Lescot

Location

An industry with a highly fragmented structure, still concentrated around Martínez de la Torre

The Tahiti lime cultivation area, extending over an estimated 100 000 ha in 2019, is concentrated on the Atlantic seaboard, unlike the aurantifolia lime, the main cultivation zone of which is situated in the warmer Pacific Coast zones (95 000 ha situated primarily in Michoacán and Colima).

Three States cover 70 % of surface areas. Veracruz is by far the biggest, with approximately half of the cultivation area (47 800 ha in 2019). The historic centre, Martínez de la Torre district, remains highly dominant (35 400 ha in 2019, i.e. more than 35 % of the national cultivation area), alongside the more modest cultivation areas of Fortín and Veracruz districts.

Oaxaca State holds second position (15 % of the national cultivation area, mainly in Tuxtepec district), followed by Tabasco (7 %, mainly in Cárdenas district around Huimanguillo district).

The climate is hot and humid to sub-humid in the Veracruz region, with an annual average rainfall of around 1 500 to 2 000 mm in Martínez de la Torre, for an average temperature of 25°C and maximum and minimum average values of 35-36°C in August, and 11-12°C in January. The zone is fairly frequently exposed to extreme climate phenomena (cyclones, droughts).

The sector is highly fragmented, and based primarily on small to medium-sized farms, which have a fairly rudimentary production system (no irrigation, often poor-quality plant stock, basic cropping practices), and are highly dependent on trade intermediaries. The number of large farms, operating with high technical standards, packing and marketing their production themselves, is relatively limited. According to the 2017 agricultural survey, two-thirds of the Mexican lime cultivation area (across all varieties) comprised farms of less than 20 ha (one third of which less than 5 ha). According to this same source, only a quarter of surface areas had irrigation in the Veracruz production centre. Hence average yields are highly heterogeneous, ranging from 5 to 25 t/ha according to the technical literature. Although economic returns are limited and haphazard, the lime is a major cash crop for many small growers. The cultivation area expanded at a rate of approximately 3 500 to 4 000 ha/year on average between 2014 and 2019, and should continue to increase.

Persian lime – Mexico – Planted areas

in hectares	Surfaces	Share
Veracruz state, of which	**47 831**	**48 %**
Martínez de la Torre	35 403	36 %
Fortin	3 510	4 %
Veracruz	3 570	4 %
Oaxaca state, of which	**15 055**	**15 %**
Tuxtepec	12 404	12 %
Tabasco state, of which	**7 220**	**7 %**
Total	**99 500**	**100 %**

Source: SIAP

Lime
Mexico

Production

Year-round production, but irregular in terms of both volume and quality

Citrus latifolia is produced year-round, with several blooms a year, and a relatively short production cycle (approximately 120 to 140 days according to the seasonal temperature fluctuation). However, production levels are highly variable over time, especially according to the rainfall. Hence the harvest peaks from May to September, a period packing in approximately 70 % of annual volumes. It is much more moderate from October to April (approximately 30 % of volumes). The quality varies greatly over the season, with high temperatures affecting most of the zones from July to September, which adversely affects the fruit appearance (yellowed and rough skin).

© Régis Domergue

Exports

An industry built on exporting fresh fruit

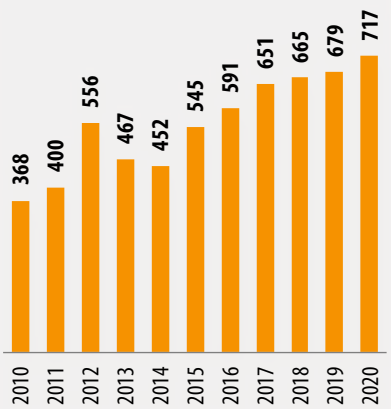
Fresh fruit exports are by far the main outlet, reportedly taking in 50 % of production, with exports of nearly 750 000 t in 2020 (i.e. approximately $500 million), making the lime one of the top products in the Mexican agro-export sector. Local lime consumption is very high, with this fruit a practically omnipresent condiment in both traditional dishes (tacos, etc.) and in beverages (beer, soda, etc.). However, it is *Citrus aurantifolia*, rooted in tradition, and more acidic and aromatic, which is preferred by consumers. *Citrus latifolia* nonetheless is tending to break through, especially in the low-budget catering sector, for its higher juice content and more attractive price. *Citrus latifolia* volumes intended for juice or essential oil manufacture are modest. Mexico dominates the world market for these derivatives, but mainly using the more aromatic *Citrus aurantifolia* as the raw material.

Persian lime – Mexico – Exports

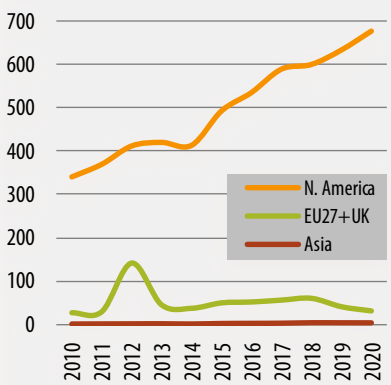
in tonnes	2016	2017	2018	2019	2020
Total	**590 545**	**650 556**	**665 004**	**678 851**	**716 858**
North America, of which	**535 717**	**590 098**	**600 944**	**634 516**	**678 498**
USA	533 297	587 483	600 640	634 124	677 887
Canada	2 420	2 615	305	393	611
EU27+UK	51 426	55 809	59 965	40 435	30 643
Asia, of which	**2 490**	**2 620**	**3 022**	**2 977**	**2 933**
Japan	1 962	2 019	2 112	1 997	1 777
China + Hong Kong	-	0	112	0	-
Other Asia	528	600	798	980	1 156
Eastern Europe excl. EU27	**861**	**1 080**	**482**	**621**	**1 423**
Arabian Peninsula	**6**	**6**	**2**	**105**	**3 033**
Others	**45**	**944**	**589**	**195**	**803**

Source: Mexican Customs

Persian lime - Mexico - Exports
(in 000 tonnes | source: Customs - code 08055002)



Persian lime - Mexico - Exports by destination
(in 000 tonnes | source: Customs - code 08055002)



Outlets

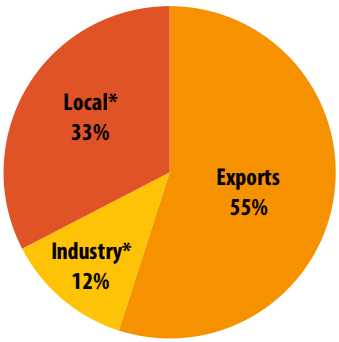
US market as central as ever

Mexico's Tahiti lime industry was built on fresh fruit exports to the USA, and to this day remains almost completely dedicated to this neighbouring market. Shipments started in the 1980s. The collapse in Floridian production and the gradual disappearance of customs duty, due to the implementation of the free trade treaty between these two countries in 1994, led to a very big and steep increase in flows. The market is relatively easy to operate on, thanks to its vicinity and its expectations in terms of quality, lower than in the EU27+UK or Japan (quality level three accepted, as opposed to level 2 for Europe and level 1 for Japan). Furthermore, it is highly progressive (+ 30 000 to + 35 000 t/year on average over the past decade), thanks in particular to a high-consuming and rapidly growing Hispanic population. The US market took in more than 700 000 t of Mexican limes in 2020, i.e. nearly 95 % of the country's exports.

The EU27+UK represents Mexico's number two market. However, the volumes taken in are much more modest, and tending to wane for the reasons mentioned above, and for the economic risk incurred on this distant and highly versatile market. After a peak of 60 000 t in 2018, they dropped to 30 000 t in 2020, the effects of the Covid-19 pandemic accentuated the downward movement registered since 2019. Asia is in third position, with very modest volumes of high-quality fruit (2 000 to 3 000 t/year, mainly exported to Japan).

The trade sector remains mainly situated in the Martínez de la Torre zone: shipping markets (weighing centres known as "basculas", or auction markets such as "subastas"), packing stations and exporters. However, it is highly fragmented and disorganised: intermediaries in place between the small growers and packers, numerous often small and medium-sized packing stations (more than 100 export-authorised stations in 2020 in Veracruz State), alongside the big players in the sector (B&S, Veca, Inverafrut, etc.).

Persian lime - Mexico - Outlets
(* estimate | sources: Customs, professionals)




© Guy Bréhinier

Packing and logistics

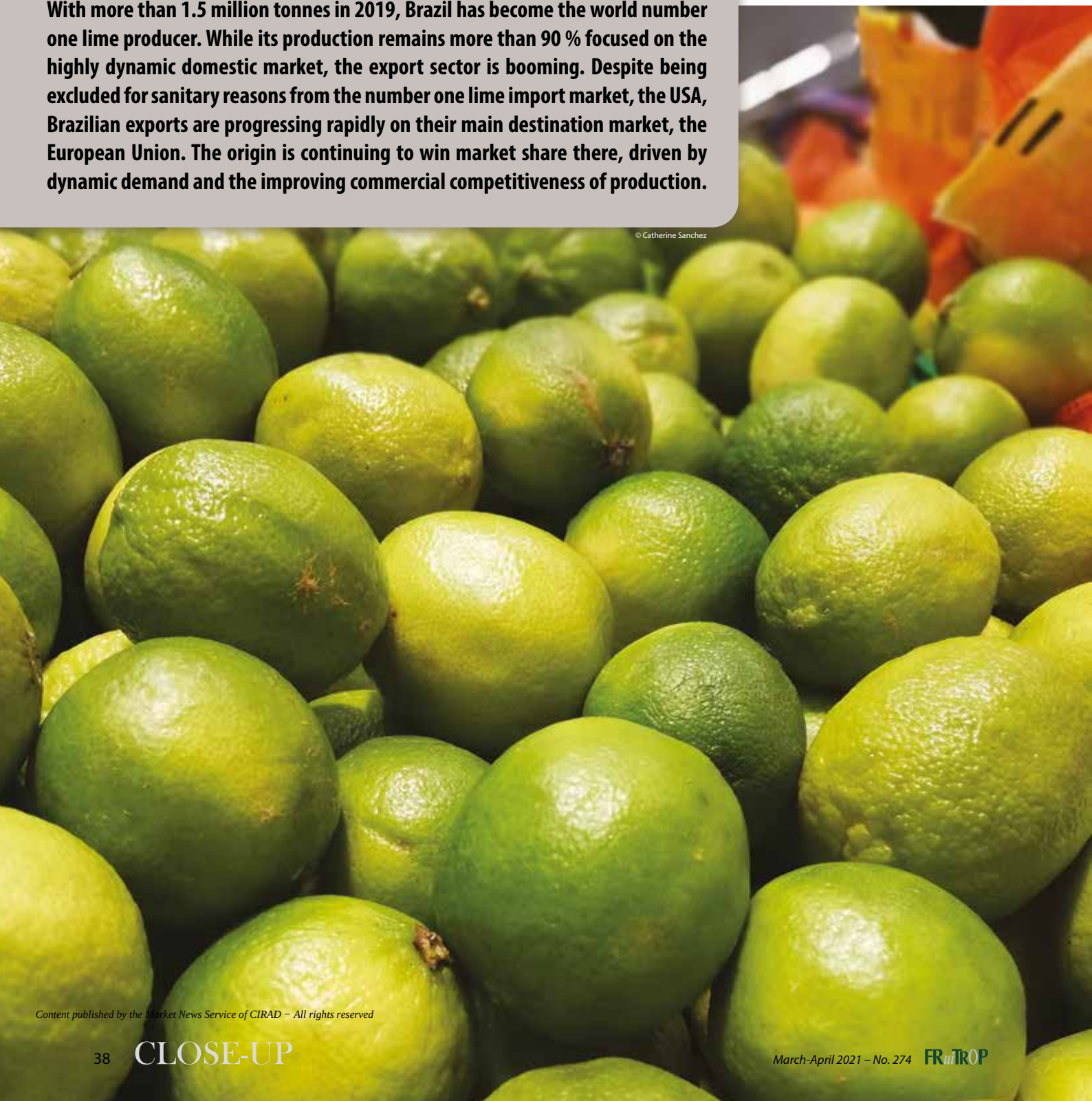
Packing varies according to the markets. The format used for the EU-27+UK is the 10-pound box (just over 4 kg). The US market is 90 % served with 40-pound boxes (approximately 18 kg), with the rest shipped in 10-pound boxes. The Mexican quality standard imposes a minimum juice rate of 45 % for fruit sold fresh, and stipulates three quality levels, dependent in particular on appearance ("extra", "first" and "second"). Fruit aimed at the US market is shipped by road-freight, generally to McAllen (Texas), a border town where numerous US importers have infrastructures. The journey is approximately 800 km from Martínez de la Torre. Fruit aimed at distant overseas markets are mainly shipped by sea-freight from the Atlantic coast ports (Altamira, just over 300 km from Martínez de la Torre, etc.). Air freight is used on a small scale, mainly on a top-up basis at certain times of year.

Producer country file

The lime in Brazil

by Carolina Dawson

With more than 1.5 million tonnes in 2019, Brazil has become the world number one lime producer. While its production remains more than 90 % focused on the highly dynamic domestic market, the export sector is booming. Despite being excluded for sanitary reasons from the number one lime import market, the USA, Brazilian exports are progressing rapidly on their main destination market, the European Union. The origin is continuing to win market share there, driven by dynamic demand and the improving commercial competitiveness of production.



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Lime
Brazil

Location

While Brazil has more than 56 000 hectares of lime spread across the entire nation, more than half is concentrated in the commercial orchards of São Paulo State, around the city of Itajobi, from Votuporanga in the west to Limeira in the east, by way of Matão and Bebedouro. There are also orchards in the north-east of the country, in the States of Bahia (10 %) and Pará (9 %), and finally in the Triangulo Mineiro, in the west of Minas Gerais State (8 %).

In São Paulo State, a pioneer in commercial citrus growing, more than 30 000 ha of limes are at present mainly in the hands of small to medium growers. Thanks to the improving technical level, the use of plant stock tailored to the zone's pedoclimatic conditions, the improved cropping practices (pruning, thinning, irrigation management and fertilisation management) and the renewal of old orchards, production yields have risen to become the highest in the country: 36 tonnes/ha in 2019. In addition, the surface areas in this State have increased in particular since 2014 (annual growth rate 6 %), with numerous orange growers strongly attracted by the better profitability of the lime due to its high greening tolerance and to the fresh fruit outlet, more lucrative than the processing industry. Although the local market is the main production outlet, 90 % of Brazilian export volumes come from this zone.

Conversely, Bahia State, the number two producer in terms of surface areas (5 800 ha), is exhibiting the reverse trend. Production there has dropped by nearly 50 % from its high point in 2015. While there are large high-tech surface areas present in the Litoral Norte and Agreste Baiano zone, in the rest of the State, production is based primarily on family smallholdings, with surface areas of less than 10 ha, or even 3 ha in certain zones, with highly traditional lime cropping methods. The average productivity is actually low, at less than 12 t/ha. While this State is free from greening, the growing incidence of other diseases which arrived in the 2010s (e.g. citrus blackfly), as well as the low degree of supervision of smallholders, and their modest investment capacities, have led in recent years to the abandonment or replacement of citruses with other crops (such as passion fruit or cassava). Furthermore, given the production boom, intermediaries account for 80 % of outlets for growers, which means that the latter are not guaranteed decent economic returns.

While production in Pará was still fairly marginal just a few years ago, it is now seeing a dazzling rise, concentrated around the municipio of Monte Alegre. With an annual surface area expansion of around 26 % over the past decade, Pará State has outstripped Bahia, to become the country's number two producer in terms of volumes. The 5 300 ha cultivated are primarily in the hands of family smallholdings. Production is making rapid progress thanks to expanding surface areas and productivity gains (yields of around 20 t/ha), explained by the higher technical level of the smallholders, supported by State programmes (technical assistance, training, support in finding outlets, support in installing irrigation). While the outlet for the majority of production is the local market (Belem, the capital of Pará, and Amazonas State), the supply to the Nordeste region is progressing, and exports to the EU have started via export companies in São Paulo.


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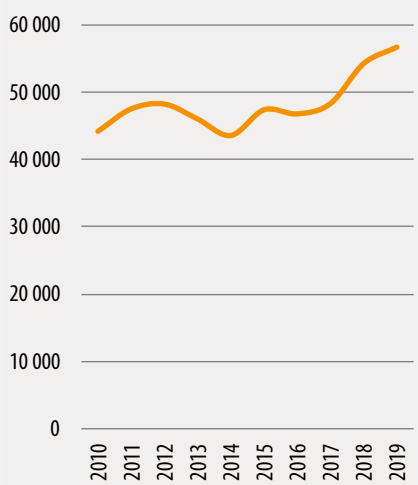
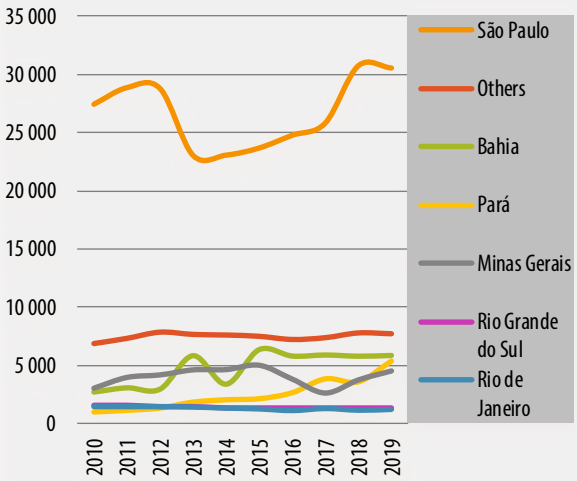
Lime - Brazil - Evolution of planted areas
(in hectares | source: Brazilian government)



Lime - Brazil - Evolution of planted areas by state
(in hectares | source: Brazilian government)



Lime
Brazil

THE LIME IN BRAZIL

56 664 ha in 2019

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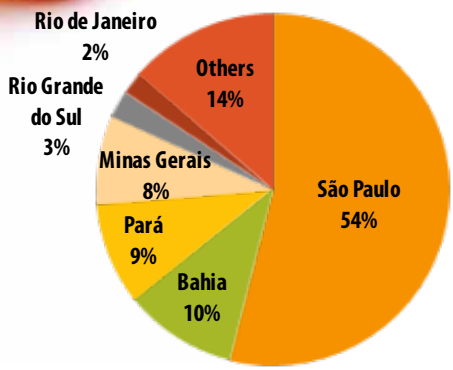
Lime - Brazil - Main producer states in 2019
(source: Brazilian government)



Lime
Brazil

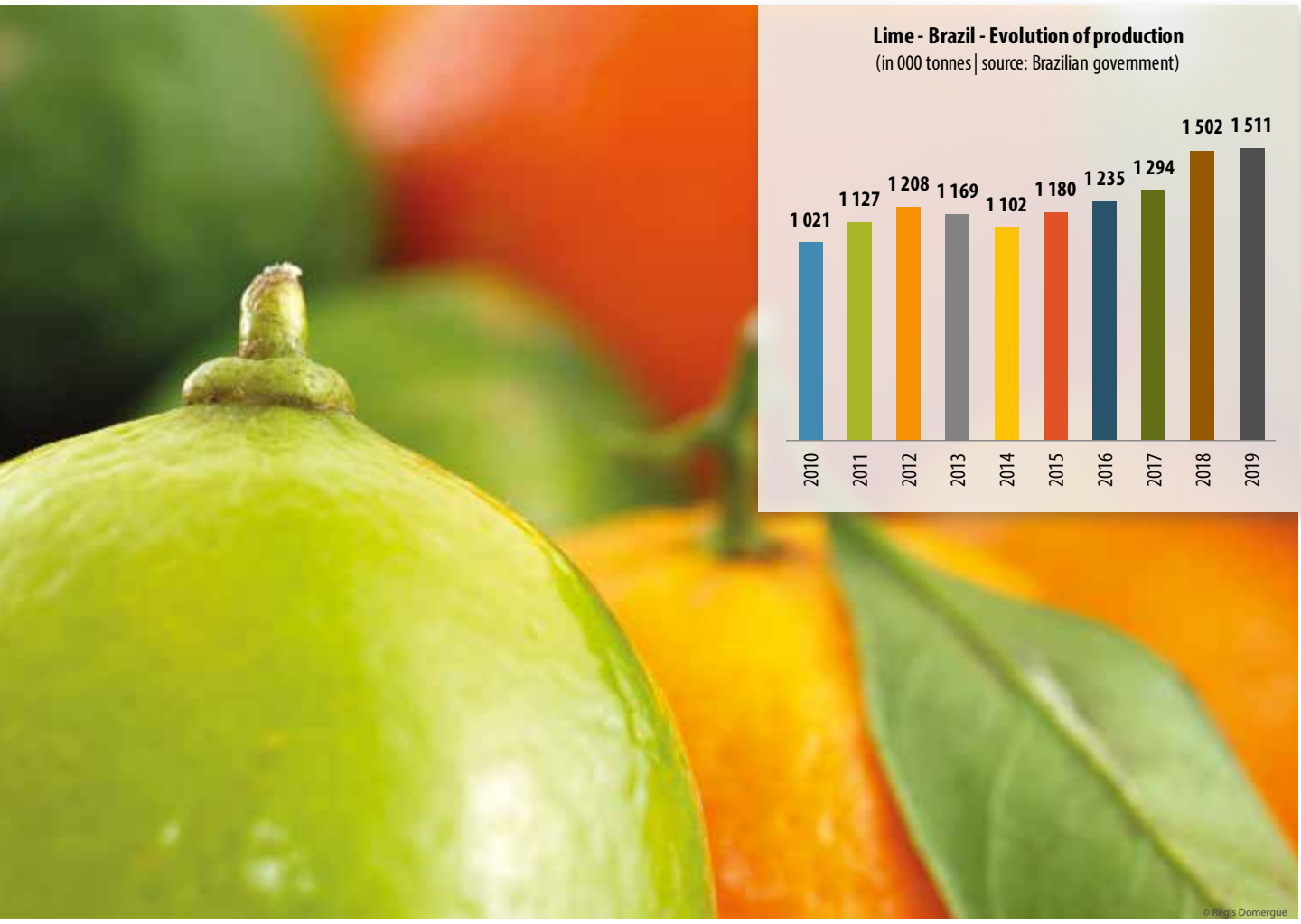
Production

Although in Brazilian latitudes the lime is produced year-round, its seasonality is highly marked. The main harvest (safra), highly abundant, runs from January to June, and a second counter-season harvest (entressafra) runs from July to December. Thanks to tailored cropping practices (pruning, thinning, irrigation management and fertilisation management) or use of growth regulators in certain cases, attempts are being made to stagger production during the counter-season, to take advantage of the very strong demand from the local market in low-production periods.

