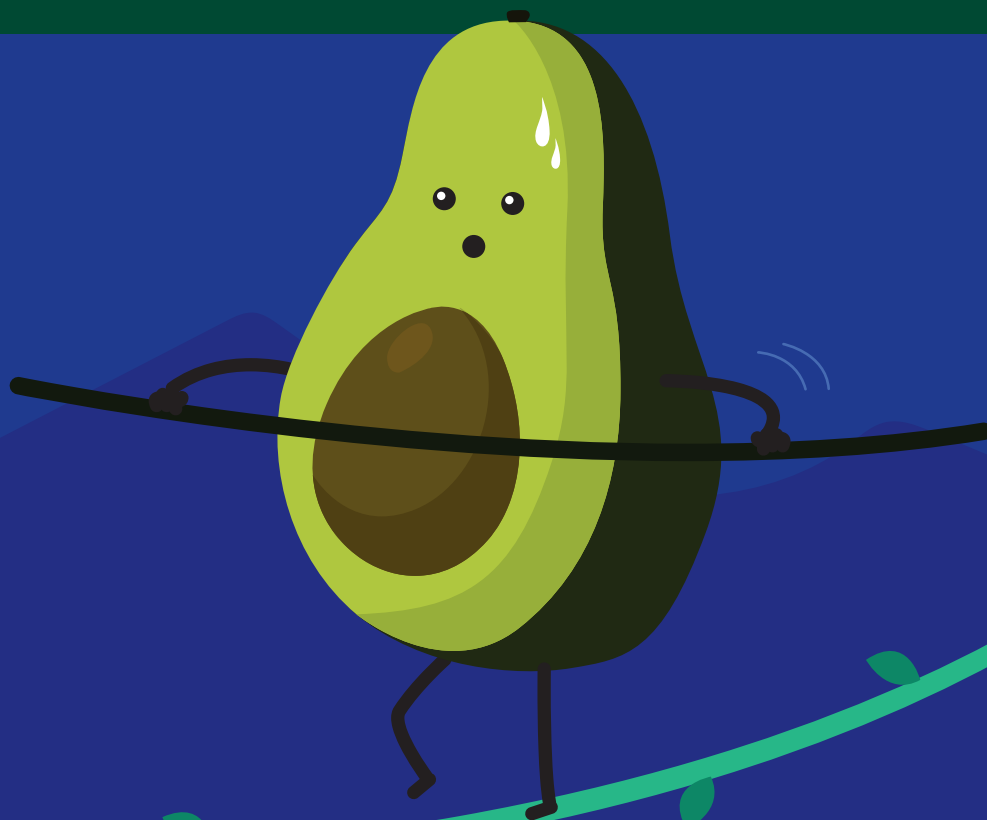


FR*ui*TROP

MAGAZINE
N°277
SEPTEMBER - OCTOBER 2021



AVOCADO

ABOUT TO EMBARK ON A BALANCING ACT?



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Editorial



To be vegan or not to be? That is the banana question.

The never-ending Covid crisis would have some sort of positive aspect, if it led the public to ask the right questions in both personal and collective terms. Putting events into perspective, thinking about the purpose of one's time on this Earth, reading more carefully the latest conclusions from the IPCC on the effects of climate deregulation, etc. Unfortunately, we have to observe that not all of our contemporaries will see the light. As proof, I present the issue recently put before us, as to whether the banana is vegan. Curses! There was me, after three decades dedicated to studying this fruit, its economy, the social and environmental effects of its production and trade, and I had missed out on what could be the Big Question! The one which demotes the topics of fairness in the sector, or of scaling back pesticide use, to mere common room debates. To be vegan or not to be? That is the banana question. So thank you to those vigilant consumers, or should I say whistle-blowers, who were prepared to brave all the risks in condemning the vile trickery, or even insidious conspiracies. The entire faculty, the banana sector as a whole and this outdated author are grateful to you for clearing this point up. In the quest for knowledge, I am eager to know the answer to the next, and ultimate, great mystery: does the banana have a soul?

Denis Loeillet



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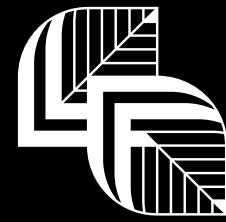
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*prepared by
Eric Imbert*