Brazilian production has to cope with numerous pests and diseases, such as *phytophthora*, citrus canker, citrus blackfly (*Aleurocanthus woglumi*) and, since 2004, the devastating greening. While the Nordeste regions are for the moment being spared this disease, it is still on an upward trajectory in the States of São Paulo and Minas Gerais. According to the 2020 survey on greening conducted by Fundecitrus, approximately 41 million trees (20.87 %) in the commercial zone of São Paulo State and the western part of the Minas Gerais zone are affected by the disease, a figure which is showing a particular rise in adult orchards.

In addition, in recent years, production has suffered particularly from the effects of repeated droughts. While production was already affected in 2019, a record reduction in the potential across all citruses can be expected for the 2020-21 campaign, due to the effects of the drought in late 2020.

Nonetheless, production is continuing to progress, especially thanks to the nationwide expansion of the cultivation areas (5 % annual increase in surface areas between 2014 and 2019), and to a distinct improvement in productivity, in particular in the main producer State, São Paulo, which provides 75 % of production volumes. With more than 1.5 million tonnes produced in 2019, and volume growth of nearly 30 % since 2015, Brazil has become the world's number one lime producer, outstripping its historical rival Mexico.



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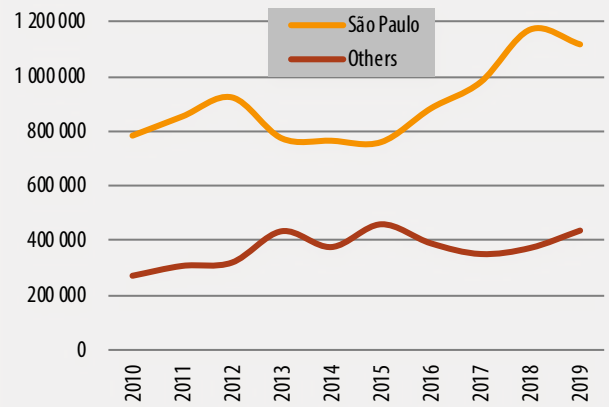
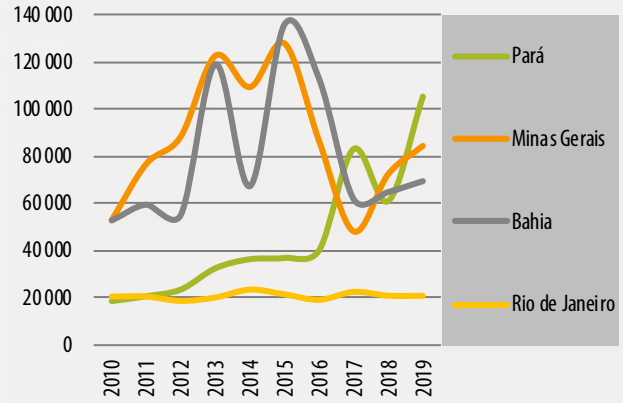
Lime
Brazil

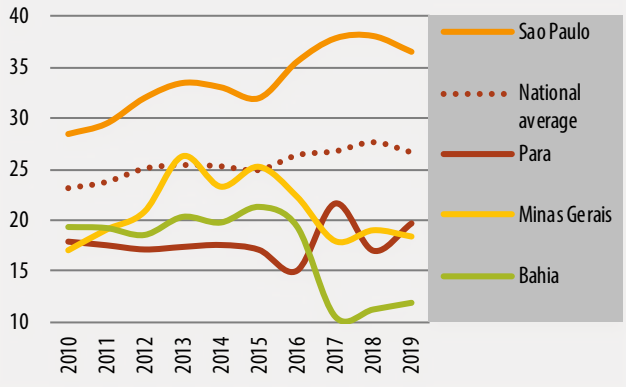
Lime - Brazil - Evolution of production by State
(in tonnes | source: Brazilian government)



Lime - Brazil - Evolution of production in other States
(in tonnes | source: Brazilian government)



Lime - Brazil - Evolution of average productivity in main producer States
(in tonnes/hectares | source: Brazilian government)



Photos © Guy Bréhinier

Lime
Brazil

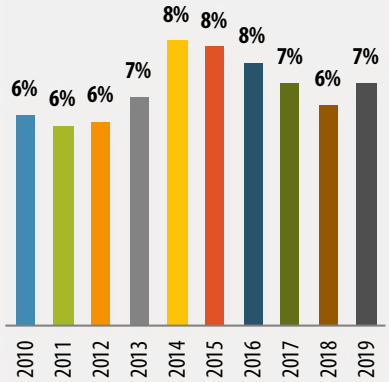
Outlets

Since the lime is a staple of the Brazilian diet, production is aimed primarily at the highly dynamic domestic market. It is estimated that Brazilian consumption exceeded 1.4 million tonnes in 2019, i.e. 6.6 kg per capita. This figure is on the rise, in the context of population growth. The local market represents a lucrative outlet, in particular during the second half of the year (low production season), during which the prices paid to growers can soar to levels 3 to 4 times higher than in the first half. By way of example, while during the production peak in the first half-year on-tree prices at the production stage fluctuated on average between 20 and 30 reals (i.e. €3 to €4) for a 27-kg crate, in August 2020 they peaked at a record level of 85 reals (equivalent to €12 – source: CEPEA-ESALQ).

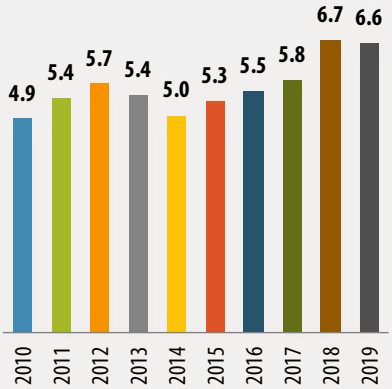
Just 7 % of production is sent for export, at a relatively constant level for the past several years, though on the increase in absolute value.

Some of production is also sent to the industrial sector (essential oils, flavourings and juices), but this outlet remains marginal, given its low economic benefit to growers (prices half those on the local market).

Lime - Brazil - Export volumes share of total production
(source: Brazilian government)



Lime - Brazil
Evolution of consumption
(in kg/capita | source: Brazilian government)



© Denis Loeillet

Logistics

Most of the volumes are shipped by sea-freight from the port of São Paulo. However, some shipments are also made by air-freight.

Lime
Brazil

Exports

With exports of nearly 120 000 tonnes in 2020, and an annual growth rate of around 6 %, the lime is Brazil's number three export fruit, and in particular the main fresh citrus (Brazil is a major orange producer, but the bulk is sent to the juice industry).

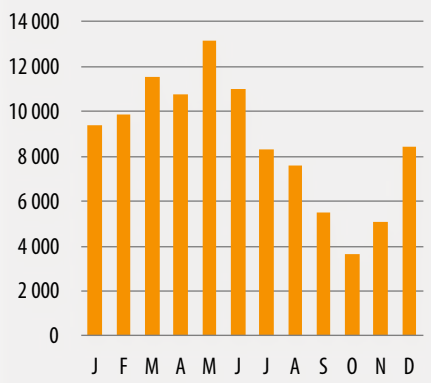
Because of the presence of citrus canker in the production zones, which is a quarantine disease, Brazil is banned from the world's main importer market, the USA.

Hence exports are aimed mainly at the EU27+UK, which takes in more than 90 % of volumes, and where the origin has seen a near-exponential increase. On the one hand, its competitiveness is increasing due to the better productivity and a trend in the euro/real exchange rate particularly beneficial for exports. On the other hand, European demand seems increasingly focused on the characteristics offered by limes cultivated in Brazil (juiciness), compared to the more cosmetic outward characteristics of the competing origins. Furthermore, the adoption of contract-based trading practices is in the origin's favour, with European importers seeking a guaranteed regularity of supply.

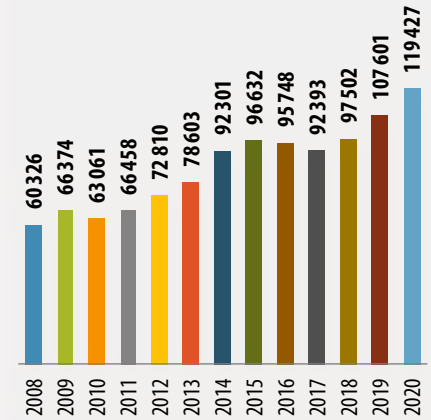
Finally, although the export calendar remains highly concentrated into the first half-year, during the safra production peak, the EU market window is tending to widen in the second half-year. During the second half of the year, the Brazilian domestic market is particularly lucrative, due to lower production availability and to fruit quality less suited to the requirements of the export markets (a yellowish coloration and small sizes), because of the transition to the winter period (July/August) in the main production areas of São Paulo. However, we can in recent years point to a staggering trend of the export calendar, with volumes on the rise in July, August, September and October.

Although exporters are attempting to diversify their outlets, in particular to the Middle Eastern and Eastern markets, volumes to these destinations remain very limited to date.

Lime - Brazil - Exports seasonality 2017-2020 average
(in tonnes | source: Brazilian government)



Lime - Brazil - Exports
(in tonnes | source: Brazilian government)



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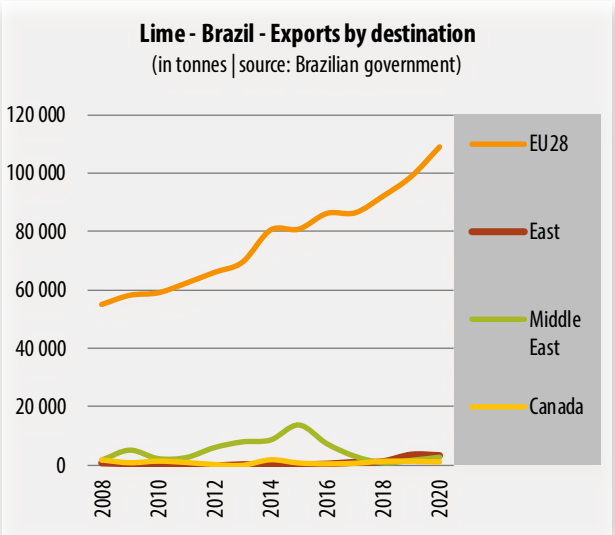
Lime - Brazil - Exports by destination
(in tonnes | source: Brazilian government)



Mango

A report by
Pierre Gerbaud

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Mango
European market trend

How far will it go?

by **Pierre Gerbaud**, consultant
pierregerbaud@hotmail.com

Going by the trajectory of the statistics, the European mango market is continuing its rise to new heights, and at a rapid tempo. Hence between 2019 and 2020, we can observe an increase of more than 47 000 tonnes, around the same as that registered between 2017 and 2018 (49 000 tonnes). This growth is especially surprising since it came in the particular context of the Covid pandemic, from which we might rather have expected a downturn in consumption for this product. Nonetheless, the health crisis presented its share of obstacles to the mango trade, without undermining its progress.

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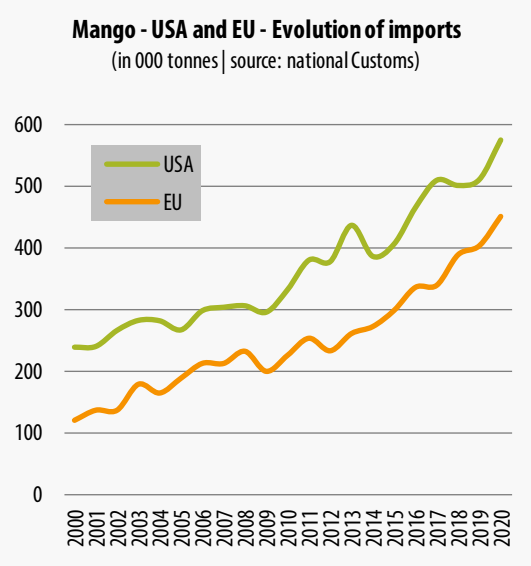

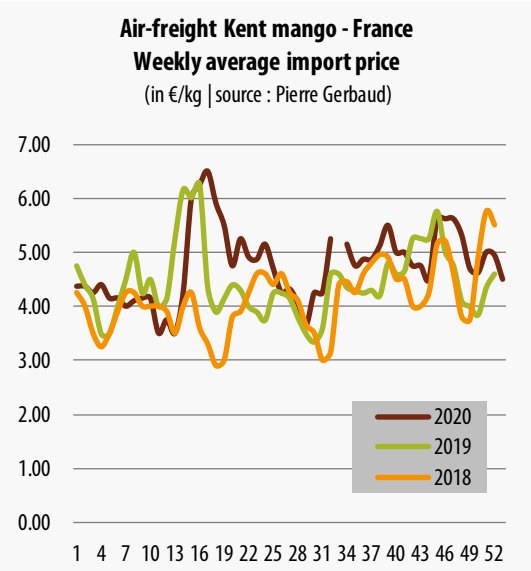

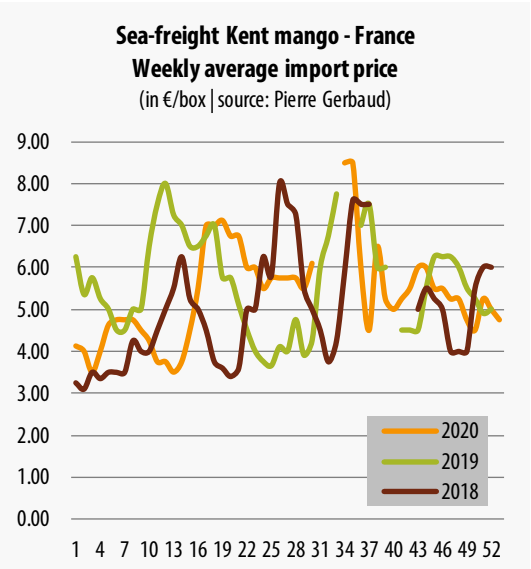

Still on a positive trajectory

The main supply balances held up, for both the US and European markets. The two main Western consumption areas saw import rises, albeit the USA enjoyed a clearer upshift, with incoming volumes increasing by more than 63 000 tonnes between 2019 and 2020, while Europe saw a rise of 47 000 tonnes. The difference between these two blocks widened once more (124 000 tonnes), though without reaching the record levels of 2016 and 2018 (129 000 t and 170 000 t). These two markets are primarily supplied by Peru and Brazil, which simultaneously target their shipments at both markets. There is a difference in the remainder of the supply. For the USA, we can find Mexico, Ecuador, Guatemala and Haiti; while Europe has West Africa, Israel and Spain. Given the respective populations (330 million for the USA and 450 million for the EU), there remains a theoretically large margin for growth.

The increase in total European mango imports in 2020 was down to the two biggest traditional suppliers, i.e. Brazil and Peru. Conversely, the smaller suppliers, which top up the supply calendar, saw a more or less marked shrinkage. This was the case with the West African origins (including Senegal), Israel and Spain. Their decline, due to weather phenomena or to the consequences of the Covid health crisis, was readily offset by the two regular mainstays. When this decline was only partially covered, mango rates soared, as could be observed in spring and during the summer period, when it exceeded €7.00/box, or even €8.00/box. This trajectory highlights, if it were needed, the predominant role of Brazil and Peru in the mango supply to the European market. The fact that these two origins are able to offset the shortfall from secondary origins proved to be rather a good thing for the continuity of shipments. Conversely, this phenomenon presupposes that Brazil and Peru could on their own fulfil European demand, thereby depriving it of the diversity of its procurement sources and the wealth of the varietal range currently available – which puts the market on course for drab uniformity.

Covid as a disrupting factor of the mango campaign?

Indisputably, the Covid pandemic greatly disrupted the export campaigns of suppliers to the European Union. In the first instance, the protective and social distancing measures adopted by all the countries slowed down harvesting, local transport and fruit processing at the packing stations. The reduction in staff numbers and working time constraints frequently required the reorganisation of various merchandise preparation tasks. Regarding international transport, the pandemic had heavy repercussions on air transport, with in particular reduced freight capacity on passenger flights. These account for a considerable proportion of exports, and enable regulation of the flows. This drastic reduction also caused big price increases, limiting the competitiveness of the products. Sea-freight transport seems to have suffered less from these conditions, except for increased shipment delays. On the recipient markets, the more or less strict lockdown measures created, during the first wave of the pandemic, a climate of profound uncertainty, generating cutbacks or cancellations to import programmes. Yet after a slack period, flows were quickly restored in the face of consumption holding up, boosted by the stability of the supermarket sector circuits. Going by the rise in European mango imports in 2020, we cannot help but observe that the health crisis caused only organisational problems, which were substantial, yet no upheaval as might have been expected from the gravity and universality of the pandemic crisis.


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Fruit quality, between immaturity and over-maturity

What can we say about fruit quality in the 2020 campaign? Any attempt to obtain an overview of this aspect remains fanciful, and targeting a more precise view seems impossible given the diversity of the origins, localities, varieties and cropping methods. Nonetheless, we can pick out some pathways.

Fruit maturity remained fairly haphazard at the beginning of the campaign, sometimes triggered by a temporary under-supply. Trade took priority over fruit physiology, which is ultimately down to the consumer's experience. The mid-campaign fruit generally exhibited more homogeneity. However, we could observe some variations between the origins. Hence West African fruit often exhibited heterogeneous maturity, which was less perceptible on Latin American fruit. Differences in cropping method and the structure of the orchards themselves between the origins doubtless played a role in these disparities. Controlling fruit maturity is probably easier on well-maintained industrial orchards than on scattered orchards with little homogeneity.

The ends of the campaigns brought mainly aspects of over-maturity, often accompanied by various fungal developments. These various aspects are particularly important since ripening or triggering of the fruit after receipt are increasingly common, to satisfy customers attracted by "ready-to-eat" fruit. Should the operators not manage the starts and ends of the campaign better, to avoid shipping immature or over-mature fruit? Controlling fruit maturation will definitely be a driver for progress in the international mango trade in the years to come.

Another major point for quality is parasite pressure on the fruit, and especially the recurrent fruit fly problem. For West Africa, the campaign seems to have been less affected in 2020 than in previous years. For Côte d'Ivoire, Mali and Burkina Faso we saw just one interception apiece between April and July. For Senegal, whose export calendar is later, there were two interceptions in July and five in August. This particularly great reduction in interceptions deserves to be highlighted. The orchard treatment campaigns conducted and the availability of treatment products doubtless partly explain this notable improvement. However, it is difficult to imagine that such progress could have been achieved so quickly. We cannot help but think that the organisation of the European inspection services could have been heavily disrupted during the lockdown periods. The truth probably lies between these two factors.

The 2020 campaign was abundant in terms of volumes, nearing the 450 000-tonnes mark for imports into the European Union. The example of the USA, which imports more with a smaller population, leaves the door open to further rises, possibly even reaching toward the 500 000-tonnes mark! ■

Mango
2020 review by origin

by **Pierre Gerbaud**, consultant
pierregerbaud@hotmail.com

Brazil
Inexorable expansion

For the third consecutive year, the tonnages shipped by Brazil to the European market saw an annual rise of between 18 000 and 20 000 tonnes (175 000 tonnes in 2020). This increase indisputably keeps the origin as the number one mango supplier to Europe, maintaining a clear lead over Peru in second place. Brazilian fruit is a constant presence on the European markets, though with two distinct periods in terms of volumes shipped: a first part of the campaign from January to July, with fairly regular but still restrained volumes (50 to 100 containers per week), and a second half corresponding to the Brazilian exports peak, with shipments of 150 containers per week from August to October, and 250 to 300 containers per week for the last two months of the year. This latter part of the campaign makes up more than 60 % of total shipments, and corresponds to the Kent variety harvest, a more occasional offering than the other varieties available from this origin.

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Varietal shift confirmed

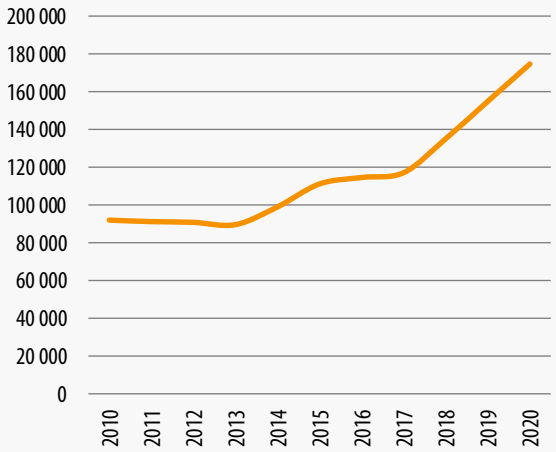
Long based solely on Tommy Atkins, Brazilian exports have undergone a considerable transformation over the past ten years. The most radical change has doubtless been the distinct drop by this variety in the range provided by the origin. Whereas it represented 75 % of shipments in 2010, it now accounts for just 20 to 30 % a decade later. This productive variety, bearing fruit which is frequently coloured, resistant to transport and certain diseases, is being abandoned especially because of its fibrous flesh and lack of flavour. However, it does provide a continual base for Brazilian exports year round, due to the size of the cultivation area but also cropping practices enabling production programming which is more difficult to achieve with other varieties.

This decline of Tommy Atkins has been simultaneously offset by the rise of Palmer. This variety, also productive, bears coloured fruit with non-fibrous flesh and good taste quality. Practically absent from the varietal range ten years ago, it now makes up 30 to 35 % of flows aimed at the European Union, thereby hoisting itself up to be the number one export variety in terms of volumes. Like Tommy Atkins, it is available year round.

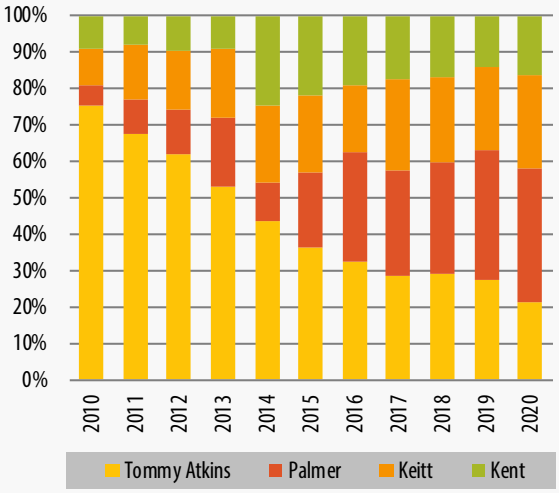
The second variety developed by the Brazilian industry for export is Keitt, growth of which has been less dazzling than for Palmer, but which accounts for 20 to 25 % of export volumes, as opposed to 10 to 15 % in the 2010s.

Finally, Kent, whose campaign, enriched by other varieties from Brazil, represents the high point of the annual supply, accounts for on average just 15 to 18 % of quantities shipped to Europe. It is restricted to what is still a marked seasonal tempo by greater programming difficulties, while its low productivity limits and concentrates its availability. In spite of everything, it remains the ambassador for Brazilian exports, since it remains the most popular variety on the European markets.

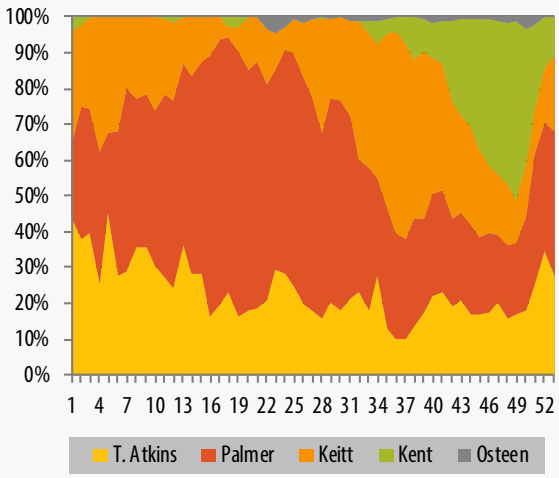
Brazilian mango - European Union - Imports
(in tonnes | source: Pierre Gerbaud)



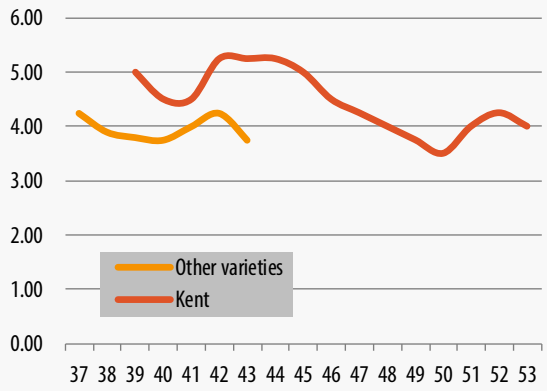
Mango - Brazil - Evolution of export volumes by variety
(sources: Brazil, Pierre Gerbaud)



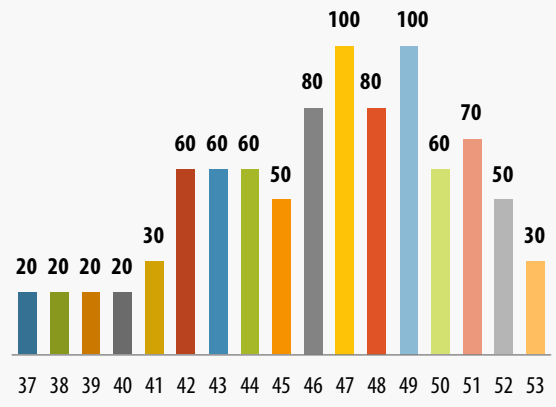
Mango - Brazil - Varietal breakdown of weekly export volumes to Europe in 2020
(sources: Brazil, Pierre Gerbaud)



Brazilian air-freight mango - Weekly average import price on the French market in 2020
(in €/kg | source: Pierre Gerbaud)



Brazilian air-freight mango - Weekly incoming shipments on the French market in 2020 (in tonnes | source: Pierre Gerbaud)



A late air-freight campaign

As in 2019, the first air-freight shipments were placed on the market in week 37 (early September). They comprised Keitt, which sold at around €4.00/kg. Two weeks later, the first Kent shipments began. With a scarcity of this variety, the market offered good conditions, with sale prices often above €5.00/kg in October. Brazilian shipments remained restrained, though the limited demand and qualitative variations of the Brazilian fruit sent prices on a gradual and long-term fall. In November, Brazilian mangos were trading on a footing of €4.00/kg. In December, the market became more mixed, with the start of the Peruvian campaign and the progress made by its shipments. Brazilian mangos saw their prices drop back down to €3.50/kg by mid-December. The invigoration of consumption by the end-of-year festivities enabled prices to partially recover (€4.00-4.25/kg), while the origin was nearing the end of its season. The last batches from Brazil received in the first half of January obtained prices on a downward footing, faced with the surging Peruvian supply.

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A mixed sea-freight campaign

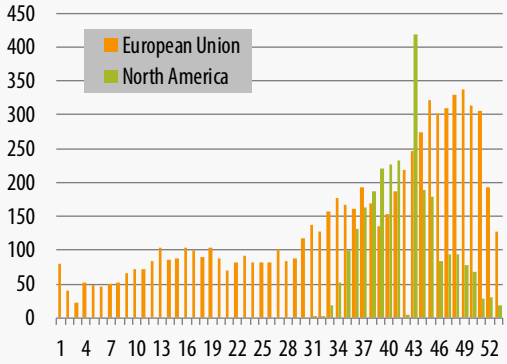
Generally, the beginning of the year is never very favourable for mangos from Brazil or elsewhere. Brazil is nearing the end of its winter campaign, mainly focused on the Kent variety. From December Peruvian shipments are on the rise; this origin enters the market with massive quantities in January. This transition between Brazil and Peru is often a tough time for the former, which is subjected to a Peruvian wave which drives down prices.

This situation continues throughout Q1, when Peru largely dominates the mango supply to the European market. During the European spring, Brazil steps up its shipments upon the transition from the Peruvian campaign to the West African campaign. The handover between these campaigns is characterised by a fall in the Peruvian supply level and a late start by South Africa, leaving a trade window for Brazil, which represents an alternative to the more or less marked breaks in the supply. This period also provides a pick-up in consumption for the Easter holidays, with promotion programmes in the supermarket sector. In the less common scenario of a prolonged Peruvian campaign, Brazilian shipments represent an overload on the market, favouring price decreases. This was the case in 2019.

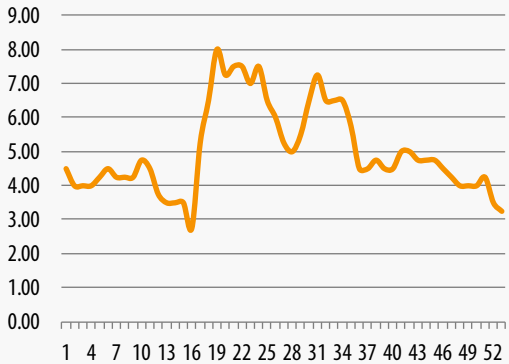
In 2020, the spring and summer period was rather favourable for Brazilian mangos. This origin indeed made up for the drop by the secondary origins, which are nonetheless important in the European supply calendar: West Africa (- 10 000 t), Israel (- 3 700 t), the Dominican Republic (- 1 600 t) and Senegal (- 4 000 t). In total, these nearly 20 000 tonnes correspond to the increase in Brazilian exports to Europe. From April to September, the price of Brazilian mangos maintained a level above €5.00/box, at times reaching over €7.00/box. The situation deteriorated in the autumn with the start of the Kent campaign. The less marked demand and above all disparate quality of Brazilian fruit from October to mid-November brought prices back to around €5.00/box. In late November and December, prices continued to fall, before stabilising at around €4.00/box, because of the supply progressing while demand remained stable, and the first batches arriving from Peru.

Hence Brazil experienced the best moments of its 2020 campaign when it was offsetting the defection of other origins, once again showing its responsiveness, with the support of a well-developed production sector. Furthermore, volumes shipped by this origin remained measured during these periods. Conversely, the end of the year proved more complicated, with a large and concentrated supply facing a fairly quiet market ■

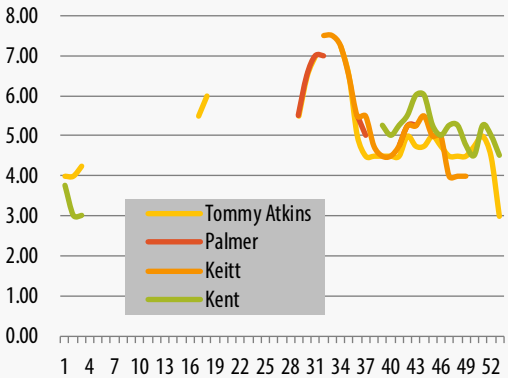
Sea-freight Brazilian mango - Weekly incoming shipments in 2020 in the EU and in North America
(in number of 40-ft containers | source: Pierre Gerbaud)



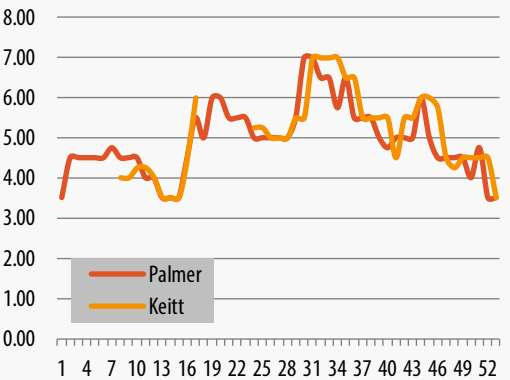
Sea-freight Brazilian Tommy Atkins mango Weekly average import price in 2020 in the Netherlands
(in €/box | source: Pierre Gerbaud)



Sea-freight Brazilian mango - France - Weekly average import price in 2020 for various varieties
(in €/box | source: Pierre Gerbaud)



Sea-freight Brazilian mango - Netherlands - Weekly average import price in 2020 for various varieties
(in €/box | source: Pierre Gerbaud)



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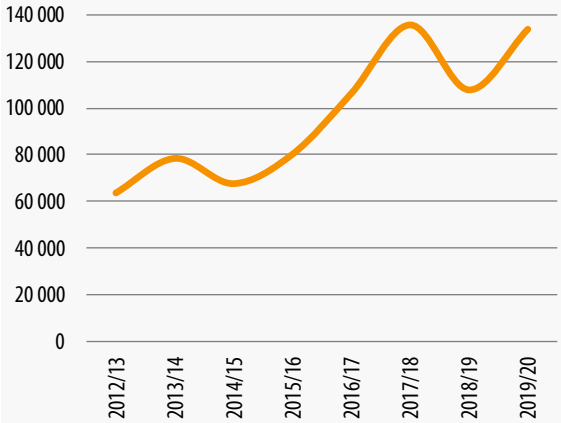
Peru

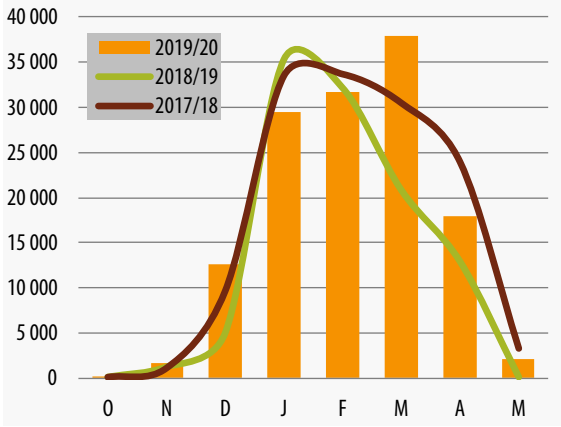
Climbing ever higher!

The 2019-20 campaign marked a new step in Peru's development of its mango exports to the European markets. With exports of nearly 125 000 tonnes between October 2019 and May 2020, Peru regained its relentless expansion on the international mango market, which had reached its zenith during the 2017-18 campaign (135 500 tonnes). The 2018-19 season had marked a downturn of nearly 28 000 tonnes, because of less favourable weather conditions combined with the alternate bearing phenomenon. The entry into production of new orchards did not offset this shortfall. In 2019-20, Peru came back strongly on the European markets, and regained practically all the volumes lost between the 2017-18 and 2018-19 campaigns.

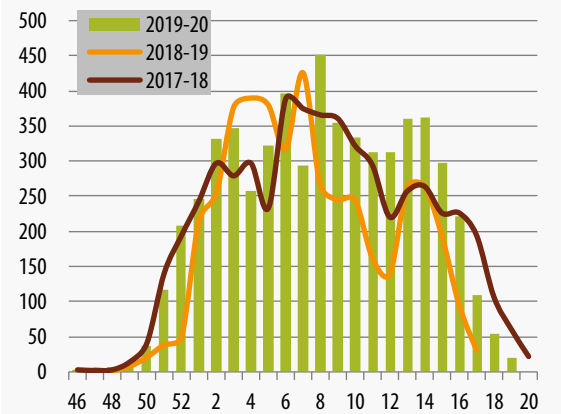
Peruvian mango - European Union - Imports
(in tonnes | source: Eurostat)



Peruvian mango - European Union - Monthly incoming shipments (in tonnes | source: Eurostat)



Peruvian sea-freight mango - Weekly incomping shipments in Europe (in number of containers | source: Pierre Gerbaud)



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A steadier sea-freight campaign

The 2019-20 Peruvian export campaign began in mid-November with unrepresentative volumes, which were received when Brazilian fruit was really dominating the market. They sold on the same price footing as Brazilian fruit, with a slight markdown, as the Peruvian supply primarily comprised small sizes less sought after by the distributors. Despite Brazil's withdrawal in terms of the Kent variety at the beginning of 2020, Peruvian mango rates dipped by practically €1.00/box from the start of the campaign. This fall steepened in January, before prices stabilised at around €4.00/box on average for medium-sized fruit. Small sizes, which dominated the incoming shipments, earned only €2.50 to €3.50/box. The magnitude of the volumes received (300 to 350 boxes/week), in a context of depressed demand after the end-of-year festivities, weighed down heavily on sales of the merchandise.

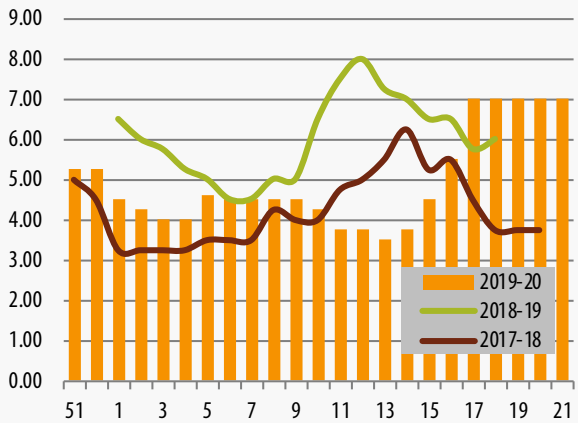
In February, although incoming shipments were still large, sale prices strengthened slightly, returning to around €4.50/box. This improvement can doubtless be attributed to the better sizing balance of the Peruvian supply. The height of the European counter-season was another factor reinvigorating demand.

In March, the disruptions due to the Covid-19 pandemic and the lockdown measures arising from it plunged the market back into a difficult period. Over the first two weeks of lockdown, mango consumption dropped, with consumers preferring to switch to staple products. Thereafter, distributors expanded their range of fruits once more, and in the mango found an opportunity for diversification at decent prices. The still substantial supply from Peru drove prices downward to their lowest level of the campaign, below €4.00/box on average.

In late March-early April, the situation turned around rapidly, with consumption making an unexpected recovery, accelerating in the run-up to the Easter holidays, which even during lockdown saw consumers fall back into their more traditional purchasing behaviours. Peruvian mango rates literally soared, while shipments maintained a particularly high level in the first half of April. In the second half of the month, the rapid decline in Peruvian shipments maintained the price rises, which reached a stable level of €7.00/box until the end of the campaign. In the space of three weeks, the rate went from its rock-bottom level of the campaign to its highest level, with more than a twofold rise. The change in prices from March to April 2020 exhibited the exact opposite of the profile from the same time the previous year, when the breakdown in tonnages and their intensity were different. Traditionally, Peruvian volumes peak in January/February, a time when prices are at their lowest. They tend to rise in March/April when shipments dip. In 2020, incoming Peruvian shipments maintained a high level throughout the campaign (more than 300 boxes/week), with a marked peak in late March/early April. These intensified shipments, right at the peak of the health emergency, caused a drop in prices. There was a bounce-back in consumption after the trade had adapted to the restrictive measures, which made for a distinctly better end of the campaign.

In the end, the extension of the Peruvian campaign, with larger volumes in April than in previous years, initially bore the full brunt of the effects of the health crisis. But it also took advantage of it at the end of the period, due to the recovery in consumption due to the lockdown. On the other hand, Peru filled the relative supply trough during the transition between its campaign and the West African campaign. An earlier start by Côte d'Ivoire would probably have kept the market in a tougher spot. The quantitative growth in Peruvian exports did not lead to better economic results, but only to predominance on the market.

Peruvian sea-freight mango - Weekly average import price on the French market (in €/box | source: Pierre Gerbaud)



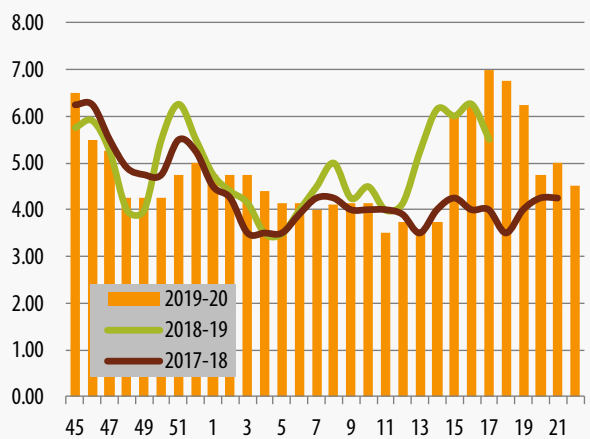
An extended air-freight campaign

The profile of the Peruvian air-freight campaign was similar to that of the sea-freight campaign, with rates rapidly falling from the start in the face of the Brazilian competition, stagnating in December before partially recovering in January due to the halt of the Brazilian Kent campaign. Sale prices then gradually dropped in February, and sank in March when lockdown was implemented. In the second half of March, air-freight mango sales suffered a particularly heavy slowdown, resulting in prices of around €3.50/kg, below cost price for the merchandise. In early April, rates soared to €6.00-€7.00/kg during the Easter holidays. These high prices held up until week 17. They then dipped for the last batches of the campaign down to €4.50/kg, given the increasingly fragile quality in the face of the first Ivorian shipments, which kept better.

The air-freight campaign this year was marked by highly versatile sale prices from one week to another, especially during lockdown periods, when stop-start shipments generated uncertainty. The readability of the market was blurred according to the dramatically reduced capacities to transport the merchandise. Incoming batches traded at high prices for the good sizes, but rapidly deteriorated, especially at the end of the campaign when the fruit quality became more fragile. This price yo-yoing made marketing more complicated, especially since freight rates, and therefore the cost price of the merchandise, were on the increase. In spite of the transport constraints during the last two months of the campaign, Peru managed to ship approximately 14 600 tonnes of fruit by air, i.e. approximately 10 % of its total exports to the European markets.

Whether by sea-freight or air-freight, Peru remains one of the mainstays of the mango supply to the European market, alongside Brazil. Its production and export capacities are not limited to Europe, since it also ships 79 000 tonnes to North America (2019-20), slotting in alongside Mexico, Ecuador and Brazil. Peru exported a total of around 214 600 tonnes to these two main markets. On top of this figure we should add its shipments to other countries (e.g. Japan), though the quantities are smaller ■

Peruvian air-freight Kent mango - Weekly average import price on the French market (in €/kg | source: Pierre Gerbaud)

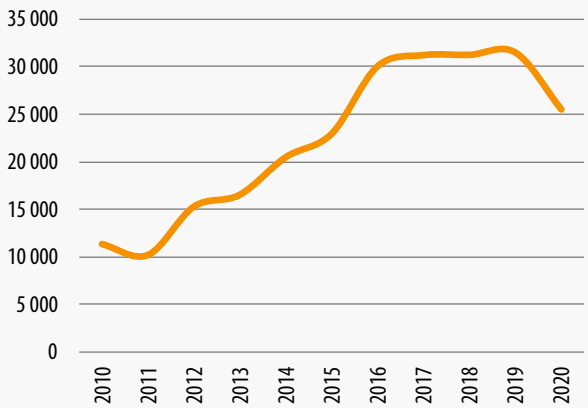


West Africa

Standing in the midst of the storm

Despite their exports to Europe taking a downturn of nearly 10 000 tonnes in 2020 from the previous season, the West African origins (Côte d'Ivoire, Mali, Burkina Faso and Guinea) held up against the competition and the health crisis. In fact their campaigns coincided with the first wave of the Covid-19 pandemic. The emergency adaptation to the protective measures imposed by the authorities of these countries imposed new constraints on operators in the West African mango industry, on top of the pre-existing ones already mentioned in FruiTrop (no.268 in March 2020). Under these particular and exceptional circumstances, the export campaign nonetheless went ahead as lockdown measures spread across Europe, providing little opportunity to read the reaction of the recipient markets. Sales of West African mangos ultimately seem to have gone well, and the loss of volumes was doubtless offset by better economic results. Maybe this is something for the professionals to think about?

Côte d'Ivoire mango - European Union - Imports
(in tonnes | source: Pierre Gerbaud)

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Côte d'Ivoire

A quantitative downturn, but better valuation

Côte d'Ivoire was set for a complex mango export campaign in 2020 due to the progress of the Covid-19 pandemic, and its consequences on the merchandise flow. The lockdown measures taken by both European and African states blurred the supply conditions and the market prospects. For the supply, Ivorian exporters had to quickly adapt to social distancing rules, with the economic capital in go-slow mode. Traffic restrictions in the country's northern production zones reduced the supply rate to the packing stations. The reduced working hours and the number of employees at the stations inevitably had consequences on volumes shipped. As for Europe, the uncertainty over sales also represented a brake on import flows, with scaled-back or cancelled fruit supply programmes. With exports of approximately 25 500 tonnes, the 2020 campaign marked a 20 % drop from previous years. This major West African origin made considerable progress in terms of mango exports in 2016. Indeed they rose to around 30 000 tonnes until 2019, with variable economic results. The 2020 campaign went differently, and more positively than the backdrop of the health crisis would have led us to expect.