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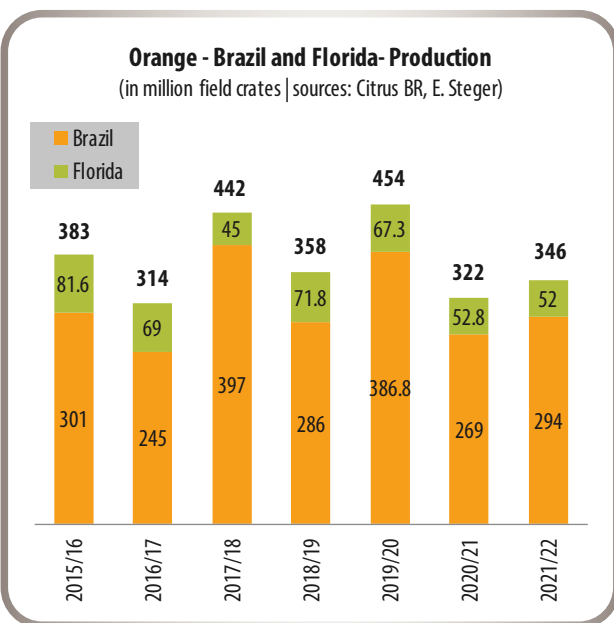
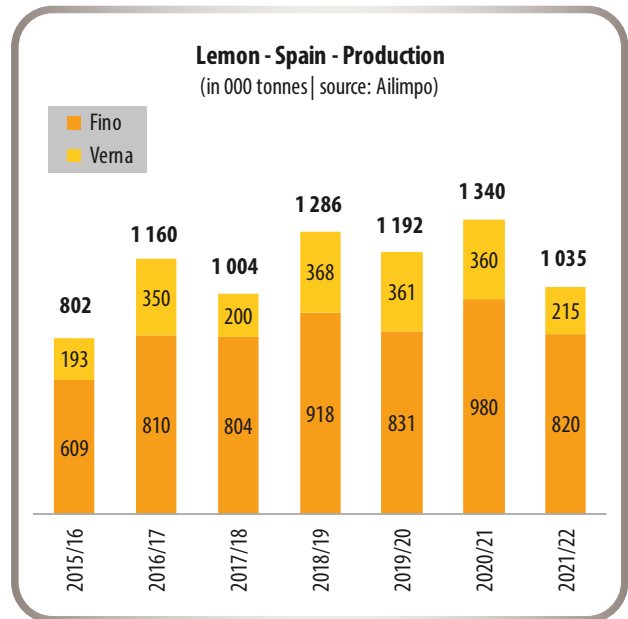
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Spanish lemon:
significant cyclical fall expected in 2021-22.

The Spanish lemon harvest expected for 2021-22 should be slightly more than one million tonnes, according to the initial estimate published by the inter-professional organisation AILIMPO. This figure marks a major downturn of more than 20 % from the record 2020-21 season, at nearly 15 % below the four-year average. There should be a bigger fall for the end-of-season variety Verna (33 % below average) than for Fino (7 % below average). This downward trajectory is completely contrary to the structural trends in production: with more than 5 million lemon trees planted in the past six years. It is due to highly unfavourable climate conditions, especially during the key blooming/fruit-setting period. This fall should enable growers to find lucrative prices, after a catastrophic 2020-21 season in economic terms.

Source: AILIMPO



Floridian orange:
production stable in 2021-22, according to an initial estimate.

The Elizabeth Steger consultancy firm has issued an initial Floridian orange production estimate, pending the official figures from the FDOC, which will be published in early October. The harvest should be between 49 and 56 million field crates (52 million crates in the most likely scenario), a similar level to 2019-20 (52.8 million field crates). This would keep it well below the four-year average (- 12 %). This information consolidates the hypothesis of a high juice market tension, despite the structural decline in world consumption. Brazil, which dominates world production along with Florida, also has a limited harvest for the second consecutive season, while world stocks are registering a restrained level (<https://www.fruitrop.com/en/Articles-by-subject/Direct-from-the-markets/2021/Orange-juice-prices-on-the-up>).

Source: Steger



To Zest...



LEMON
South Africa - Argentina

...or not to Zest



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Spanish persimmon: harvest down by 25 %.

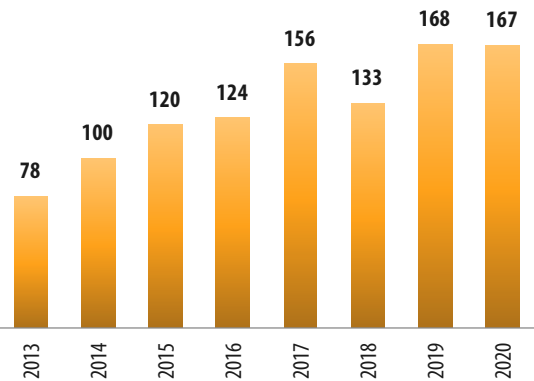
2020 was a most peculiar season for the Spanish persimmon, with export volumes similar to 2019, but over a shorter period. Despite a high sales tempo at the start of the campaign, December saw a poorer market performance than usual in the 2nd and 3rd weeks, because of a lack of volumes (climate and parasite impacts on the orchards). Nonetheless, in export terms, Spain dominated the European market with 160 000 tonnes sold to its three main markets: Germany (48 598 t), France (25 082 t) and the United Kingdom (5 527 t). Large volumes were also exported to East European countries such as Lithuania (14 410 t) or Poland (9 417 t).

According to the latest forecasts, the 2021 Rojo Brillante harvest, Spain's main persimmon variety, should be down by 20 % to 25 % because of parasite problems in the orchards, especially the obscure mealybug *Pseudococcus viburni* (Cotonet) from citrus orchards. Nearly all growers, whether in cooperatives or private, have been affected by this parasite. Last year many orchards were affected, but this year losses should be even bigger. So treatments against this parasite are being stepped up, raising production costs for growers. According to the Anecoop cooperative group, the loss in volumes could be as much as 20 000 to 30 000 tonnes, resulting in a national production level of around 180 000 tonnes. The group markets 70 % to 80 % of its persimmons under the "Kaki Ribera del Xuquer" PDO, and an additional 10 % to 15 % from orchards in Andalusia.

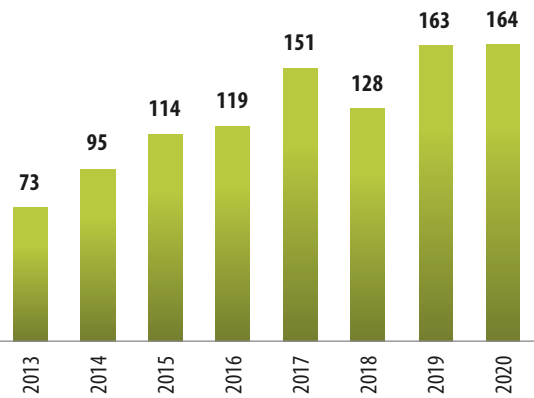
The export season should start in early October and finish in late December. To boost persimmon sales, on the launch of the campaign in early October, Anecoop will put on more than 250 days of events and tasting at points of sale, a TV promotion campaign and a significant presence on social networks via Instagram, FaceBook, TikTok, etc.

In marketing terms, the Spanish exporters are meeting the expectations of the French market in terms of eliminating plastic from packaging. Major investments have

Persimmon - EU27+UK - Evolution of imports
(in 000 tonnes | sources: Eurostat, UK Trade)



Persimmon - EU27+UK - Imports from Spain
(in 000 tonnes | sources: Eurostat, UK Trade)



been made in the stations, with new machines able to offer 100 % cardboard one-kilo punnets (4 to 7 fruits). These punnets appeared on shelves this season. Furthermore, organic persimmon volumes have risen (approximately 4 000 to 5 000 t), though demand is lacking on the non-specialist market. In France, practically all sales are via organic specialists, which promote the French-produced varieties Fuyu or Rouge Brillant (just 300 t of Spanish organic persimmon).

For the sake of completeness, we can note a hesitant comeback by the minor origins. Hence in 2020, Israeli exportations took an upturn (312 t as opposed to 31 t in 2019,) in conjunction with a slight production increase between 2019 and 2020, to 30 000 tonnes. Morocco also registered a slight rise, with over 110 tonnes of exports, as opposed to 33 tonnes in 2019. Finally, on the counter-season market, which remains marginal, both South Africa and Brazil lost market share in Europe, with 497 tonnes and 43 tonnes respectively.

Source : Anne-Solveig Aschehoug



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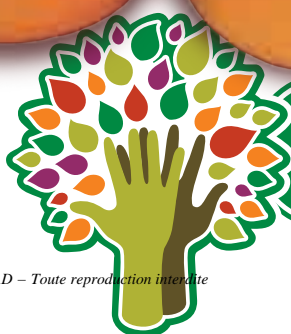
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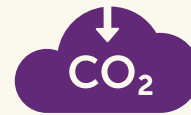


Doing Good Business



Improve livelihoods

Good working conditions for the people who grow, harvest, and package our products is a priority for us. It's an essential part of how we do business. Moreover, through the Nature's Pride Foundation we also contribute to better living conditions of communities through projects focused on nutrition and water.



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Nature's Pride is the first fruit and vegetable trading company in the world to have its CO₂ targets approved by the Science Based Targets Initiative (SBTi). This means that our climate goal is in line with the level of decarbonization required to meet the Paris Climate Agreement. We take action to limit global warming to 1.5 °C.



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Sustainable packaging

By 2023 we only want to use recyclable or reusable packaging. We also look where we can eliminate packaging altogether, always keeping in mind the shelf-life and protection of the product. In 2020 we introduced the 100% carton avocado packaging. In 2020 alone, it saved 60.231 kg or more than 6 full garbage trucks of plastic.

Nature's Pride Sustainable Business report 2020:



EU27+UK banana supply in June 2021: scaling ever higher heights.

After a big surge in May 2021 (+ 6 %), the supply to the EU27+UK returned to very limited growth in June 2021, of + 0.6 %. The dollar banana supply remained stable. European production fell (- 3.2 %). So it was ACP banana imports which enabled the market to remain in the green. Over Q1, however the market maintained a downward trend, falling by 1.8 % to 3.5 million tonnes. It was the dollar zone which set the trend, selling 84 000 tonnes less on the European market. It was only Costa Rica (a major origin) and Nicaragua (minor origin) which made headway. All the other origins traded in favour of the North American markets, which had a shortfall due to the reduction of the Guatemalan and Honduran supplies due to the cyclones of late 2020. Regarding the ACPs, Africa was back at the top, exporting 309 000 tonnes to Europe, while the Caribbean ACPs lost a bit of ground due to the fall in imports from Belize and slack growth from the Dominican Republic. On a 12-month sliding scale, the market has been stable, at a ceiling level of 6 621 000 tonnes.

Source: CIRAD

European banana market: a chaotic summer.

While the summer is traditionally a far from favourable time for banana sales, because of falling consumption in favour of seasonal fruits, never has there been such a poor summer season as in 2021. This year, the fact that the banana supply was abnormally heavy during the spring definitely triggered this hell-bound spiral. After a light start to the year in terms of volumes, due to cool climate conditions in Ecuador and Colombia, the supply underwent a considerable rise in spring. Hence Colombia reached its peak late, and this extended until early summer, with high levels late in the season. Furthermore, the African origins also performed at above-average levels over this period. Hence prices started to drop gradually from week 20, i.e. 2 weeks earlier than in 2020. Thereafter, although the Ecuadorian giant eased up slightly during the summer, and the African supply was scaled back because of the low-production period and numerous trade-offs in favour of the sub-region's markets, Colombian pressure remained much too high. In addition, although the volumes were small, shipments from the French West Indies were at much higher levels than in 2020. In this context the supply proved much too big for demand, and free market prices dropped with every passing week, until they slipped below the €10/box mark from week 29, a threshold not observed for the past 10 years. In Western Europe, the markets held up overall, thanks to the contract sales. However, the excess supply underwent frequent clearances at low prices, on both the wholesale and East European markets. There, import prices levelled out for more than 4 weeks between mid-July and late August at around €6.25/box, something never witnessed during the summer period.