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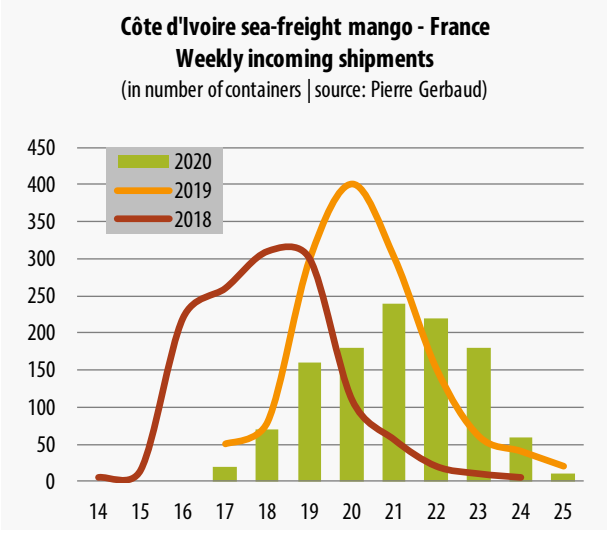
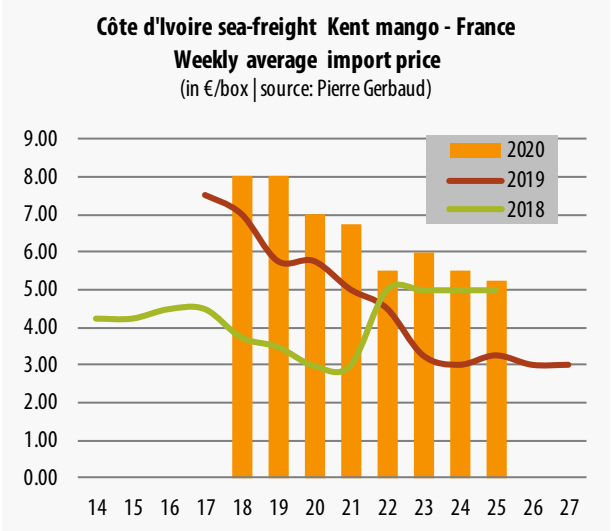
Growers at heart





A compact but lively sea-freight campaign

The Ivorian campaign frequently begins too late to enjoy good market conditions over the Easter holidays, when demand is generally vigorous. The fruit reaches physiological maturity for the export market later. The official opening of the mango harvest by the Ivorian authorities this year was set for 12 April, leading to the produce entering the European market at the end of April. The fruit harvesting and packing times, as well as the transport times, could hardly allow earlier market entry. In a sense, this configuration proved favourable, since it made the supply to the European market scarcer, and therefore provided an opportunity for better sale prices. The fairly rapid withdrawal of Peruvian mangos left the market in a situation of under-supply, all the more marked since demand remained high and seasonal fruit availability remained very moderate.

Hence the first Ivorian batches available in the last week of April sold on the same price footing as the last of the Peruvian batches. The Ivorian supply made rapid progress, reaching its peak in the second half of May, when most export companies were winding down their campaigns. The more abundantly supplied market and less urgent demand led to a gradual drop in prices, though they remained high and well above the previous season's level. In the first half of the campaign, their average rate registered a price differential from 2019 of plus €1.00 to €1.50/box, and plus €2.00 to €2.50/box in the second part of the campaign. At the end of the period, price ranges widened given the more haphazard fruit quality (heterogeneous batch maturity, fungal attacks, etc.). The general trajectory of the market was also less favourable due to the proliferation of supply sources and the increasingly marked consumption switch toward seasonal products. In mid-June, this campaign wound down with the sale of the last Ivorian batches; contrary to all expectations, it was one of the best in recent years.

The particular context of this year, with the lockdown measures due to the first wave of the Covid-19 pandemic, was rather favourable for mango marketing. After the second half of March, a period which marked a nearly complete halt to mango consumption, this fruit won back market share primarily through the supermarket sector, with the catering sector and open-air markets having been closed. The rapid fall in Peruvian shipments from April was also an asset for the Ivorian campaign, as was the decrease in shipments of approximately 5 000 tonnes. The combination of these favourable factors – if they were behind the smoothness of the campaign – should be food for thought for the Ivorian industry, in particular in terms of better adapting export volumes to the market's absorption capacities. Overloading would appear pointless, particularly in the context of a short and condensed season.

Air-freight campaign governed by transport

While the Covid-19 pandemic ultimately had fairly little effect on sea-freight flows, it heavily disrupted air-freight supplies. When the Ivorian export campaign started in the second half of April, the lockdown measures in Europe were being strictly implemented. The closure of many countries' borders and the resulting reduction in travel paralysed a large proportion of air traffic. Most passenger flights were cancelled or minimised, and reserved for repatriation purposes. Logically, air-freight export capacities were scaled back, resulting in a loss of the supply regularity that characterises this mode of transport. To offset this logistical bottleneck, professionals resorted to cargo freight. Yet the fleets of airlines serving West Africa proved insufficient to transport merchandise aimed at the European markets. Hence operators also employed charter/cargo flights to ensure the air-freight mango supply to the European markets.

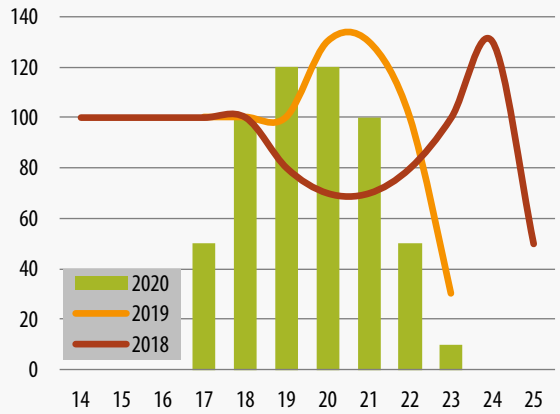
While this solution did feed the markets, there were some drawbacks. The first was the soaring freight rates, which were automatically passed onto fruit sale prices. Then there were the consequences of chartering on the import tempo, and the jerkiness it caused on the markets. At the beginning of the campaign, this aspect did not make itself felt, insofar as the air-freight fruit supply was particularly small, with a considerable fall in Peruvian shipments at the end of the country's campaign. With a small market supply, Ivorian air-freight mango prices approached those of Peruvian mangos. Yet after two weeks on the market, prices dipped distinctly, from more than €6.00/kg on average to €5.00/kg, an apparently satisfactory price in a normal context, though less lucrative due to increased freight rates. In mid-May, Ivorian air-freight Kent rates settled back into their trajectory from the previous campaign, not affected by the pandemic context. Exports wound down from the end of May, with average prices of €4.25/kg.

© Virginie Pugnet

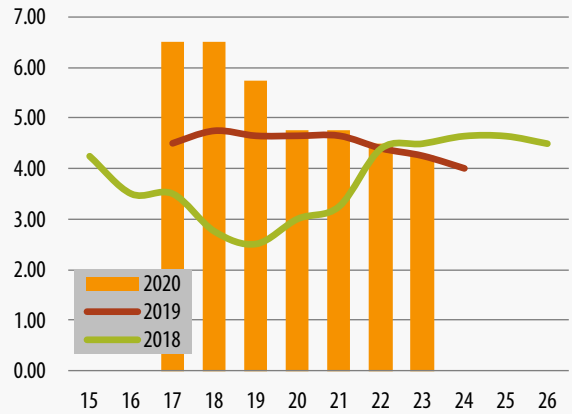
As decent as they were, these average prices conceal large variations in the transactions. The stop-start supply resulted in high sale prices for high-quality incoming batches, though with considerable depreciation at the tail end of batches, often of advanced maturity after some time in storage. After a favourable start, the second part of the campaign proved to be less brilliant. The extremely high fruit retail prices gradually put off a section of consumers, especially since from mid-May the lockdown easing process began. With the reopening of stores, consumption expanded to a greater variety of goods, having been highly focused on food products during the lockdown. The lack of consumer interest in tropical products was also aggravated by the parallel progress of the seasonal fruits supply.

Despite particularly tough conditions and the difficulty getting a read on the market trajectories, Ivorian operators managed to consolidate their trade niche on the European market. Atypical situations sometimes generate positive factors. And the economic results of the 2020 campaign seem satisfactory and positive. We can note that the health constraints of the international situation did not wipe out the industry's export capacities. It certainly did force operators to show great adaptability, and forced volumes downward. In view of the results obtained, was this quantitative downturn not actually advantageous? ■

Côte d'Ivoire air-freight mango - France
Weekly incoming shipments (in tonnes | source: Pierre Gerbaud)



Côte d'Ivoire air-freight mango - France
Weekly average import price (in €/kg | source: Pierre Gerbaud)



Mali

A campaign of perseverance

True, the rise in mango volumes shipped by Malian operators to Europe came to a halt in 2020. However all in all the downturn was limited (700 tonnes), with the origin remaining in place (8 960 tonnes, as opposed to 9 660 tonnes in 2019). Over the last decade, this landlocked country tormented by a fragile geopolitical situation has managed to more than double its mango exports to European markets. These sales are being topped up, like its neighbour Burkina Faso, by shipments on the regional market and progress in processing, especially in the dried fruits sector.

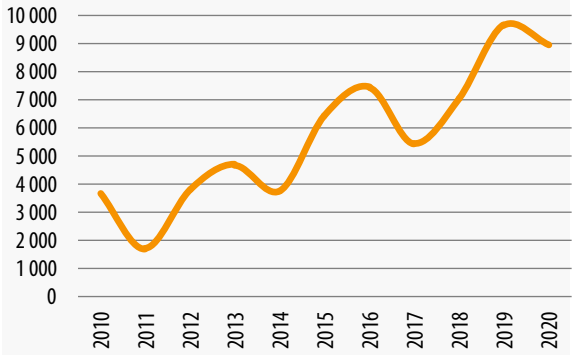
A two-part air-freight campaign

As for the other West African countries, air-freight exports this year were governed by air freight availability, and limited by the impacts of the worldwide health crisis. However, operators were able to ship some volumes from early April, with Valencia selling steadily at around €4.50/kg for approximately four weeks. After a brief hiatus in late April/early May, shipments resumed with Kent, which traded on the same price footing, but quickly became exposed to fierce competition from Ivorian and then Mexican fruit. With Ivorian shipments on the wane in late May/early June, Malian mangos regained more favourable market conditions. They also represented an alternative to Mexican fruit, often available at higher prices.

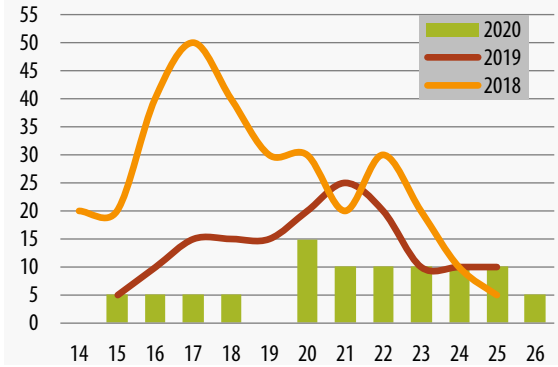
A steady sea-freight campaign

Sea-freight mangos started trading in mid-May, with the campaign continuing until mid-July. Hence they avoided the shipments peak from Côte d'Ivoire, thereby limiting massive frontal competition. From mid-May to mid-June, Malian fruit was aimed mainly at North European markets: Belgium and the Netherlands, and their re-shipment markets (Germany, Eastern Europe and Scandinavia). Feeding these multiple markets helped the sales fluidity, and kept prices higher overall than those registered the previous season. Malian mango rates nonetheless dropped until mid-June due to the increasing supply and the weight of the merchandise from Côte d'Ivoire still available on the European market. From mid-June to mid-July, the rate stabilised at around €5.50/box. The French market opened up to Malian fruit, which bit by bit replaced Ivorian produce, whose campaign was winding down earlier. Malian produce also benefitted from the later arrival of the first batches from Senegal, especially since the overall supply to the European market comprised more Keitt than Kent, since Keitt is less popular among consumers. With a slight quantitative downturn, Mali recorded a fairly smooth campaign, and maintained its position among the West African suppliers behind Côte d'Ivoire, without access to the latter's logistical advantages ■

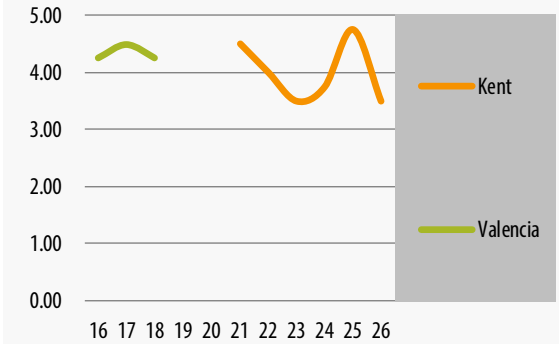
Malian mango - European Union - Imports
(in tonnes | source: Pierre Gerbaud)



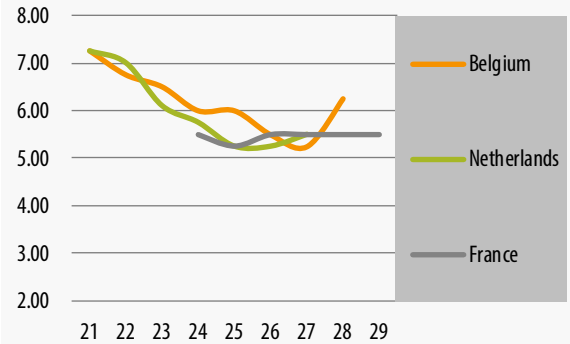
Malian air-freight mango - Weekly incoming shipments on the French market (in tonnes | source: Pierre Gerbaud)



Malian air-freight mango - Weekly average import price on the French market in 2020
(in €/kg | source: Pierre Gerbaud)



Malian sea-freight mango
Weekly average import price in Europe in 2020
(in €/kg | source: Pierre Gerbaud)



Burkina Faso

Relative stability in the crisis

With nearly 5 300 tonnes of mangos exported to the European market in 2020, Burkina Faso registered a quantitative downturn of less than 350 tonnes on the previous campaign. As for Côte d'Ivoire and Mali, the Burkinese export campaign coincided with the lockdown period. It has to be recognised that the Covid crisis had little effect on the Burkinese campaign, at least in terms of volumes. Of the origin's total exports, air-freight shipments can be estimated at approximately 300 tonnes, with the rest shipped by sea-freight. A few tonnes also seem to have been transported by road-freight, though these remain marginal and unrepresentative.

The Burkinese mango industry is continuing its commercial diversification based on three mainstays: intercontinental exports, supplying the regional markets and finally the processing sector. Hence on the fresh market, on top of the 5 300 tonnes shipped to Europe, we should add approximately 7 500 tonnes aimed at the regional markets (Ghana, Niger and Côte d'Ivoire). As for the domestic market, it would seem to have taken in 3 800 tonnes, not counting volumes involved in informal trading. The processing sector logically accounted for much larger quantities (of fresh fruit), providing decent value for the country's production as a whole. Its share can be estimated at around 85 000 tonnes of fresh fruit for processing into purée and fruit juices, but also into dried fruit. Sales of dried mangos are reported at around 2 150 tonnes of finished product, nearly all of which was exported to Europe (96 %), with the remainder distributed on the regional and local markets. Volumes of fresh fruit involved in intercontinental trade remain limited, although they are far from negligible, given the economic returns that they generate. Yet the Burkinese mango industry cannot focus too heavily on this sector. The value earned from processed products, and more particularly dried mango, has an equivalent turnover to the entire fresh fruit trade.

The Burkinese air-freight campaign began in the second half of March, when the lockdown measures were taking effect in several European countries. Freight capacities were considerably reduced at this time, due to the cancellation of the majority of flights by airlines serving the country. The division of the merchandise between the various European countries and their irregular shipments made it impossible to track sales accurately. Some Amélie imports in mid-April onto the French market illustrated the good sales conditions, with prices in excess of €4.00/kg. These prices were particularly high for this variety, corresponding to a dwindling supply at this time. This irregular flow rapidly wound down in favour of Kent and Valencia, which then sold at high prices too, although on a downward footing from early May. During May, Ethiopian Airlines provided an occasional service to Bobo-Dioulasso Airport, with four flights to transport mangos to the international markets.

Sea-freight shipments were distributed to the usual markets, though it was impossible to record sale prices regularly. These shipments were 70 % packed into May and June. April marked the start of the campaign, which wound down in July, with distinctly smaller tonnages. We will be able to refer to the graph of prices recorded for Malian mangos shipped at the same time, which should be fairly similar for Burkinese fruit.

As for all origins whose campaign began in March or April, the disruptions generated by the health crisis hindered shipment organisation. First of all, in the exporter countries, which had to adapt to the social distancing measures and curfews adopted by the governments. And then in the logistical aspects, and more particularly in the air-freight sector, heavily handicapped by border closures. Finally, on the recipient markets, where lockdown measures often caused a considerable drop in store footfall. Under these specific conditions, we can nonetheless observe that countries such as Burkina Faso maintained their place on the international mango market ■

Sources: Pierre Gerbaud and APEMAB

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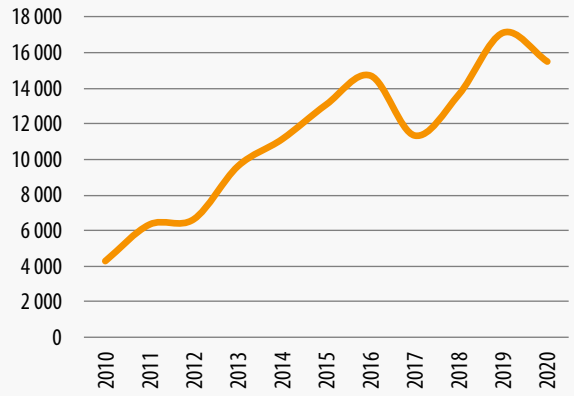
Dominican Republic

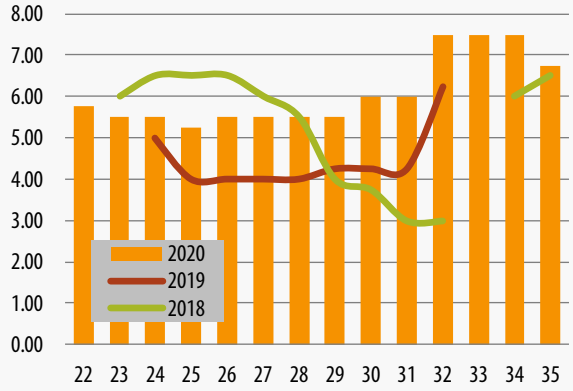
An extended campaign

Dominican mango exports amounted to 15 500 tonnes from May to early September 2020, stepping up the origin's presence on European markets. In 2019, it exported more than 17 000 tonnes – a quantitative record to Europe – during a more condensed period from June to August. While volumes shipped were distinctly bigger than the previous year (13 700 t in 2018), sales proved particularly difficult from the start because of qualitative problems. Furthermore, the difficult general market conditions also generally hindered the campaign.

Dominican mango - European Union - Imports
(in tonnes | source: Pierre Gerbaud)



Dominican Republic mango
Weekly average import price in France
(in €/box | source: Pierre Gerbaud)



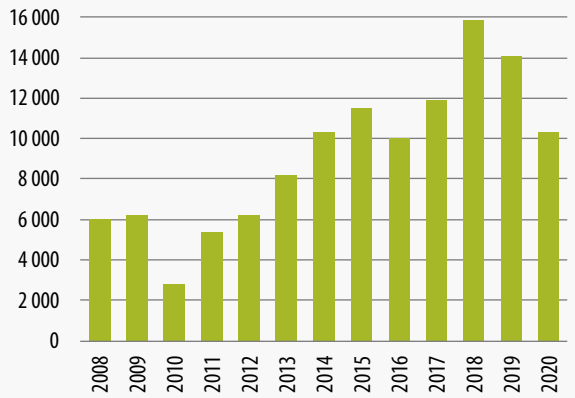
The 2020 campaign seems to have enjoyed more favourable conditions. The first shipments were received in Europe in early June, i.e. two weeks before the previous season. At this time the mango market saw a downward shift because of the progress made by seasonal fruits, and a more heterogeneous mango supply in terms of origin, variety and quality. Nonetheless, sale prices stabilised at between €5.50 and €6.00/box, which though down on the €7.00-€8.00/box charged the previous month, were high nonetheless. In July, the overall supply dwindled and balanced against demand, itself on the slide. This market balance, or even slight under-supply, benefitted Dominican produce, whose sales prices strengthened and rose, even in the second half of the month. However, this good price trend was partly wiped out by the development of quality problems. Hence it was good-quality, well-preserved mangos which enjoyed the price increase, while fruit of more fragile quality sold at lower prices. In August, the situation improved further due to the reduction in the overall supply. The effective end of the Malian campaign and the temporary suspension of Senegalese shipments came at the same time as the winding-down of the Dominican campaign, still partially offset by the surges from Israel and Brazil. Hence the Dominican campaign had a decent ending for high-quality fruit, with prices exceeding the €7.00/box threshold. The staggering and scaling back of exports doubtless enabled Dominican operators to achieve a better campaign in the changeable supply context at this time of year ■

Senegal

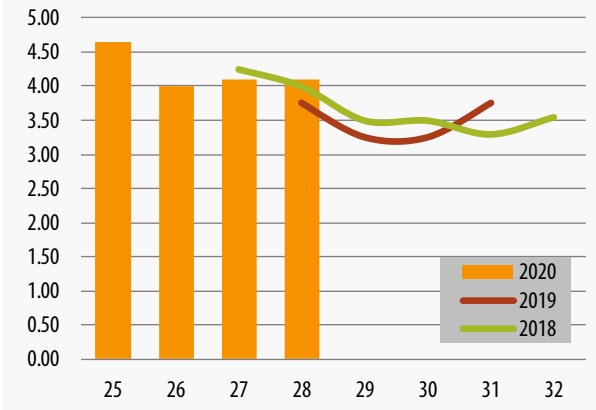
A bizarre season!