Source: CIRAD

Banana – EU – Supply from January to June 2021*

000 tonnes	2019	2020	2021	2021/2020
Net supply	3 375	3 532	3 469	- 1.8 %
Total imports, incl.	3 068	3 220	3 156	- 2.0 %
MFN	2 521	2 698	2 614	- 3.1 %
ACP Africa	300	289	309	+ 7.1 %
ACP others	248	233	232	- 0.3 %
Total EU production, incl.	307	312	313	+ 0.3 %
Martinique	78	71	71	- 0.1 %
Guadeloupe	20	23	28	+ 21.8 %
Canaries	199	208	204	- 1.9 %

* provisional | sources: CIRAD, EUROSTAT (excl. EU local production)



© Régis Domergue

US banana supply in June 2021: slipping back.

The US banana market supply took a downturn in June 2021 (- 2.5 %), erasing the gains made in May (+ 2.9 %). Four of the last six months registered negative growth. The main reason is well known: the cyclones in November 2020, which in particular devastated Guatemala and Honduras. Trade-offs in favour of the US market from origins such as Colombia, Ecuador or Costa Rica were however insufficient to offset the big shortfall. So over the 1st half of 2021, the market was down by 76 000 tonnes, dropping to 2 362 000 tonnes. Note that the trend for the organic banana was exactly the opposite to that for the conventional banana: + 4.7 % for organic, and - 4.1 % for conventional. Organic's market share also climbed to 11.9 %. Over 12 months, there was a clear downward trend, with a 3.6 % downturn in net supply, barely holding the 4-million tonnes level, with 4 026 000 tonnes, i.e. a historic low.

Source: CIRAD

Banana – USA – Supply from January to June 2021*

000 tonnes	2019	2020	2021	2021/2020
Gross supply, of which	2 356	2 437	2 362	- 3.1 %
organic	219	269	282	+ 4.7 %
Re-exports to Canada	294	299	292	- 2.1 %
Net supply	2 062	2 139	2 069	- 3.2 %

* provisional | source: US Customs

Apples and pears

2021 European harvest forecasts

More apples, and much fewer pears

by **Anne-Solveig Aschehoug**, consultant
annesolveig.presse@gmail.com

According to the 2021-22 harvest forecasts published by WAPA on 5 August, European apple production should register an increase of one million tonnes, to reach a total of 11 735 000 tonnes. Pear production is set to see a big fall of 28 % over one year, to 1.6 million tonnes, one of the smallest harvests for the past thirty years.

© Catherine Sanchez





Apple – EU27+UK – Harvest forecast for main producer countries

in tonnes	2018	2019	2020	2021	2021 compared to	
					2020	2018-2020 average
Poland	4 810 000	2 910 000	3 410 000	4 170 000	+ 22 %	+ 12 %
Italy	2 264 000	2 096 000	2 124 000	2 046 000	- 4 %	- 5 %
France	1 477 000	1 551 000	1 337 000	1 375 000	+ 3 %	- 8 %
Germany	1 093 000	991 000	1 023 000	1 080 000	+ 6 %	+ 4 %
Spain	476 000	555 000	425 000	543 000	+ 28 %	+ 12 %
Hungary	782 000	452 000	350 000	520 000	+ 49 %	- 2 %
Romania	425 000	327 000	389 000	410 000	+ 5 %	+ 8 %
Portugal	267 000	354 000	278 000	312 000	+ 12 %	+ 4 %
Netherlands	267 000	272 000	220 000	250 000	+ 14 %	- 1 %
Greece	301 000	276 000	280 000	203 000	- 28 %	- 29 %
Belgium	231 000	242 000	168 000	192 000	+ 14 %	- 10 %
UK	219 000	205 000	196 000	191 000	- 3 %	- 8 %
Czech Rep.	145 000	103 000	118 000	126 000	+ 7 %	+ 3 %
Austria	184 000	146 000	126 000	115 000	- 9 %	- 24 %
Croatia	86 000	60 000	55 000	65 000	+ 18 %	- 3 %
Lithuania	62 000	26 000	60 000	32 000	- 47 %	- 35 %
Slovakia	44 000	35 000	30 000	31 000	+ 3 %	- 15 %
Sweden	32 000	20 000	32 000	27 000	- 16 %	- 4 %
Slovenia	72 000	36 000	46 000	19 000	- 59 %	- 63 %
Denmark	24 000	15 000	24 000	18 000	- 25 %	- 14 %
Estonia	14 000	10 000	14 000	12 000	- 14 %	- 2 %
Total	13 275 000	10 783 000	10 705 000	11 735 000	+ 10 %	+ 1 %