For the past few years, Senegalese exports to Europe maintained an upward curve. Following this exponential growth, for the second consecutive year there was a clear fall in tempo, sliding back to the export levels of 2014 or 2016. This origin, later than the West African countries (Côte d'Ivoire, Mali, Burkina Faso), is positioned in the European summer period, which is certainly not the most dynamic in terms of demand. The summer holidays scatter consumption according to flows of holidaymakers, and are also characterised by the peak consumption of European production. However, mango consumption does not stop in summer, and Senegal has a trading window between the end of the West African campaigns and the later Israeli campaign. It is one of the only origins, at this time of year, able to provide Kent. Competition from the Dominican Republic and Puerto Rico, present simultaneously on the market, primarily comprise Keitt. For 2020, Senegalese export forecasts already appear to be down on the good years. Less favourable weather conditions during fruit bearing in the orchards, as well as a perhaps more marked alternate bearing phenomenon, were reported before the start of the campaign. The predicted shortfall was 20 % to 30 %.

Mango from Senegal
Evolution of European imports
(in tonnes | source: Eurostat)

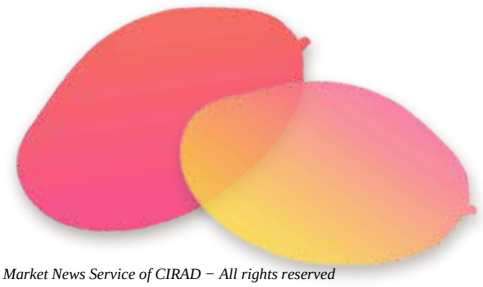


Senegal air-freight mango
Weekly average import price in France
(in €/kg | source: Pierre Gerbaud)



A rapid and early air-freight campaign

While the last two campaigns (2018 and 2019) were fairly late and concentrated on July, the 2020 export calendar was completely different. Like the 2017 campaign, air-freight exports from Senegal were distinctly earlier. They progressed from mid-June, spilling over into the first half of July. Given the air-freight shipping difficulties due to the lack of freight capacity, the competition from Mexican produce already available and more fragile fruit quality, the flows came to rapid halt. After being marketed at around €4.50/kg, Senegalese mango rates stabilised at around €4.00/kg. This did not ensure sufficient profitability given the increase in freight and transit prices. The limits on air-freight shipments contributed to a dip in overall volumes shipped, but to a moderate degree. Senegal's export focus was instead on sea logistics.

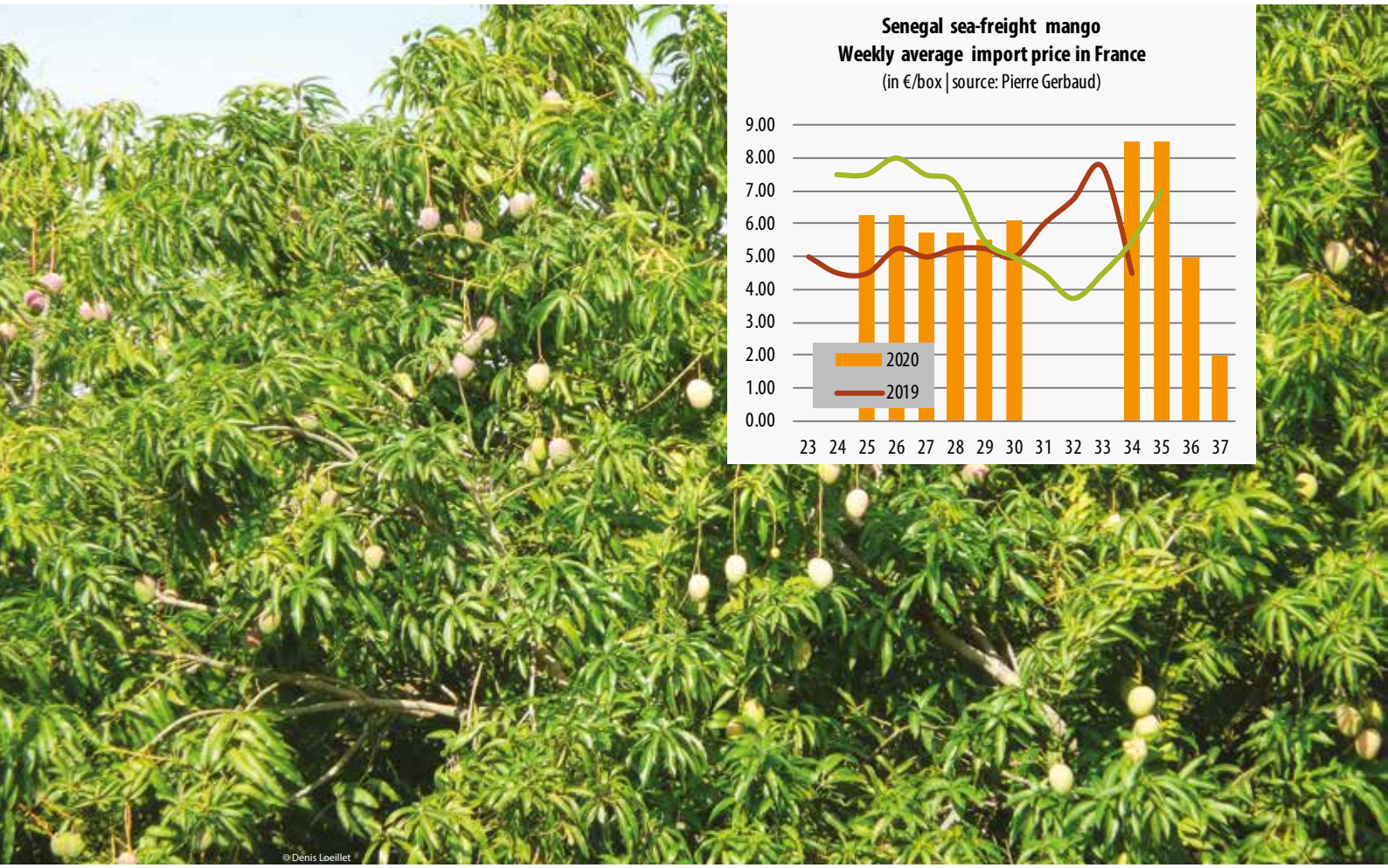


A campaign split in two

The sea-freight campaign started later this year, in the second half of June. It began two weeks later in 2019. One third of the 10 300 tonnes of exports in 2020 came in June, with the remaining two thirds shipped in July. The first sales were made at a price of approximately €6.00/box, dipping to around €5.50/box, and then stabilising until the end of July. Senegal enjoyed satisfactory market conditions because of its own supply limitation, but also restrained shipments from competing origins (Puerto Rico, Dominican Republic). Senegal had an additional asset insofar as it was the only Kent supplier, slipping in between the end of the Malian campaign and the start of the Israeli campaign.

In the second half of July, the market saw a period of relative under-supply which helped rates strengthen. Yet paradoxically, it was also at this time that supply levels exhibited more fragile quality. The market exhibited a dichotomy, with high prices for good quality fruit, but in parallel sales at low prices for deteriorated fruit. At this point in the campaign, Senegalese shipments collapsed. Fruit from later blooms initially had to ensure the continuity of the shipments, but they were practically one month late, arriving in late August. It was tough for the supply to resume after such a break, after purchasers had switched to other origins. Nonetheless, Senegal remained the sole Kent supplier. Shipments proved to be of very average quality, explaining the rapid price drop registered at the end of the campaign. Fortunately, Senegalese shipments remained marginal at this time, limiting the collapse in economic results.

The interruption to Senegal's supply dragged down the economic results for the campaign, despite the positive trend in the first part of the season. Resuming a supply is always a tricky matter, since it is difficult to revitalise marketing operations, with purchasers switching to longer-lasting origins. In addition, the Senegalese campaigns often come to a complicated end due to the qualitative deterioration of the fruit. The fruit is exposed to frequent rainfall during harvesting, favouring fungal growth. After two downward campaigns, with 2020 affected by the health crisis, Senegal should in future return to export levels more in line with its recent trajectory, because of the genuine potential of its mango industry ■



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Mexico

Ever bigger volumes

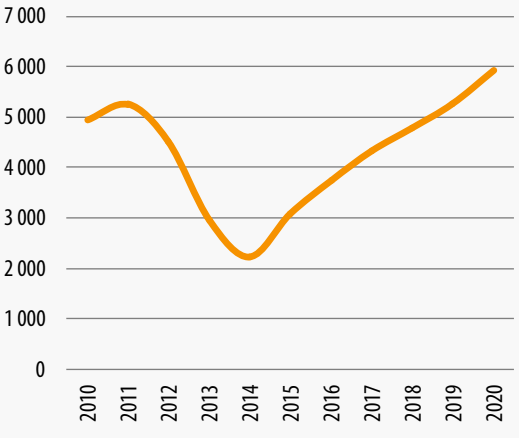
A summer supply origin, Mexico regained its mango export level from the 2010s. After a drop in shipments to Europe, reaching its lowest point in 2014, Mexico has gradually rejoined the ranks of supplier countries, increasing its shipments year on year. In 2019, it regained its level from 2011 (around 2 250 tonnes per year). In 2020, it broke this ceiling, with nearly 6 000 tonnes. While the figures registered for the European market might seem well below those of other origins, they illustrate the diversification of Mexico's target markets. This country is the world number one exporter country. Yet as we might expect, its flows are mainly aimed at the closer and more traditional North American markets, providing more than 60 % of total mango imports. The 6 000 tonnes shipped to Europe are merely a drop in the ocean compared to the 400 000 tonnes shipped to the USA and Canada. The Mexican calendar extends from January to October, and its role is supposedly proportionally comparable to that played by Brazil in the European supply. Its European season is shorter, extending from mid-May to mid-August, doubtless for two main reasons. On the one hand, the handover between the West African and Israeli campaigns leaves a relatively favourable window, and on the other hand, this period corresponds to the Kent production season.

Apart from a few sea container shipments, Mexican exports are more focused on air transport. The 2020 campaign began in the second half of May, with restrained volumes slowly rising to their peak in mid-July. This longer start can be explained, as for the other origins, by the dwindling air-freight capacities due to the health crisis. The increase in freight rates also slowed down the start of this campaign in quantitative terms.

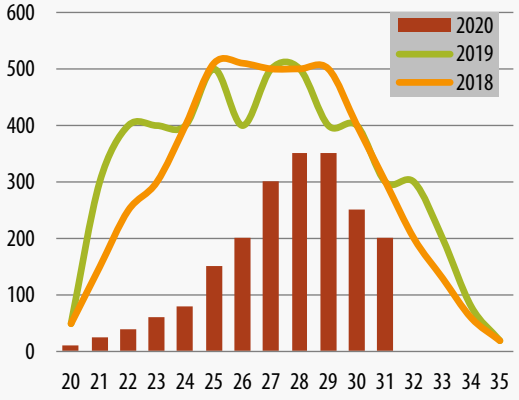
After some Haden shipments to begin the campaign, shipments focused on Kent, which obtained high prices for the first batches available. They dipped slightly at the end of the month due to ongoing lively competition from West African fruit, still available and often charging lower prices. In June, the quality of Mexican fruit decreased again, with prices following a constant downward trend, going in the space of a few weeks from €5.50-€6.00/kg to €4.50/kg. The situation deteriorated further in July due to the often mediocre quality. While fruit of satisfactory quality sold at around €4.00-€4.50/kg, numerous batches of advanced maturity or affected by fungal attacks sold at lower prices, with some on commission or at clearance prices. In early August, prices strengthened in spite of ongoing disparate quality, because of a more marked under-supply (€5.00-€5.50/kg). The campaign wound down earlier than in previous years, when it continued through practically the whole of August.

The quantitative rise in Mexican imports was not accompanied by clear success. The middling fruit quality and its short lifetime dented the renown generally enjoyed by fruit from this origin ■

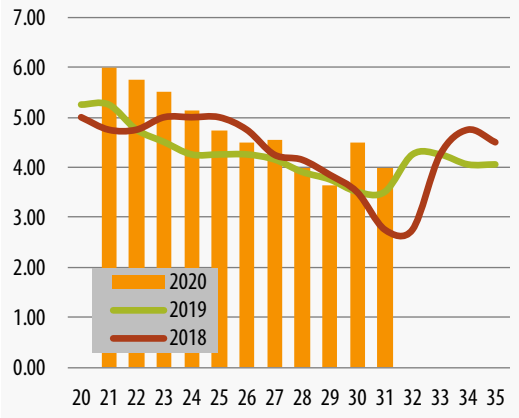
Mexican mango - European Union - Imports
(in tonnes | source: Pierre Gerbaud)



Mexican mango
Weekly incoming shipments in Europe
(in tonnes | source: Pierre Gerbaud)



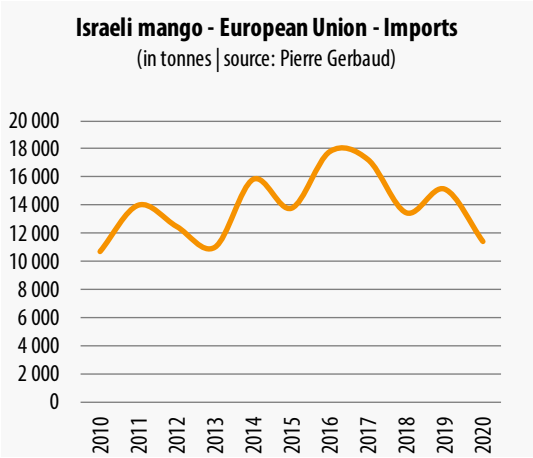
Mexican mango - Weekly average import price on the French market (in €/kg | source: Pierre Gerbaud)



Israel

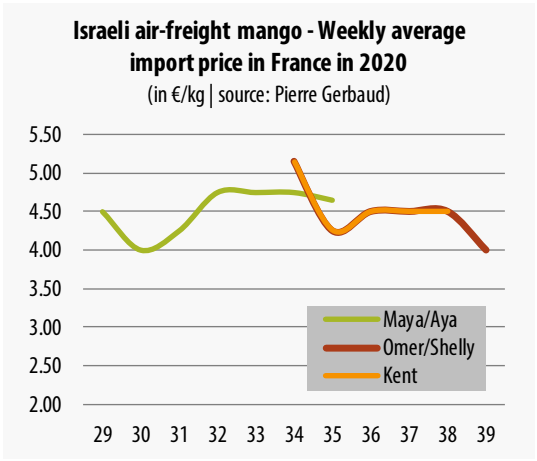
A smaller campaign

Israeli mango exports to the European market reached their maximum in 2016 and 2017. Since then, there has been a downward trend, although the 2019 campaign regained a bit of ground. In 2020, the Israeli supply registered another downturn of nearly 4 000 tonnes from the previous campaign.



A steady air-freight campaign

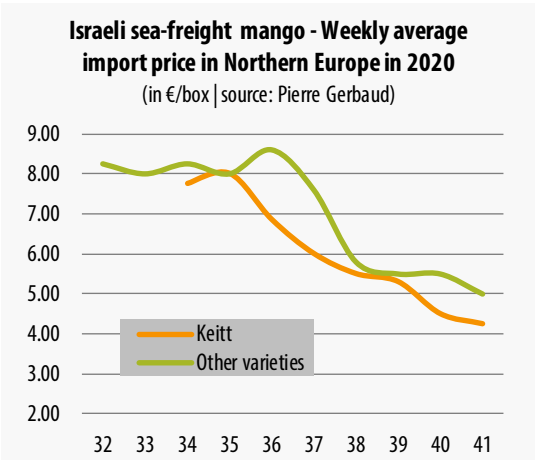
Israeli mangos began trading in late July, with the first batches of air-freight Aya and then Maya. These varieties remained available until early September. Their marketing was hampered by the presence of Kent from Senegal and Mexico, more popular among consumers. Sale prices settled at around €4.00/kg. Yet rates quickly strengthened to between €4.50 and €5.00/kg, insofar as the competing supply was decreasing, and frequently exhibited fragile quality and unreliable keeping. This situation lasted until the second half of August, when Kent took over in Israeli shipments. Kent sales were steady, at an average price of €4.50/kg. Kent volumes ran out of steam in the second part of September, giving way to a few shipments of Omer and Shelly for a fortnight. These products sold on a downward footing (€4.00/kg), and ended this origin's air-freight campaign.

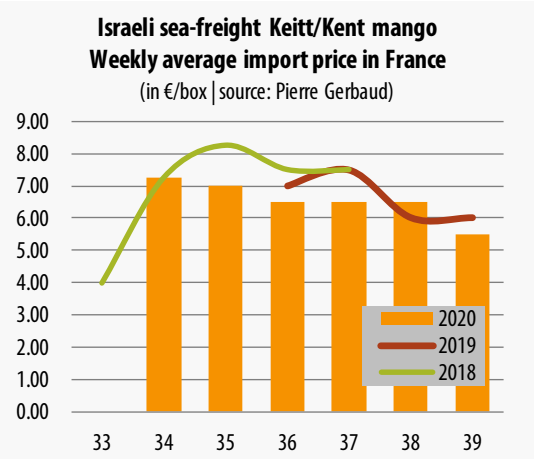


A good sea-freight campaign

The first sea-freight shipments were made in the first or second week of August, when the market supply level was low. The Senegalese campaign was at a standstill, while the Dominican campaign was on the wane. With moderate quantities, Israeli products obtained high prices of between €7.50 and €8.00/box on average. The supply above all comprised Omer and Kasturi. August also brought the most intense flow. At the end of the month, Keitt became predominant in Israeli shipments. They continued to be supplied until mid-October, though with a distinct decrease in volumes. Their prices dipped gradually to reach an initial plateau of around €6.00-€7.00/box in September, before ending up at €4.00-€5.00/box for the final batches sold in the first half of October. Kent shipments were apparently smaller than in previous years, and concentrated in September. They earned steady value, on a footing of €6.50/box. From mid-September, market conditions became less favourable, with the progress made by Brazil and Spain.

Ultimately, the Israeli campaign profile was fairly similar to the 2019 campaign, though with smaller quantities. The origin consolidated its position as a major supply source to the European market during the summer period, and during the handover to the autumn supplier countries, mainly Spain, another Mediterranean origin ■





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Spain

A balanced campaign

As has been the case for several years, forecasts for the Spanish campaign issued at the beginning of summer are often overestimated in terms of sales. Not that they are incorrect - these forecasts reflect the scale of the blooms and fruit bearing at what is still a long time from the harvest. Their accuracy varies according to the year. They were similar for the past two campaigns (2019 and 2020), with high estimates. Yet the recurrent high temperatures in July and August substantially cut down the harvests. This heat affects mango fruit bearing, in particular causing high fruit droppage in its growth phase. This phenomenon explains the stagnation in Spanish shipments, in spite of expanding cultivation areas. Hence after a particularly abundant 2018 campaign, with exports of around 32 000 tonnes, the following two campaigns levelled out at around 22 000 tonnes.

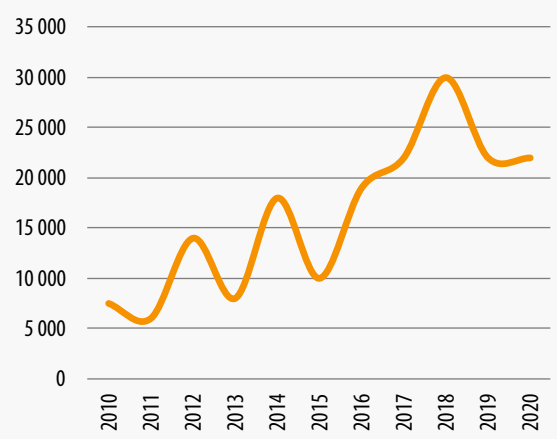
Overall, the 2020 campaign enjoyed good conditions, with mild competition from the two other origins supplying the market at this time of year: Brazil and Israel. The fairly steep decrease in Israeli shipments in October and the gradual start of the Brazilian Kent campaign maintained a favourable trading window for Spanish mangos.


© Catherine Sanchez

The campaign began in late August-early September, with moderate volumes, one week later than the previous season. The supply made gradual progress, reaching cruising speed in the second half of September for Osteen, which formed the bulk of the Spanish potential. The shipments were topped up by a few Tommy Atkins batches as August passed into September. These finely coloured products earned slightly lower prices than those registered for Osteen, though high nonetheless. Osteen trading proved to be difficult in the first half of September, despite rather favourable market conditions. The frequent lack of fruit coloration and maturity partly explained this tough start to the campaign. From mid-September, the increase in volumes weighed down on the market, sending prices into a limited downward trend. The qualitative disparity of incoming batches resulted in widening price ranges, with differences of as much as €3.00/box.

In the first half of October, the gradual disappearance of Israeli produce left Spanish produce with a larger trading window, especially since the origin was reaching its campaign peak. This situation consolidated Osteen sales in the face of Brazilian competition that was livelier, but undermined by Kent shipments of variable quality. Osteen rates strengthened as the quantities entering the market gradually decreased. The final batches were sold in early November, and were replaced for the next three weeks by Keitt, selling steadily at around €8.00/box.