Source: WAPA

Apple – EU27+UK – Harvest forecast by main varieties

in tonnes	2018	2019	2020	2021	2021 compared to	
					2020	2018-2020 average
Golden Delicious	2 403 000	2 361 000	1 968 000	2 120 000	+ 8 %	- 4 %
Gala	1 467 000	1 439 000	1 444 000	1 563 000	+ 8 %	+ 8 %
Idared	1 177 000	592 000	628 000	685 000	+ 9 %	- 14 %
Red Delicious	737 000	678 000	660 000	640 000	- 3 %	- 7 %
Red Jonaprince	371 000	407 000	441 000	422 000	- 4 %	+ 4 %
Jonagold	577 000	391 000	312 000	418 000	+ 34 %	- 2 %
Shampion	569 000	413 000	423 000	404 000	- 10 %	- 1 %
Other varieties*	356 000	319 000	334 000	375 000	+ 12 %	+ 12 %
Elstar	357 000	363 000	312 000	342 000	+ 10 %	0 %
Granny Smith	393 000	372 000	365 000	301 000	- 18 %	- 20 %
Fuji	332 000	316 000	313 000	299 000	- 4 %	- 7 %
Ligol	350 000	150 000	210 000	280 000	+ 33 %	+ 18 %
Jonagored	563 000	246 000	250 000	249 000	0 %	- 29 %
Braeburn	312 000	286 000	251 000	241 000	- 4 %	- 15 %
Cripps Pink	275 000	289 000	273 000	241 000	- 12 %	- 14 %
Gloster	190 000	145 000	154 000	191 000	+ 24 %	+ 17 %
Pinova	155 000	140 000	161 000	163 000	+ 14 %	+ 20 %
Reinette grise	142 000	129 000	131 000	135 000	+ 3 %	+ 1 %
Jonathan	164 000	96 000	97 000	76 000	- 21 %	- 36 %
Boskoop	66 000	55 000	46 000	58 000	+ 26 %	+ 3 %
Morgendurf	58 000	48 000	54 000	51 000	- 5 %	- 3 %
Annurca	40 000	45 000	45 000	45 000	0 %	+ 4 %
Bramley	72 000	54 000	50 000	44 000	- 13 %	- 25 %
Cox	23 000	17 000	29 000	24 000	- 18 %	+ 5 %

Ariane, Belgica, Cameo, Diwa, Greenstar, Honey Crunch, Jazz, Junami, Kanzi, Mariac, Rubens, Tentation, Wellant, etc. | Source: WAPA

European apple production on the increase

According to the latest harvest forecasts published by WAPA, European apple production should register an increase of one million tonnes, to reach a total of 11 735 000 tonnes, up by 10 % over one year, though just 1 % above the three-year average. Western Europe will have a roughly average production, while the Eastern European harvest is set to increase.

The Gala and Golden Delicious varieties will rise by 8 % to 2.12 million tonnes and 1.56 million tonnes respectively. So Gala will have a bigger presence on the export and domestic markets, but 7 to 10 days later, and with more availability from April to June 2022, i.e. in competition with the Southern Hemisphere apples. As for Braeburn, the expected volume is down by 3 % to 241 000 t, with a 4 % rise in German volumes to 117 000 t. In general terms, Cripps Pink has registered a 12 % fall over one year, at 14 % below the three-year average, with an expected volume of 241 000 t.

Poland, the number one producer country, should register a 22 % increase over one year to 4.17 million tonnes, though the harvest quality will not be as good, because of poor climate conditions. This country has announced figures of nearly 2.5 million tonnes earmarked for industry, 1.17 million tonnes for export and 500 000 t for the domestic market. Hungary has also predicted a big production increase to 520 000 t (+ 49 % over one year). Italy has reported a 4 % fall in its harvest over one year, to 2.05 million tonnes, with smaller-sized fruit and a one-week delay to the harvest. France has registered a 3 % increase over one year, to 1.38 million tonnes, thereby returning to normal but remaining well below the three-year average (- 8 %), with 300 000 t lost due to the April frosts. The campaign is set to be 8 to 10 days behind 2020. Small sizes are in the majority, with large sizes scarce. Visual impacts due to frost will be likely (frost rings). Organic apple production is expected to be up by 6 % over one year to 605 650 t, with 204 000 t in Italy, 118 000 t in Germany and 110 000 t in France.

Furthermore, European apple stocks were around 439 000 t in early August 2021, with 188 000 t of Golden Delicious. Europe decided to direct approximately 4 million tonnes to the industrial market, bearing in mind its shortfall (small stocks) and high demand since the spring.

Among the non-EU producer countries, Turkey has announced a harvest of 4 million tonnes (+ 2 %), China of 44.94 million tonnes (+ 2 %), the USA of 4.47 million tonnes (- 6 % over one year and 10 % below the three-year average), and India of 2.65 million tonnes. It should be noted that European apple imports by the Indian market are on the up (176 000 t from August 2020 to March 2021), despite the closure of the Suez Canal, a mandatory import certificate since

21 August 2020 and strong competition from Iranian apples. Meanwhile the Southern Hemisphere countries revised their estimated volumes to 5.23 million tonnes, with a considerable increase for Brazil to 1.27 million tonnes.

We should recall that world apple imports between September 2020 and April 2021 rose by 13 % to 845 000 t, with EU-27 imports down by 28 %, a 20 % rise in Chinese imports, and a 24 % fall in US imports.

One of the smallest pear harvests for the past 30 years

2021-22 pear production is set for a big fall of 28 % over one year, to 1.6 million tonnes, 27 % below the three-year average. This is one of the smallest harvests for the past thirty years. The April frost and high physiological droppage, plus storms in June, partly explain this fall across all the production areas, except for Portugal which saw a 36 % increase over one year to 189 000 t. Summer pears were hardest hit in terms of percentage, but it is the market heavyweight, Conference, which has seen the biggest drop in terms of volumes.

Italy seems to be the worst affected country, with a 65 % drop in production to 213 000 t. The damage varied between production zones and varieties. Summer varieties such as Carmen, Santa Maria, Coscia and Williams have seemingly been less affected, while the seasonal varieties have been hardest hit. Hence we can observe a cyclical fall for Conference, and a big drop for Abate Fetel. The latter should see a harvest fall of 73 % over one year, to 66 000 t. These falls are due both to the various frosts in April, to the damage done by the stink bug and the appearance of brown spots on the fruit. On top of these cyclical problems there is the shrinking Italian pear cultivation area (- 5 % over one year). This concerns in particular Emilia-Romagna (surface areas - 13 %) and the Decana variety (- 7 %).

In France, production is set for a very low figure of 57 000 t (- 57 % over one year), in particular for summer pears (Guyot and Williams). Belgium and the Netherlands are also forecasting a fall in the harvest of nearly 20 %, to 325 000 t and 295 000 t, respectively. This is the first time in twenty years that Belgian pear surface areas have shrunk.

Overall, Europe is set for a generalised decline in Conference volumes (- 18 % over one year, i.e. 805 000 t). Despite expected falls in production, the Netherlands, Belgium and Spain could take advantage of the lack of Italian pears. Furthermore, the impact of the world cyclical conditions will need to be taken into account; this relates in particular to additional raw materials costs, which affect packaging, freight and logistics ■



© Belgif-Domengue

Pear – EU27+UK – Harvest forecast for main producer countries

in tonnes	2018	2019	2020	2021	2021 compared to	
					2020	2018-2020 average
Netherlands	402 000	373 000	400 000	325 000	- 19 %	- 17 %
Spain	298 000	313 000	307 000	300 000	- 2 %	- 2 %
Belgium	369 000	332 000	393 000	295 000	- 25 %	- 19 %
Italy	730 000	363 000	611 000	213 000	- 65 %	- 63 %
Portugal	142 000	202 000	139 000	189 000	+ 36 %	+ 17 %
Poland	70 000	70 000	65 000	70 000	+ 8 %	+ 2 %
France	134 000	121 000	133 000	57 000	- 57 %	- 56 %
Greece	60 000	58 000	80 000	44 000	- 45 %	- 34 %
Germany	45 000	42 000	39 000	42 000	+ 8 %	0 %
Romania	21 000	16 000	19 000	21 000	+ 6 %	+ 11 %
Hungary	38 000	32 000	16 000	17 000	+ 3 %	- 43 %
UK	23 000	20 000	17 000	15 000	- 13 %	- 26 %
Czech Rep.	7 000	6 000	6 000	7 000	+ 14 %	+ 3 %
Denmark	6 000	4 000	6 000	6 000	0 %	+ 13 %
Croatia	4 000	3 000	2 000	2 000	0 %	- 29 %
Sweden	2 000	1 000	2 000	2 000	- 15 %	+ 2 %
Estonia	0	1 000	1 000	1 000	0 %	- 1 %
Slovakia	1 000	1 000	1 000	1 000	+ 12 %	- 6 %
Slovenia	5 000	1 000	1 000	0	- 67 %	- 84 %
Total	2 358 000	1 959 000	2 236 000	1 604 000	- 28 %	- 27 %

Source: WAPA

Pear – EU27+UK – Harvest forecast by main varieties

in tonnes	2018	2019	2020	2021	2021 compared to	
					2020	2018-2020 average
Conference	988 000	892 000	984 000	805 000	- 18 %	- 16 %
Others	329 000	278 000	319 000	240 000	- 25 %	- 22 %
Rocha	142 000	202 000	139 000	189 000	+ 36 %	+ 17 %
Williams	272 000	200 000	257 000	127 000	- 51 %	- 48 %
Abate Fetel	318 000	140 000	247 000	66 000	- 73 %	- 72 %
Coscia-Ercollini	70 000	63 000	73 000	55 000	- 25 %	- 20 %
Doyenne du C.	82 000	62 000	72 000	41 000	- 44 %	- 44 %
Blanquilla	40 000	37 000	38 000	35 000	- 9 %	- 9 %
Guyot	58 000	58 000	55 000	30 000	- 45 %	- 47 %
Kaiser	45 000	17 000	41 000	11 000	- 72 %	- 67 %
Passe Crassane	10 000	7 000	8 000	3 000	- 57 %	- 59 %
Durondeau	4 000	3 000	3 000	2 000	- 24 %	- 27 %

Source: WAPA

European banana market

A perfectly consenting victim

by **Denis Loeillet**, CIRAD
denis.loeillet@cirad.fr

It is undeniable that trading terms are continuing to deteriorate, indeed reaching crisis point. Between a downward trend in European banana prices and the steep inflation in production factor costs, margins are now close to zero. Especially since the regulations and markets are demanding better in both environmental and social terms, and sanitary threats are setting in. The sector must change, out of absolute necessity. Yet no-one ever asks about how these stipulated changes in practice are to be financed.