Mango - Spain - Evolution of exports
(estimates in tonnes | source: Pierre Gerbaud)



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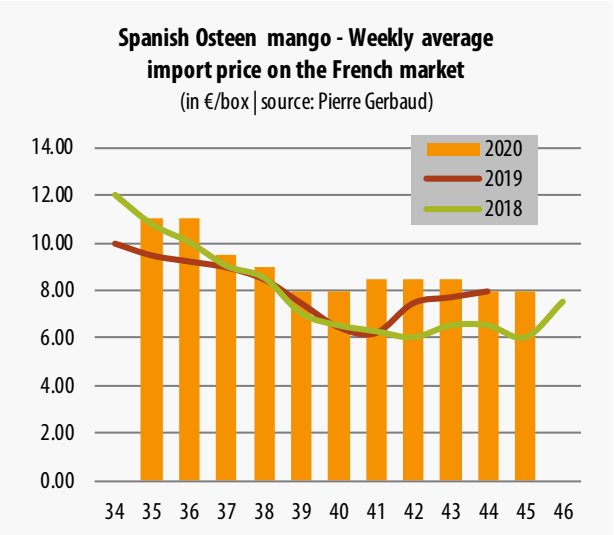

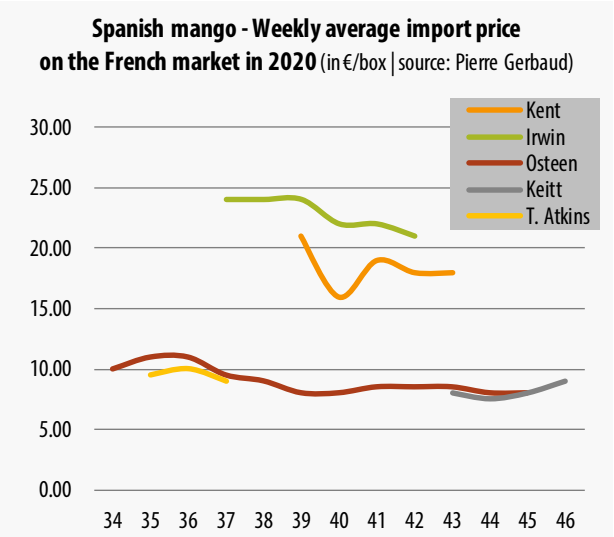

The Irwin and Kent varieties from Spain supplied the market on a more modest scale. This is the case in particular for Irwin, which is present on the market from September to mid-October, and sold mainly on the wholesale markets to stores specialising in top-end products. This variety was scarcer than in previous years, doubtless suffering more heavily from the August heatwaves in southern Spain. It obtained high prices throughout the season, despite a dip in the middle of the period. Meanwhile, the Kent supply was more abundant, with the campaign starting in the second half of September. The increase in volumes shipped, as well as the quality disparity in merchandise, meant distinctly wider price ranges. Batches of higher quality matched the air-freight fruit from Brazil, the supply of which was on the rise (€4.50-€5.00/kg). Meanwhile, fruit of more standard quality was trading from €3.00/kg. On this subject, we can note the adoption by several brands of a new box format, of the same type as used by Peruvian and Brazilian exporters (folding box of approximately 6 to 6.5 kg). At the height of the Kent campaign, good-quality batches traded at abnormally low prices (€3.50/kg), pointing to the development of intense competition between Spanish exporters.

In conclusion, with more restrained volumes of Osteen, though slightly bigger Kent and Keitt volumes, the 2020 Spanish campaign was similar to the previous one in terms of overall tonnage. Conversely, the economic results seem to be better, with the origin having enjoyed favourable market conditions, with less marked competition from Israel and Brazil. So Spain is consolidating its place as a market supplier in the autumn, with its specific variety Osteen now well received by consumers ■

Manguo

European market month by month in 2020

Predictability really put to the test...

by **Pierre Gerbaud**, consultant
pierregerbaud@hotmail.com

Early 2020: a classic

Following the end-of-year festivities, demand shrank, leading to a fall in rates while volumes were on an upward trend. The withdrawal of Brazil was very readily offset by increasing shipments from Peru, which was entering its peak production period. In mid-January, the European mango market took a downturn, given on the one hand the rise in shipments from Peru, and on the other hand, the highly moderate demand. In late January/early February, the market became very swollen because of the massive volumes shipped by Peru, well in excess of the demand level from the European markets. Peru was also shipping large quantities to the North American markets (at a higher tempo than at the same period in 2019). In late February, large sizes came to dominate the Peruvian supply, which affected sale prices. Small sizes were earning value better than larger sizes.

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March: a twin storm!

The first was purely meteorological in nature. Delays to Peruvian shipments, because of stormy conditions in the Atlantic, led to deferrals, thereby magnifying incoming shipments. Furthermore, fruit quality was weakened by fungal growth caused by the rainfall in the production zones.

The second relates to a phenomenon with which we are still struggling to come to terms: the Covid-19 pandemic. Without having any major direct consequences in March in the field of fruits and vegetables, it did however gradually instil a harmful, oppressive atmosphere in the sector's trade relationships. The travel restrictions and closure of numerous structures (public places, catering, academic establishments, etc.) drove the wait-and-see attitude of the markets. In late March, the European mango market clearly found itself at the heart of the storm because of the pan-

demic. The implementation of lockdown in a good many European Union countries was heavily disrupting the market conditions. While the basic fruit and vegetables range (and those with a longer shelf life) enjoyed massive, and at times irrational, sales, many tropical fruits were abandoned by distributors and consumers. This shift was aggravated for the mango, with shipments remaining very high out of Peru, but also out of Brazil. The climate of uncertainty which characterised the European markets led to hesitant decision-making by the operators. The massive Peruvian volumes still available in early April, from both incoming shipments and accumulated stocks, were selling very slowly. The addition of Brazilian shipments made the situation even more complicated. In the face of this abundance, demand remained at rock-bottom, with the mango not a popular product during this crisis period. While other tropical products seemed to enjoy a little renewed interest from distributors, this was not the case for the mango. The lack of market fluidity logically led to a qualitative deterioration of the stored fruit, which in turn generated poor sales.

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Stirring over Easter

In mid-April, renewed interest in the mango began primarily with the supermarket sector circuits. This improvement was accompanied by a big reduction in Peruvian shipments. However, the situation remained precarious, with on the one hand restrictions on consumers' movements, which considerably handicapped sales; and on the other hand the uncertainty of future supply levels. The phenomenon was even more acute for air-freight mangos, due to heavily scaled-back and highly irregular air links.

Turnaround in late April

The rapid fall in Peruvian volumes, even when partially offset by Brazilian shipments, returned the market to a scenario of under-supply. Meanwhile, demand was characterised by renewed interest in the product. This turnaround was probably due to lockdown easing on certain markets. Furthermore, the end of the Peruvian campaign was not offset by Brazilian imports, or the start of the West African campaign. In late May, the market could indeed be deemed to be balanced.

A classic summer slowdown

In mid-June, the European mango market was characterised by a classic general slowdown in demand, in the face of the strong headway made by seasonal fruits. The supermarket shelf space dedicated to mangos decreased with the end of the European counter-season. The West African origins campaign (Côte d'Ivoire, Mali) was winding down. The supply was now based on Brazil, the Dominican Republic and Guatemala, pending the start of shipments from Senegal. In mid-July, the European mango market was clearly settling into its summer tempo, characterised by slower demand. Supply levels remained moderate, and provided by Brazil, the Dominican Republic, Senegal and Puerto Rico. The curtailed Senegalese campaign created a shortage of Kent.

In August, the European market was buoyant, since demand was stable and the overall mango supply limited. Rates were strengthening for all available fruit, even for batches deemed to be unreliable in terms of maturity. Brazil and Israel were the origins on which the operators were depending to receive high-quality fruit.

September: change in the supply profile

In September, the market was approaching a new phase, with on the one hand the more or less rapid disappearance of the summer origins (Dominican Republic, Senegal, Puerto Rico and Israel), and on the other hand Brazilian shipments coming to the fore. The increase in and accumulation of Brazilian shipments over several weeks caused a sales slowdown, in a context of stable and quiet demand. Brazil shared its exports evenly between the North American and European markets, while exporters had hitherto favoured the European market.

Second lockdown in the autumn: hard to read

In October, the mango market was sluggish, with demand remaining limited. The supply was provided mainly by Brazil, and topped up by Spain. The absence of any real domination by an origin/variety pairing made market conditions hard to read, especially since the quality of the products available was variable.

In late October, the atmosphere on the European market was oppressive, across all products, due in particular to the more or less severe lockdown measures in very many European Union countries. The distribution circuits seemed to be slowing down their supply, in anticipation of a dip in store footfall. There was a wait-and-see atmosphere, with the return of lockdown putting regular commercial habits on hold.

In November, the European market was gradually swollen by high-tempo regular shipments from Brazil. The scaling back of Brazilian shipments to the North American markets in the face of the rising competition from Ecuador meant that the bulk of volumes were transferred to the European markets. The Brazilian supply still mainly comprised large sizes, harder to sell due to lower demand, especially in the supermarket sector. So these products underwent a markdown. Sales were slow, with the trade focusing its communication on more traditional products (e.g. easy peelers).

December: the dilemma … to be or not to be?

In mid-December, the European mango market was under fire. Availability was high, given the substantial incoming shipments from Brazil. The wait-and-see, often moderate demand from the distributors, resulting from the stepped-up health measures in several European countries, did nothing to help the fluidity of the merchandise. Yet at the same time, there was an opposing trend perceptible, with demand temporarily stronger over the Christmas holidays. These contradictory movements went hand-in-hand, and can be illustrated by the sometimes considerable price differences. This market configuration seemed to be valid for both sea-freight and air-freight mangos.

In late December, despite sales picking up slightly over the Christmas holidays, the sea-freight mango market remained swollen. The accumulation over the last few weeks of big shipments from Brazil in a context of moderate demand led to stocks forming. This saturation was accentuated by the start of the Peruvian campaign and a consumer withdrawal in the face of a resurgence in the Covid-19 pandemic ■


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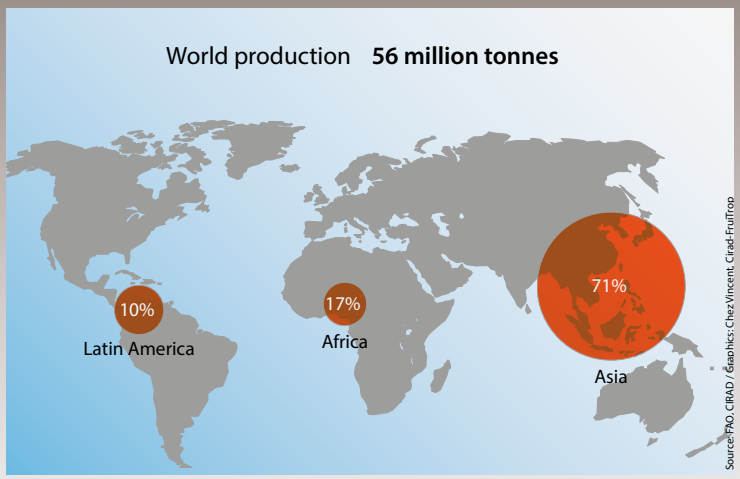
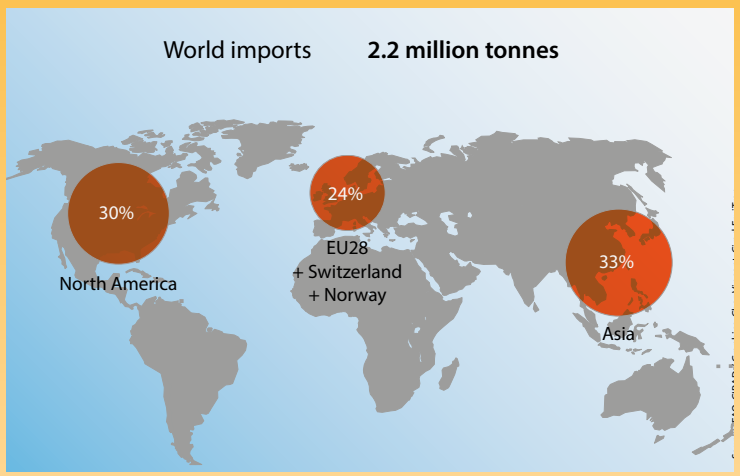
MANGO - Production (2019)



Mango - Top 10 producer countries	
million tonnes	**2019**
India	25.6
Indonesia	3.3
China	2.6
Pakistan	2.3
Mexico	2.2
Brazil	2.0
Malawi	1.7
Thailand	1.6
Egypt	1.5
Bangladesh	1.4

Sources: FAO, professionals

MANGO - Imports (2019)



Mango - Top 7 importer countries	
tonnes	**2019**
United States	518 207
China	431 640
Netherlands	208 975
United Arab Emirates	89 852
Vietnam	85 171
Canada	71 202
Saudi Arabia	54 723

Sources: National Customs, Comtrade

USA - Imports - Main supplier countries						
tonnes	2015	2016	2017	2018	2019	2020
Total	**405 965**	**464 797**	**508 904**	**500 463**	**518 207**	**573 747**
Mexico	263 217	304 059	332 525	327 495	341 905	359 538
Peru	33 494	44 953	51 546	49 945	54 350	74 573
Ecuador	38 202	56 319	49 584	52 540	44 367	53 066
Brazil	32 210	27 858	32 934	31 782	39 967	48 214
Haiti	10 728	7 079	9 347	6 617	8 366	11 645
Guatemala	15 544	12 448	16 818	17 026	13 424	11 008
Dom. Rep.	901	1 038	1 154	1 924	3 431	3 567
Philippines	3 027	3 065	2 932	2 563	2 162	3 228

Source: US Customs

Canada - Imports - Main supplier countries						
tonnes	2015	2016	2017	2018	2019	2020
Total	**57 234**	**57 022**	**65 576**	**67 298**	**71 202**	**77 418**
Mexico	37 065	36 477	41 239	43 013	43 506	47 591
Peru	4 789	5 875	6 732	7 079	7 965	11 377
Brazil	6 744	5 645	7 131	7 208	7 910	8 899
Ecuador	2 716	2 744	2 235	2 889	2 420	1 896

Source: Comtrade

MANGO - Exports (2019)

Mango - Top 7 exporter countries	
tonnes	**2019**
Thailand	479 616
Mexico	412 873
Brazil	222 126
Peru	191 417
Vietnam	158 688
India	147 242
Pakistan	96 610

Source: Comtrade

Central and South America - Main markets						
tonnes	2014	2015	2016	2017	2018	2019
Total	**21 440**	**19 637**	**23 048**	**24 419**	**22 892**	**21 744**
Chile	4 820	4 765	7 546	9 855	9 564	9 745
Honduras	2 999	3 276	2 643	3 161	2 292	3 538
Colombia	6 594	3 219	4 499	3 870	4 191	2 726
Mexico	2 041	1 588	1 768	1 909	2 347	1 500
El Salvador	1 952	1 797	1 196	1 384	1 444	1 477
Argentina	1 426	1 425	1 337	1 832	1 527	1 205
Panama	431	620	914	572	522	615
Guatemala	363	1 558	1 740	623	254	325
Bolivia	431	834	874	706	222	250
Paraguay	265	364	412	406	413	239

Source: Comtrade

European Union - Imports - Main supplier countries						
tonnes	2015	2016	2017	2018	2019	2020
Total extra-EU + Spain	**305 150**	**354 233**	**360 602**	**419 218**	**437 968**	**449 915**
Total extra-EU, of which	**295 150**	**335 233**	**338 602**	**389 218**	**415 968**	**427 915**
Brazil	111 511	114 923	117 496	135 535	155 406	175 218
Peru	78 299	87 819	95 537	120 593	115 583	132 249
Côte d'Ivoire	22 919	30 298	30 193	29 168	31 495	25 525
Dominican Rep.	13 103	14 727	11 360	13 668	17 138	15 519
Israel	13 777	17 843	16 583	13 300	15 166	11 444
Senegal	11 520	10 029	11 125	15 843	14 106	10 296
Mali	5 946	7 449	4 897	5 989	9 662	8 937
USA	7 383	12 254	11 119	9 145	8 283	8 886
Burkina Faso	4 358	6 158	4 786	5 772	6 880	6 810
Pakistan	5 318	8 106	6 271	8 646	11 409	6 748
Mexico	3 078	3 742	4 322	4 779	5 252	5 924
Ghana	2 656	3 611	3 609	3 815	3 771	4 538
India	2 477	4 329	5 421	5 979	5 301	3 370
Egypt	853	1 238	2 233	1 257	1 888	2 911
Costa Rica	3 952	2 460	3 154	2 589	2 266	2 340
South Africa	1 482	1 510	2 287	1 777	2 124	1 526
Ecuador	1 857	2 136	1 426	1 245	1 044	1 273
Guatemala	904	510	979	2 578	1 287	1 134
Gambia	1 915	1 679	1 753	1 524	2 169	1 037
Thailand	1 168	974	1 020	998	825	573
Venezuela	468	381	310	384	276	54
Spanish production shipments (estimate)	**10 000**	**19 000**	**22 000**	**30 000**	**22 000**	**22 000**

Source: EUROSTAT

Other West European countries - Main markets						
tonnes	2015	2016	2017	2018	2019	2020
Total	**19 080**	**21 344**	**22 522**	**23 253**	**22 696**	**25 072**
Switzerland	13 448	14 709	14 984	15 211	14 723	16 695
Norway	5 176	6 155	7 051	7 552	7 483	7 977
Iceland	456	480	487	490	490	400

Source: Comtrade

Russia - Imports - Main supplier countries						
tonnes	2015	2016	2017	2018	2019	2020
Total	**5 564**	**6 119**	**11 907**	**25 683**	**31 119**	**38 695**
Peru	535	632	1 437	5 956	5 852	11 768
Brazil	3 518	3 513	6 165	10 449	10 606	8 979
China	286	301	1 106	2 313	6 052	5 746
Egypt	-	11	938	1 929	2 750	5 246
Thailand	404	438	812	1 034	984	591

Source: Comtrade

Other East European countries - Main markets						
tonnes	2014	2015	2016	2017	2018	2019
Total	**1 397**	**1 389**	**655**	**1 359**	**2 624**	**4 565**
Ukraine	579	275	452	763	1 580	3 360
Belarus	818	1 114	203	596	1 044	1 205

Source: Comtrade

Mediterranean - Main markets						
tonnes	2014	2015	2016	2017	2018	2019
Total	**11 045**	**11 089**	**16 897**	**15 882**	**17 592**	**20 612**
Morocco	3 228	4 377	5 550	6 297	7 645	7 749
Lebanon	3 084	3 420	8 523	7 907	8 074	5 792
Jordan	2 260	1 335	2 315	1 068	884	5 599
Turkey	285	365	382	610	945	1 060
Libya	1 915	1 413	122		44	412
Algeria	273	179	5	-	-	-

Source: Comtrade

Japan - Imports - Main supplier countries						
tonnes	2015	2016	2017	2018	2019	2020
Total	**5 841**	**6 012**	**6 690**	**7 692**	**7 535**	**6 903**
Mexico	2 740	2 952	3 112	3 464	3 361	3 525
Thailand	1 116	1 369	1 588	2 036	2 096	1 358
Taiwan	803	429	587	624	715	710
Philippines	464	669	535	352	262	12
Others	718	593	868	1 216	1 101	1 298

Source: Japanese Customs

Other Asian countries - Main markets						
tonnes	2014	2015	2016	2017	2018	2019
Total	**304 801**	**319 387**	**281 261**	**366 582**	**490 152**	**689 310**
China	151 387	156 842	106 778	112 398	200 601	431 640
Vietnam	53 375	28 850	39 877	*95 855*	*73 268*	*85 171*
Malaysia	50 324	55 140	51 158	61 389	62 411	44 684
Thailand	385	18 380	26 597	29 945	71 684	28 369
Singapore	22 507	22 083	20 336	23 651	26 824	25 547
Afghanistan	-	-	-	8 574	8 684	23 263
Nepal	12 550	15 845	14 362	11 024	19 548	21 433
South Korea	11 248	13 917	11 747	13 972	17 383	18 840
Laos	-	1	3 825	4 598	5 939	4 618
Bangladesh	-	3 138	948	1 658	359	3 237
Brunei	1 142	1 466	1 477	1 882	2 560	2 341

Source: Comtrade

Persian Gulf - Main markets						
tonnes	2014	2015	2016	2017	2018	2019
Total	**263 624**	**225 800**	**238 824**	**254 098**	**226 685**	**211 885**
UAE	104 187	88 163	103 417	87 504	78 723	89 852
Saudi Arabia	63 668	64 823	54 098	69 572	53 572	54 723
Oman	21 201	15 724	17 444	23 596	35 467	21 663
Yemen	27 285	11 359	17 182	18 104	15 689	13 974
Kuwait	20 409	18 960	17 232	14 625	9 035	11 502
Qatar	6 148	6 937	-	8 984	8 435	10 362
Bahrain	8 013	7 665	9 107	9 357	8 609	9 560

Source: Comtrade

Africa - Main markets						
tonnes	2014	2015	2016	2017	2018	2019
Total	**22 440**	**17 784**	**18 299**	**27 171**	**29 065**	**24 151**
Niger	2 681	5 589	5 141	2 081	5 278	6 266
Mauritania	2 387	2 364	1 578	1 550	1 638	5 373
Rwanda	2 557	834	4 759	3 914	4 684	4 335
Uganda	2 411	3 570	843	3 098	6 462	3 558
South Africa	530	527	648	1 088	1 310	1 874
Botswana	787	1 012	1 139	1 127	1 280	1 257
Tanzania	7 503	302	708	508	501	761
Namibia	556	532	491	532	241	697
Djibouti	2 509	2 335	2 147	2 728	1 795	27
Kenya	519	719	845	10 545	5 876	3

Source: Comtrade

Oceania - Main markets						
tonnes	2015	2016	2017	2018	2019	2020
Total	**4 856**	**4 188**	**5 619**	**5 692**	**4 560**	**4 694**
New Zealand	3 468	3 168	4 584	4 939	3 654	3 792
Australia	1 388	1 020	1 035	753	906	902

Source: Comtrade

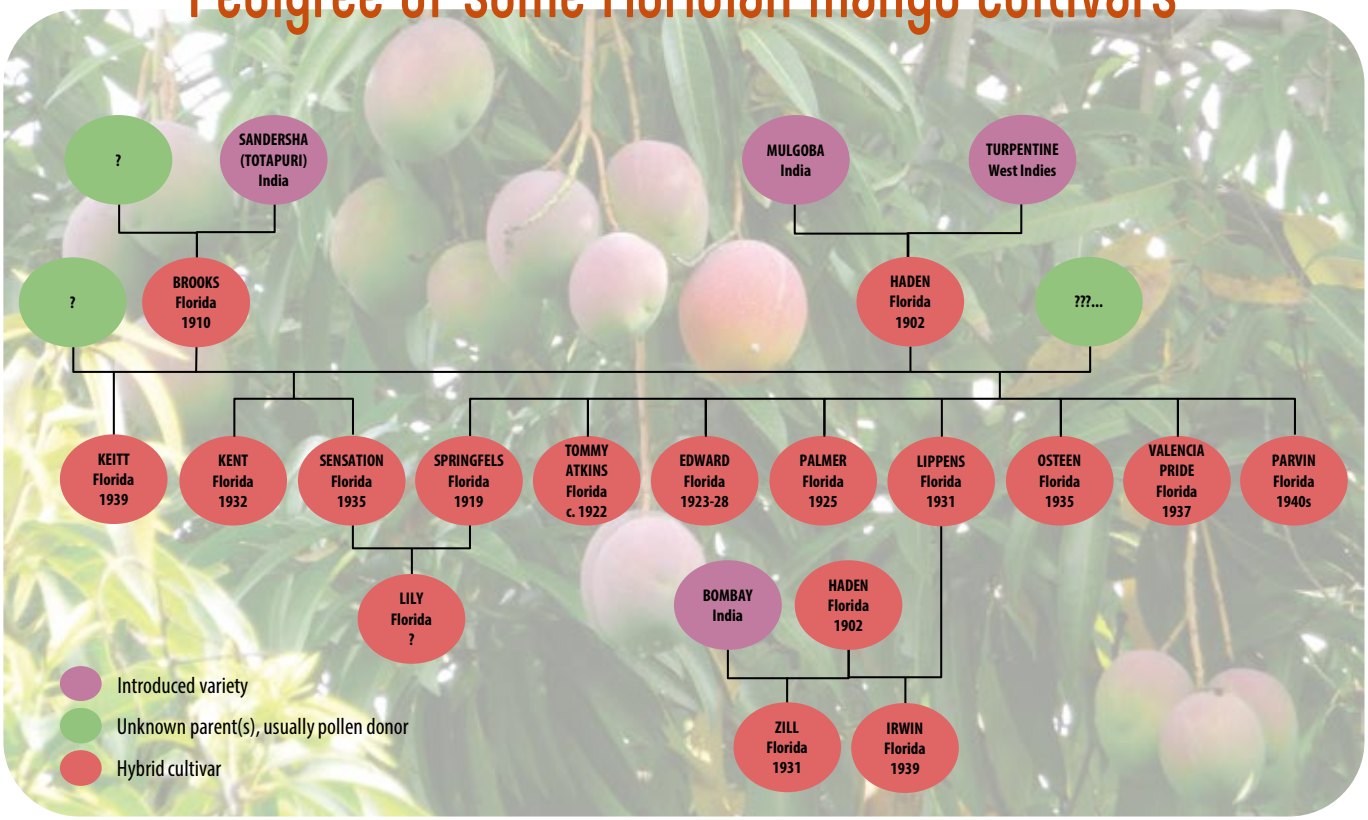
Main mango varieties

by **Guy Self**, consultant
fruitguyde@outlook.com

ORIGIN AND DOMESTICATION

The mango, *Mangifera indica* L., is one of about 60 species in the genus *Mangifera* in the family Anacardiaceae, which also contains the cashew (*Anacardium occidentale*) and the pistachio (*Pistacia vera*). It is native to eastern India and Myanmar, and is believed to have been cultivated in India for thousands of years before it was introduced elsewhere. Buddhist monks probably took it to South-East Asia (Indochina and Malaysia) during the 4th and 5th Centuries where it is thought to have undergone a second domestication. It was then carried westwards by Persian traders in the 9th and 10th Centuries to East Africa, where the Portuguese likely reintroduced it in the 16th Century from their Indian territories in Goa. The Portuguese then took it to West Africa and then to Brazil in about 1700, from where it was taken to the Caribbean, arriving in Barbados in 1742 and Jamaica in 1782. Not long after, the Spanish introduced it to Mexico, from both their territories in the Caribbean and in the Philippines. A few plants were then taken to southern Florida in 1833, but they did not survive and the mango did not become established there until the 1860s when seed was imported into Miami. As the mango spread around the tropics and subtropics, it proved to be an adaptable tree and through natural outcrossing produced varieties adapted to a multitude of different local conditions and microclimates. Today new plantations of commercial varieties are grafted onto these locally adapted types.

Pedigree of some Floridian mango cultivars



MAIN VARIETIES

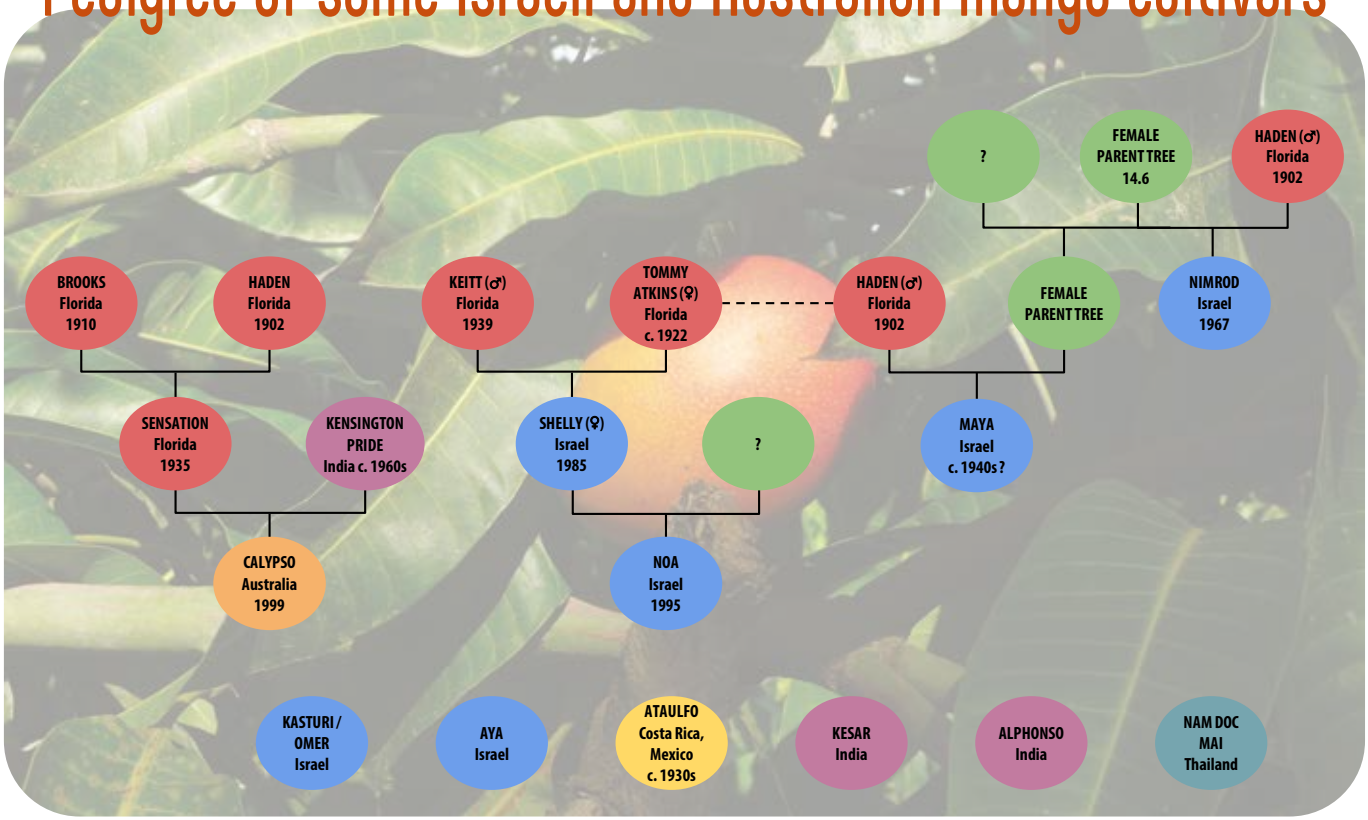
Most of the mango varieties in international trade originated in southern Florida between 1900 and 1950. Mangos were introduced to Florida in the mid-19th Century and promoted as a backyard fruit tree. The first introductions came from the Caribbean, with others added later from India, South-East Asia and Africa. This created a diverse collection of varieties that started to cross pollinate either naturally or through amateur horticulturalists, producing many new varieties. Whilst recent genetic analysis may not support southern Florida as being a secondary center of mango diversity, it was nevertheless the center of a remarkable period of largely amateur plant breeding that underpins commercial production to this day.

The first named variety came from seeds of an Indian variety, Mulgoba, bought by Captain J.J. Haden in 1902 from Professor Elbridge Gale at Lake Worth, near present-day West Palm Beach, and planted at his property in Coconut Grove, south Miami. Capt. Haden did not live to see his seedlings mature, but his wife Florence recognised one as having superior fruit and she reported it to the Florida State Horticultural Society. The variety was named for Capt. Haden and it became commercially very successful and is still grown and traded today most often as a specialty air-freight mango. Through further crosses, often with unknown parents, Haden gave rise to nearly all the varieties grown commercially today including Kent, Sensation, Tommy Atkins, Edward, Palmer, Osteen and Parvin. One important variety that does not have Haden or its parents in its pedigree is Keitt, which came from a seedling of the Brooks variety and an unknown parent.

This group of varieties became known as the Floridian cultivars, which have since been widely distributed in the tropics, the subtropics and the Mediterranean, where they have generally adapted well to local conditions. There are other centers of mango breeding, most notably Brazil, Israel and Australia, but such is the influence of Haden that it is also found in the pedigrees of some of the best known Israeli (Maya, Shelly and Noa) and Australian (R2E2 and Calypso™) varieties.

The majority of mangos traded in Europe and the UK are Floridian and Israeli cultivars, with retailers generally preferring to supply Kent and Keitt year-round, allowing other cultivars only when supplies are tight. There are however a few other varieties imported for ethnic or speciality lines. One is Ataulfo, a polyembryonic South-East Asian-type cultivar that originated in Tapachula, Mexico, reportedly from seed brought from Costa Rica in about 1930. The fruit is marketed as Ataulfo, Honey or Champagne™ in the US and was granted a protected designation of origin by the Mexican Government in 2003 as Ataulfo del Soconusco Chiapas. It is grown mainly along the western coast states of Mexico, and also in Peru. Another is the Kesar mango grown in the Girnar foothills in Gujarat, India. The variety was developed and named in the early 1930s, and was awarded a geographical indication in India in 2011. It is in the market from May to July particularly in the UK where it is sold by the box mainly to customers of Indian and Asian origin.

Pedigree of some Israeli and Australian mango cultivars



Main mango varieties (continued)

Photos © Régis Domergue

HADEN

Fruit characteristics

A medium to large-sized oval fruit with a rounded base and a medium-thick, woody stone. It is bright yellow with a deep crimson or red blush and numerous large, natural, yellow lenticel spots. Fruit weight is typically 510 g to 680 g (equivalent to a 4 kg size 8 to 6). The fruit is thick-skinned and tough, with a firm and juicy pulp that can sometimes be fibrous. It is deep yellow, rich and sweet, often with a strong, pleasant aroma.

Postharvest handling

The fruit changes colour from green to golden yellow as it matures and ripens. It softens relatively quickly, and can be prone to bruising so needs careful handling. Fruits should be transported and stored at 10-12°C. It is now shipped almost only by air.

Production

Haden is a vigorous tree with a large spreading canopy. It can be prone to alternate or irregular bearing and for this reason has tended to be replaced in commercial planting by newer cultivars. It is also prone to jelly seed and internal discolouration, often in larger fruit, so mineral nutrition is important.

Origin

The Haden mango resulted from natural cross-pollination between Mulgoba and Turpentine, Mulgoba having been introduced to Florida from India in 1889, while Turpentine is one of several poly-embryonic mangos naturalised in the West Indies, which is often used as a root stock.

The original Haden was discovered amongst 48 seedlings planted in 1902 by Captain John J. Haden, a retired US Army officer living in Coconut Grove, Florida, by his wife Florence, Haden having died in 1903. Florence reported the discovery to the Florida State Horticultural Society and sent samples to the United States Department of Agriculture. The Haden cultivar was then introduced in 1910, the first of the so-called Floridian mangos, and is now widely grown. It has since become the "seed" or female parent of many other cultivars including Kent, Tommy Atkins, Edward, Palmer, Osteen, Parvin and Maya.

KENT

Fruit characteristics

Kent is a large, oval fruit with a rounded base. It is greenish-yellow with a red or crimson blush and numerous small yellow lenticel spots. Fruit weight is typically 600 g to 750 g (equivalent to a 4 kg size 7 to 6). The skin is thick and tough, adhering to the flesh, which is deep yellow to orange-yellow, firm with a melting texture, fibreless and juicy. It is sweet with high Brix and a rich, complex flavour and sweet, tropical aroma.

Postharvest handling

The fruit changes colour from green or greenish yellow to yellow-orange as it ripens, though it has a tendency to stay green. Fruits should be transported and stored at 10°C, though care should be taken as Kent can be susceptible to internal discolouration thought to be caused by low temperatures. Large fruits can be susceptible to jelly seed and internal breakdown, usually a sign of calcium deficiency or nutrient imbalance.

Production

Kent is a large, vigorous tree with a dense, compact, upright canopy. It needs cool night-time temperatures (at least below 20°C) to induce good flowering, which means that yields are affected when this does not occur. When there are no temperature issues, it generally produces well and consistently, though it can develop a tendency towards alternate bearing. Maturity can be judged by the fullness of the cheeks as well as internal colour. Though yields may not be as great as some other varieties, the proportion of exportable fruit is usually high, though quality can vary widely depending on where and how it is grown.

Origin

The Kent mango is thought to have been produced from a cross between Haden and Brooks, Brooks being a seedling of Totapuri (also known as Sandersha), a pedigree confirmed by genetic analysis in 2005. The original seedling was germinated in September 1932 and planted on January 1, 1933 on land owned by Leith D. Kent in Coconut Grove, Florida. The original tree is reported still to be alive. Kent has become a highly popular variety with consumers and is now widely grown throughout the tropics and sub-tropics.

KEITT

Fruit characteristics

Keitt is a large to very large, oval fruit with a rounded base. It is greenish-yellow with a pink or red blush, a lavender bloom and numerous small white or yellow lenticel spots. Fruit weight is typically 510 g to as much as 2 kg (equivalent to a 4 kg size 8 to larger than 5). The skin is thick and tough, and adheres to the flesh, which is lemon-yellow to yellow, firm with a melting texture, some fibre near the base of the stone and juicy. It has an excellent flavour with a good balance between sweet and acidic, tangy notes and a pleasant aroma.

Postharvest handling

The fruit changes colour from green or greenish yellow to yellow as it ripens. Fruits should be transported and stored at 11°C as large fruits in particular can be susceptible to internal discolouration thought to be caused by low temperatures and/or nutrient imbalance. The fruit is relatively resistant to anthracnose. It tolerates postharvest handling and shipping well, and has good storage and shelf-life.

Production

Keitt is a medium sized, moderately vigorous, upright tree with a fairly open canopy. Like Kent, it is a precocious variety and is therefore de-fruited for the first four years after planting to encourage vegetative growth and the establishment of a strong tree with good canopy structure. It is a consistent, high yielding variety. It is amenable to flowering manipulation and thus season extension. Keitt fruits can also be held on the tree to extend their season, though this has a detrimental impact on yield the following year.

Origin

The Keitt mango is thought to have arisen from Brooks and a second, unknown parent. It therefore shares one parent, Brooks, with Kent. The original seedling, planted in 1939, grew on the property of Mrs. J. N. Keitt at Homestead, Florida. It produced well in 1945 and 1947, but not in 1946 likely due to a hurricane in September 1945. It was first described in the proceedings of the Florida State Horticultural Society in 1947. Since then, like Kent, it has become a variety of choice with growers and consumers alike, and is now widely grown throughout the tropics and sub-tropics.

TOMMY ATKINS

Fruit characteristics

Tommy Atkins is a medium to large, oval to oblong fruit with a rounded tip. The fruit is green with a conspicuous bright to dark red blush often covering almost the whole fruit. Fruit weight is typically between 450 to 700 g (equivalent to a 4 kg size 10 or 12 to 6). The skin is thick and protects the fruit. The flesh is medium to dark yellow or orange, juicy, but with only fair to good mild flavour and with a fibrous texture.

Postharvest handling

The fruit changes from green to orange-yellow as it ripens. It is resistant to anthracnose and the thick skin protects it from damage and bruising during handling. It should be transported and stored at 10°C to 12°C and has a long storage and shelf-life, which is a major reason why at one time it was so popular.

Production

Tommy Atkins trees are vigorous with a dense, rounded canopy. They are regular and heavy bearers. It is particularly amenable to flowering manipulation and can be produced almost year-round in Brazil. Fruit maturity is indicated by the shoulders becoming raised. The fruit is particularly prone to breakdown and internal discolouration with mineral nutrition, particularly the nitrogen calcium balance, believed to be a key factor. Both the trees and the fruits are resistant to anthracnose.

Origin

The Tommy Atkins mango grew from a Haden seed planted in about 1922 in Broward County, Florida, north of Ft. Lauderdale. It apparently did not bear fruit until the early 1940s. The striking colour of the fruit attracted the attention of Mr. T. H. Atkins who believed it to have commercial potential. He began grafting trees in 1945 and offering them for sale with the first trees sold in 1948. He submitted fruit to the Variety Committee of the Florida Mango Forum several times in the late 1940s and early 1950s where it was recognised for its colour and production potential, but not for its flavour and texture. Nevertheless, it became a favourite commercial variety and was extensively planted in Florida in the 1950s and 1960s. It also became widely planted in Brazil and elsewhere and for a time was the predominant exported variety.

Mango main varieties (continued)

OSTEEN

Fruit characteristics

The fruit is an elongated oblong with a rounded base, sometimes with a small beak. It is yellow-orange with a purple or lavender blush and numerous small, whitish lenticels. Fruit weight is typically about 500 to 760 g (size 6 to 8). The flesh is firm and juicy, with little fibre, lemon yellow to deep yellow, mild and very sweet with a pleasant aroma. The skin is thick, tough and easily separates from the flesh.

Postharvest handling

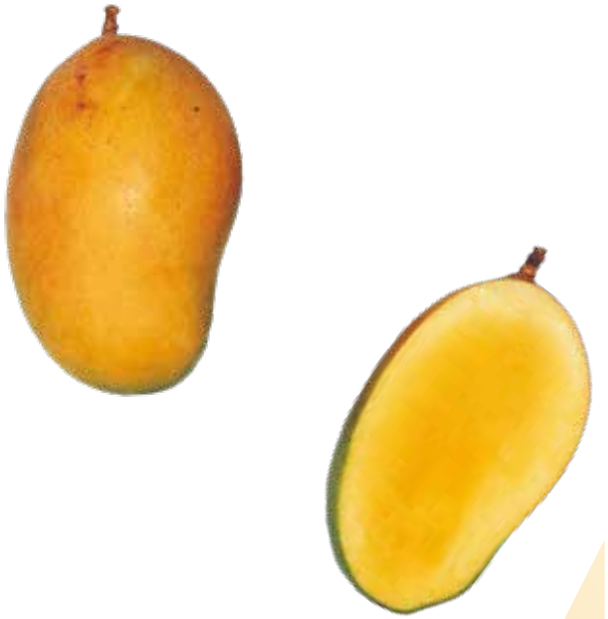
The fruit changes colour from green to yellow-orange as it ripens. Fruits should be transported and stored at 10 to 11°C. The fruit is robust and withstands postharvest handling well. There can be a tendency to develop off-flavours if harvested too mature and if the trees have received too much N fertiliser.

Production

The tree is vigorous, medium sized, forming a dense canopy. It is grown mainly in Spain where it is early maturing before Kent and Keitt, and bears regularly and well. Spanish producers regulate nitrogen and calcium fertilisation very closely to avoid internal issues and off-flavours.

Origin

The Osteen mango grew from a seed planted in 1935 on the property of S.A. Osteen, the first County Commissioner of Brevard County, Florida. Like so many others, the seed came from a Haden tree. The tree first fruited in 1940 and was named for the Osteen family that had lived on South Tropical Trail, Merritt Island, Florida, since the late 19th Century. It is said that family descendants live there still.



Photos © Guy Brehinier

VALENCIA PRIDE

Fruit characteristics

Valencia Pride is a medium to large fruit, with an elongated kidney shape, a rounded apex and a large beak. It is greenish-yellow in colour with a red to purple blush and yellow lenticels. Fruit weight is typically 600 g to 900 g (equivalent to a 4 kg size 7 to 5). The peel is quite thin and detaches easily from the flesh, which is deep yellow, practically fibreless, firm with a good, sweet and aromatic flavour.

Postharvest handling

The fruit is moderately resistant to anthracnose and other fungi, but is somewhat susceptible to internal breakdown.

Production

The trees are very vigorous and quick growing with large, open, spreading canopies. They bear consistently and well. Grown mainly in West Africa, it long enabled varietal diversification at the beginning of the season when shipments were mainly of Amelie. It is now well established in the market as an air-freight variety.

Origin

The original tree was grown from a Haden mango seed planted in 1937 by Mrs. Charles Brown in Miami, Florida, first bearing fruit in 1941. After registration with the Florida Mango Forum, the variety was propagated by Mr. and Mrs. Andrew Zapiain also of Miami.

Photos © Guy Self

PALMER

Fruit characteristics

Palmer is a large fruit with a characteristic oblong shape and rounded base with a medium-thick, woody stone. The shoulders are not raised and there can be some natural wrinkling of the peel around the stem. When ripe it is bright yellow-orange with a dark cherry-red to crimson or purple blush and a few small natural, white lenticel spots. Fruit weight is typically 510 g to 850 g (equivalent to a 4 kg size 8 to 5). The fruit has a tough, medium thick skin. The orange-yellow to yellow pulp is firm and melting with minimal fibre; it is mild and aromatic with good eating quality.

Postharvest handling

The fruit changes colour from light green or green to yellow-orange as it ripens. Fruits should be transported and stored at 11-12°C. The eating quality of Palmer can vary in different years, and it must be harvested at the correct maturity to ensure the best eating quality and good Brix values.

Production

Palmer is a moderately vigorous tree that forms a large, upright and tight canopy. It is a regular bearer. It was one of the first alternative varieties planted in Brazil when the industry there started to move away from Tommy Atkins in the early 2000s.