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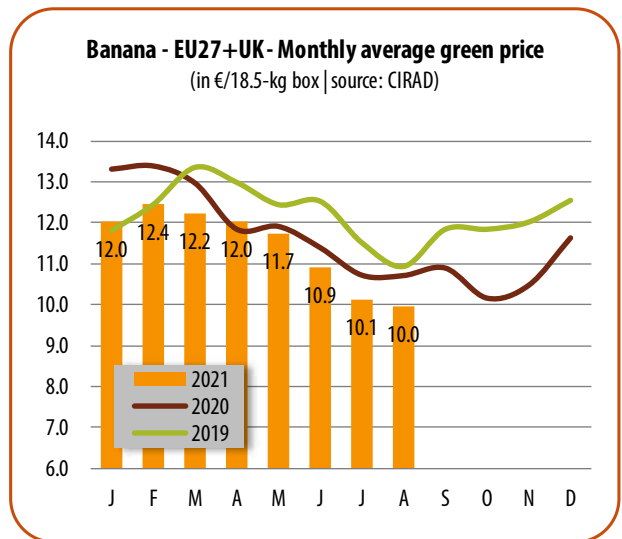
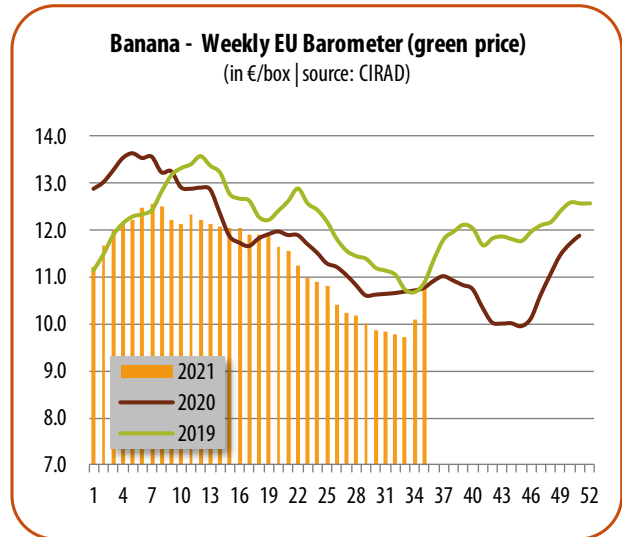
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There is something rotten in the banana kingdom. While the causes are well known, the current situation has deteriorated so far that many believe that the crisis point has already been passed. The imbalance between supply and demand is sending world prices into an unprecedented downward spiral (except in the USA, but we will come back to this). FruiTrop has demonstrated at length, with the numbers to back it up, that many operators will in the near future pass the point of no return. The arms race via the expansion of surface areas or improved productivity (e.g. irrigation) is disproportionately swelling the world production potential, especially in the main production zone for dessert banana exports: Central and South America, more commonly referred to as the dollar zone. Between 2013 and 2020, the total exports across all destinations from Ecuador, Costa Rica, Guatemala and Colombia went from 517 to 719 million boxes, i.e. an increase of 39%!

The potential is so large that the transit of two major cyclones in November 2020 (Eta and Iota) over Honduras and Guatemala shook the world markets for barely a few weeks. The only ones to benefit were the US market operators, which, in a most timely and coordinated manner, temporarily raised their sale prices to the big supermarkets. Instead of boosting the world price, the sudden disappearance of some 350 000 boxes per week only slowed the collapse in Europe by a few months. And a collapse there most certainly is! For the past decade of Cirad publishing its European import price barometer, never has there been such a low level for the first eight months of the year (average established in August 2021), dropping below the €12 mark to €11.8/box. The average price for July alone actually fell to just €10.1, and to €10.0 for August. We need to go back to 2011, a time of great gloom, to find such a disastrous summer. And unfortunately, the crisis was not confined to the summer. The market came undone very quickly in 2021, starting in week 9.



Banana – Exports for some origins

in million boxes	2012	2013	2014	2015	2016	2017	2018	2019	2020	2020/2019	
										in million boxes	in %
Total of which,	489	517	553	567	627	656	679	692	719	+ 28	+ 4 %
Ecuador	242	256	296	318	315	323	345	356	371	+ 15	+ 4 %
Colombia	89	97	83	77	93	98	97	98	106	+ 8	+ 8 %
Guatemala	55	61	65	71	100	107	113	117	113	- 4	- 3 %
Costa Rica	102	103	110	100	120	128	125	121	129	+ 8	+ 7 %