Origin

Genetic analysis shows that the Palmer mango probably developed from Haden. The original tree was grown from a seed planted by Mrs. Victor Mell in Miami, Florida, around 1925, the variety being officially recognised in 1949. It gained some commercial acceptance in Florida and is now widely grown, particularly in Brazil, but also in the Caribbean, Israel and Australia.

© Denis Loeillet

Mango speciality varieties

© Charlotte Brunet

MAYA

Fruit characteristics

Maya is a small to medium-sized round fruit with a smallish stone. It is deep yellow when ripe, sometimes with a bright pinkish orange-red blush covering much of the fruit. Fruit weight is typically 300 g to 400 g (equivalent to a 4 kg size 12 to 10). The fruit is thin-skinned and characteristically has more sap flow than other varieties. The pulp is melting and juicy, fibreless, deep yellow, with a rich, very sweet flavour and good eating quality. Like Haden, Maya mangos have a high Brix/acid ratio.

Postharvest handling

The fruit changes colour from green to deep yellow as it matures and ripens. It is a delicate fruit that needs careful handling, and for this reason it is generally air-freighted. With proper handling, the fruit has a long shelf-life. Fruits should be transported and stored at 11-12°C.

Production

It grows well around the Sea of Galilee in Israel and in The Gambia, but has been less successful in other areas such as Brazil, where it has a tendency for alternate bearing. It is a vigorous, productive tree, producing 30 tonnes/ha in Israel. Research suggests that shading trees to reduce temperatures during fruit development, promoting autumn vegetative growth by early harvesting, mild pruning, and additional irrigation have the potential to increase yields.

Origin

The Maya mango was discovered sometime during the 1940s as a natural seedling in an Israeli orchard and is believed to be derived from Haden. One source says it was developed by a Prof. Hanan Oppenheimer who named it after his wife. First arrivals in Europe started in about 2002, although it had been common in local markets for some years before.

ATAULFO

Fruit characteristics

Ataulfo is a small to medium-sized, oblong to reniform shaped fruit with a small seed. Fruit weight is typically 250 g to 350 g (equivalent to a 4 kg size 14 to 12). The fruit is thin-skinned and firm; the pulp is a rich, golden yellow colour and practically fibreless. It is aromatic with an excellent, sweet flavour with slight acidity. Brix is typically 15 to 20°. Eating quality is best when the fruit is completely ripe, indicated when the skin has completely changed to golden yellow, sometimes with slight wrinkling. Partially ripe fruit has a distinctly acidic taste. Ataulfo is high in β-carotene, vitamin C and polyphenol antioxidants, higher than typical varieties such as Tommy Atkins and Kent.

Postharvest handling

The fruit changes colour from green to golden yellow as it matures and ripens. It softens relatively quickly during ripening, but shelf-life is good with the fruit holding its appearance well. It is very sensitive to chilling injury and internal discolouration; it should be handled carefully and not stored or transported at less than 13°C, with fruit being particularly susceptible to temperatures between 10°C and 12.5°C. The fruit is moderately resistant to anthracnose.

Production

Ataulfo is an upright, vigorous tree, that can be constrained somewhat on certain rootstocks. It can typically produce 10-20 t ha-1 at 70 to 100 trees ha-1, though yields can decrease considerably if plantations are not well managed. It is not highly adaptive to climate and soil compared to varieties such as Tommy Atkins, Keitt and Haden. Flowering and harvest can be manipulated to advance the season.

Origin

The Ataulfo mango was discovered at the end of the 1950s in the Soconusco region of Chiapas on the South Pacific coast of Mexico when Héctor Cano, a coffee technician looking for alternatives to diversify agriculture in the region, found a group of mango trees bearing attractive, gold coloured fruits in the backyard of Mr. Ataulfo Morales' house in Tapachula. There are some reports that the trees originally came from Costa Rica.

KESAR

Fruit characteristics

Kesar is a small to medium-sized fruit with a roundish shape and a distinct curved tip and an average weight of about 275 g. The skin is a dull, slightly mottled yellow cadmium colour, with a green tinge when less than fully ripe, and a bluish bloom. Internally, the pulp is a deep yellow-orange to orange colour. The flesh is smooth and firm, and the flavour fragrant and intensely sweet (Brix 20 or more), with a slight acidic edge in less than fully ripe fruit. The stone is medium-sized with a little fibre attached. Eating quality is best when the fruit is completely ripe, indicated when the skin has completely changed to yellow and the fruit feels tender in the hand, sometimes with slight wrinkling of the peel.

Postharvest handling

The fruit changes colour from green to yellow as it matures and ripens. It softens relatively quickly during ripening, but shelf-life is good with the fruit holding its appearance well. Hot water treatment at 52°C for 10 mn plus a fungicide is reported to control postharvest rots. Pre-cooling to 12°C has been shown to reduce weight loss, maintain firmness, prolong shelf-life and reduce disease incidence.

Production

Today, Kesar mango is grown mainly on about 20 000 ha in the districts of Junagadh and Amreli in the Saurashtra region of Gujarat. Total annual production in India is estimated at 200 000 tonnes, which suggests a yield of 10 tonnes/ha, though yields up to 15 tonnes/ha are reported from high density planting. The tree is smaller in stature than others and moderately vigorous. It flowers and bears regularly. Kesar mango is available usually from mid-April to July.

Origin

The Kesar mango was first grown in 1931 by Junagadh Wazir Sale Bhai in Vanthali, a small town in the Junagadh district of Gujarat, though it may date from much earlier in the 16th or 17th Century during the Mughal Empire. About 75 grafted trees were then planted in the foothills of Girnar with the variety becoming known as Kesar in 1934 when Muhammad Mahabat Khan III, the last ruling Nawab of Junagadh, on seeing the rich orange pulp declared it "kesar", or saffron. Kesar mango grown around the Gir sanctuary in Gujarat is the only mango officially known as Gir Kesar mango, being granted Geographical Indication status in India in 2011.

Mango quality defects (Photos © Pierre Gerbaud, Guy Self)

INSECTS

Fruitfly larvae

Scarred-over insect pricking

Discoloration caused by scales

FUNGI AND BACTERIA

Fungal infection

Anthracnose type fungal infection

Bacterial black spot caused by *Xanthomonas citri* pv. *mangiferae indicae*

PHYSIOLOGICAL...

Misshapen fruit

Misshapen fruit

Natural discolouration of the epidermis

Stem rot

Soft stem-end rot that has progressed far into the fruit

Stem-end mold

...PHYSIOLOGICAL

Flesh cavities

Corky, white patches under the peel

PHYSICAL...

Sun scorching

...PHYSICAL

Wounding with wind-caused rubbing

Stem too long

Post-harvest sap burn

Post-harvest soiling by sap

Mechanical wounds after picking

Mechanical wounds after picking

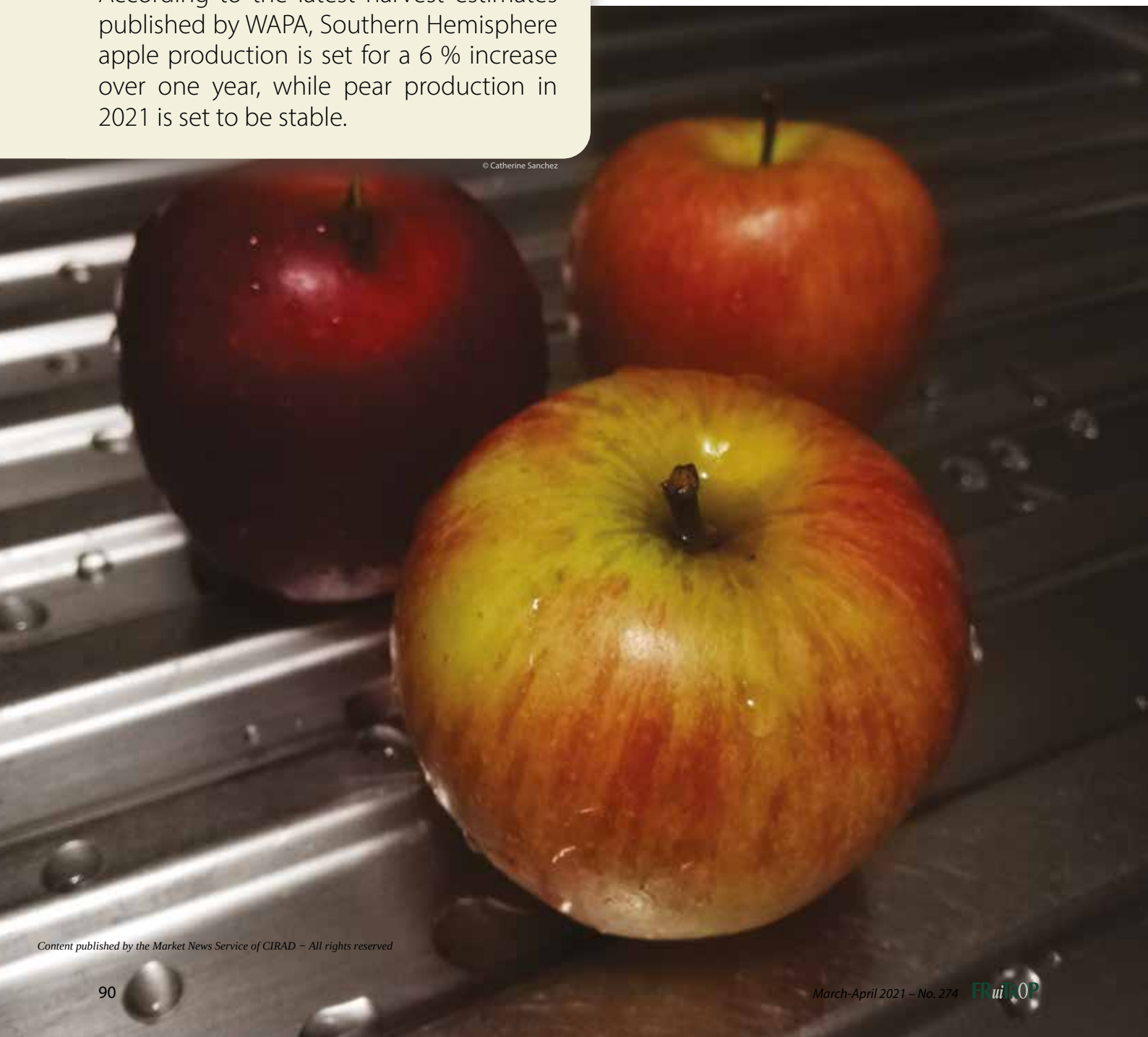
Immaturity and spotting

Overripeness

Internal breakdown caused by excessive nitrogen (high calcium and boron contents too)

Production on the up for the apple, and stable for the pear

According to the latest harvest estimates published by WAPA, Southern Hemisphere apple production is set for a 6 % increase over one year, while pear production in 2021 is set to be stable.



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Apples on the increase

In February, WAPA (the World Apple and Pear Association) published its Southern Hemisphere production estimates for 2021. It is predicting a 6 % increase in apple production to 5 090 000 tonnes, as opposed to 4 818 000 tonnes in 2020. There is considerable growth in Australia, Brazil and South Africa. A fall is expected in New Zealand, while Argentinean and Chilean production will be stable.

In 2021, Chile is to remain the main Southern Hemisphere apple producer, with 1 512 000 tonnes. Brazil holds second place with 1 130 000 tonnes, followed by South Africa with 1 013 000 tonnes, and then Argentina (617 000 t), New Zealand (547 000 t) and Australia (271 000 t). Gala is the main variety produced (39 %), followed by Fuji (14 %) and Red Delicious (13 %).

Estimated Southern Hemisphere apple exports are to remain stable at 1 691 562 tonnes. This is the case for Chile, with 650 773 tonnes. South Africa is set for a 4 % increase to 476 000 tonnes. New Zealand is down, with an export forecast of 372 000 tonnes.


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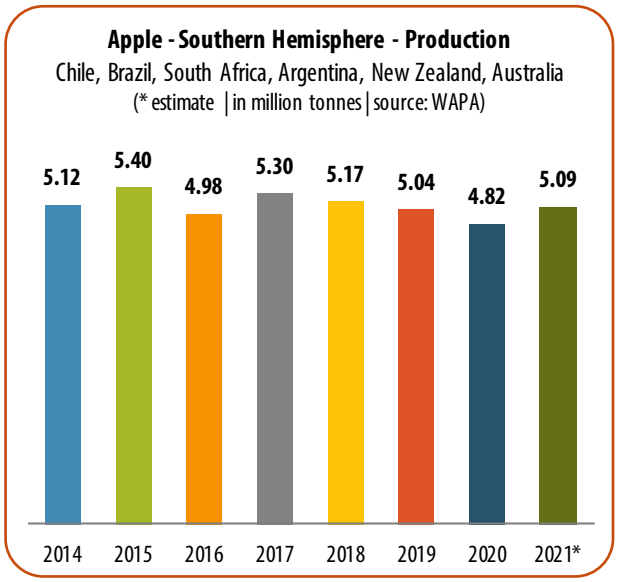
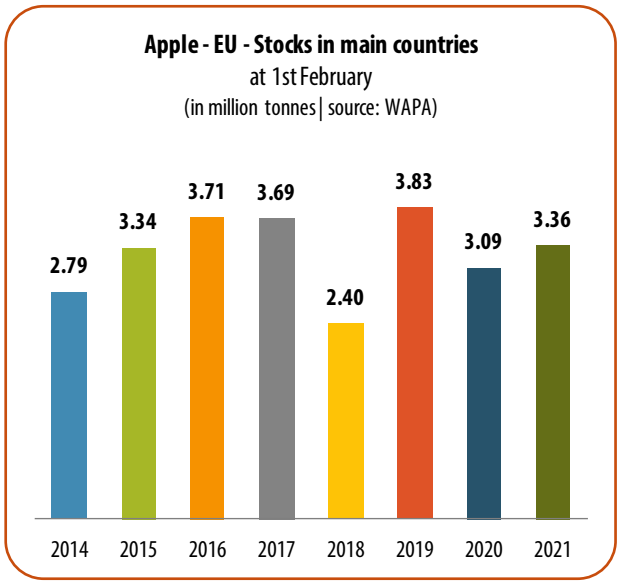




Apple – Southern Hemisphere – Harvest and export potential forecasts

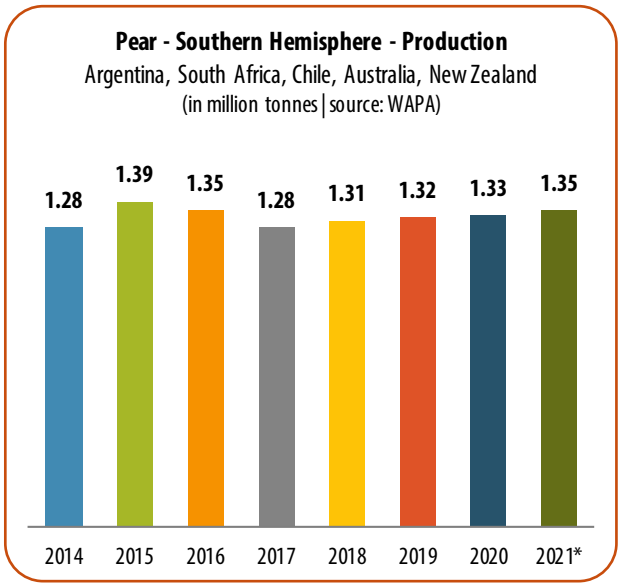
in tonnes	Total production			Export potential		
	2021*	/2020	/3-year average	2021*	/2020	/3-year average
Argentina	617 000	0 %	+ 8 %	115 000	+ 11 %	+ 9 %
Australia	271 000	+ 23 %	+ 2 %	3 453	+ 53 %	- 11 %
Brazil	1 130 000	+ 20 %	+ 8 %	74 000	+ 19 %	+ 17 %
Chile	1 512 000	0 %	- 8 %	650 773	0 %	- 10 %
New Zealand	547 000	- 5 %	- 4 %	372 226	- 7 %	- 4 %
South Africa	1 013 000	+ 6 %	+ 12 %	476 110	+ 4 %	+ 13 %
Total	**5 090 000**	**+ 6 %**	**+ 2 %**	**1 691 562**	**+ 1 %**	**- 1 %**

* Estimate | Source: WAPA

Stability for pears

Southern Hemisphere pear producers are predicting volumes stabilising at 1 346 000 tonnes, i.e. 2 % above the 3-year average. South Africa, Australia and Argentina have seen modest production rises of 3 %, 2 % and 1 % respectively. These volumes will somewhat offset the 3 % production fall in Chile and 10 % fall in New Zealand.

As in previous years, the Packham's Triumph and Williams BC/Bartlett varieties are predominant, with 36 % and 28 % of volumes respectively. Export forecasts show a 6 % increase from 2020, and should reach 708 690 tonnes. We can note a 12 % increase for Argentina (373 996 t), a 2 % increase for South Africa (214 361 t) and a 3 % drop for Chile (108 315 t).

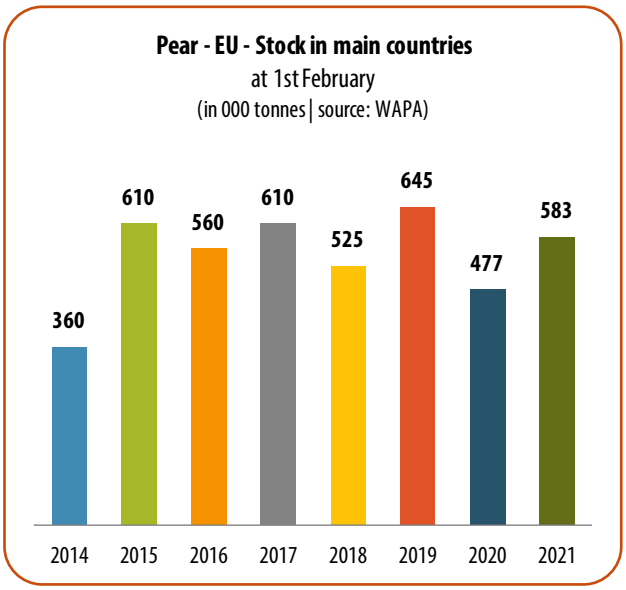


European apple and pear stocks

Meanwhile, WAPA has also set out the Northern Hemisphere apple and pear stocks. As at February 2021, apples had reached a figure of 3 364 922 tonnes, mainly represented by stocks in Poland (1 065 000 t) and Italy (1 020 570 t). France announced a stock of 479 443 tonnes of apples, and Germany 246 317 tonnes.

European pear stocks have registered an increase of 583 365 tonnes, i.e. + 22.3 % on 2020. As at February 2021, Belgium (198 117 t), the Netherlands (177 584 t) and Italy (125 600 t) accounted for the majority of stocks. France had a total pear stock of 2 355 tonnes, i.e. + 38 % on the previous year ■

Anne-Solveig Aschehoug, consultant
Annesolveig.presse@gmail.com



Pear – Southern Hemisphere – Harvest and export potential forecasts

in tonnes	Total production			Export potential		
	2021*	/2020	/3-year average	2021*	/2020	/3-year average
Argentina	656 000	1 %	+ 8 %	373 996	+ 12 %	+ 10 %
Australia	87 000	2 %	- 8 %	9 493	+ 7 %	- 6 %
Chile	161 000	-3 %	- 11 %	108 315	- 3 %	- 14 %
New Zealand	11 000	-15 %	- 15 %	2 525	- 4 %	- 33 %
South Africa	431 000	3 %	+ 3 %	214 361	+ 2 %	+ 1 %
Total	**1 346 000**	**1 %**	**+ 2 %**	**708 690**	**+ 6 %**	**+ 2 %**

* Estimate | Source: WAPA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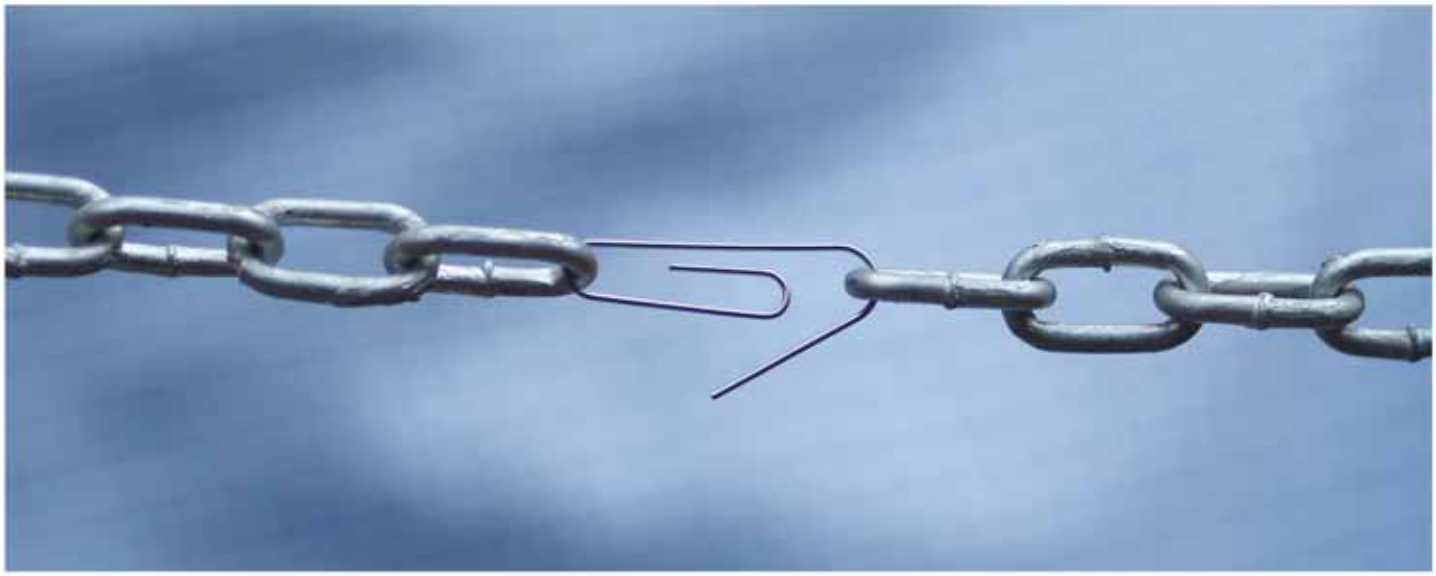
Information... your weak link?



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