Professional sources, CIRAD-FruiTrop





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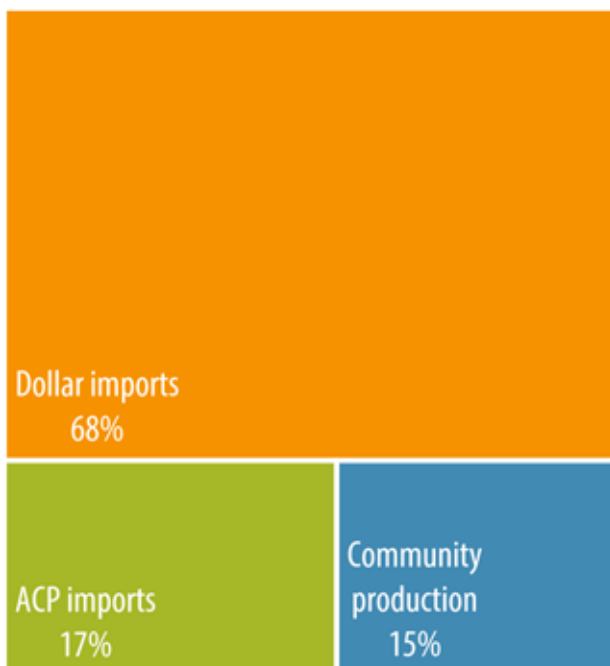
We should also remember that the comparison with 2020 is even less flattering, since we were already starting from a low point, with a record of €11.7/box (reference: CIRAD Barometer). However, the infernal cycle of destruction of value went into overdrive in 2021, and a major catastrophe is on the cards if nothing changes in terms of world supply. The absurd mechanics mean that the contracts for 2022 are being discussed on a historic basis. For example, in autumn 2021, the upstream and downstream operators will discuss the prices applicable to the 2022 contracts based on the (historically low) 2021 contracts, and the 2021 situation (highly deteriorated). The scope for discussion over what 2022 could bring (expected production level, impacts of climate vagaries, new constraints, competition from other fruit sectors, etc.) has practically shrivelled right up.. In other words, the European operators are already caught in the deflationist trap. So there are only three ways to bring prices on the European market back up: natural selection, regulation or destruction.

Loss of diversity in supply sources

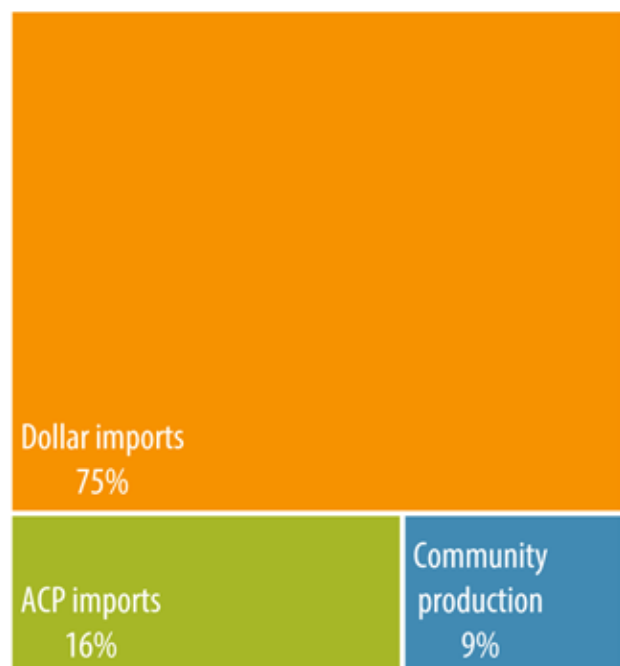
Natural selection is already doing its job, and will continue to do so, eliminating the least competitive from the market. Creative destruction, Joseph Schumpeter's pet theory, has been at work for a long time. The liberalisation trend of the European banana market has brought about the complete disappearance of entire origins, and reduced the diversity of supply sources. In the space of two decades, the ACP group for example partially or completely lost several origins such as Jamaica, Suriname, Saint Vincent, Saint Lucia, etc. We can also mention French production, which is undergoing pressure from increasingly intense competition on its own market, while being outgunned in terms of production conditions. Creative destruction is also at the root of a little or undocumented phenomenon for the banana sector: the reduction in the number of small growers to the benefit of big production facilities. This sector has in no way escaped a weighty international trend, which cuts across the agricultural sectors and level of economic development of the country (see <https://grain.org/en/article/4929-hungry-for-land-small-farmers-feed-the-world-with-less-than-a-quarter-of-all-farmland>).



Banana - EU27+UK - Supply in 2005



Banana - EU27+UK - Supply in 2020



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When the idea of regulation resurfaces

While the time of full liberalism seems, albeit rather misleadingly, to have passed under the effect of Covid shock therapy, the European market will not return to quota-based management. Nostalgics for the banana CMO will definitely need to mourn the passing of this system, though in many respects it was a success. Conversely, nothing is stopping proposals for a modernised vision of regulation, with a “magistrate” who could look at the social and environmental conditions of production. That is the main idea of the European Commission’s Green Deal, to ensure that for example products imported and consumed by Europeans have the same requirements levels as those produced in the EU. There is many a slip twixt the cup and the lip, but the idea is making progress, and supporting or encouraging European distribution and certifiers, which have set themselves the challenge of anticipating what the near future will bring – perhaps regulation.

It is hard law (the authorities) which drives soft law (the economic operator), unless things are the other way round ... but not to worry, that’s a good thing. We still need to find the right impact indicators and a verification system above any suspicion. And that makes for a vast field! This realisation – that we can do much better in social and

environmental terms – would be all the more convincing if it was accompanied by an economic valuation of the changes in practice. Since as ever, efforts have only been focused on the upstream segment, which has to eliminate entire classes of pesticides from its production systems, pay decent wages, in many places substituting the failing social protection systems of impotent States, provide housing and transport for its employees and their families, education for their children, etc. In parallel, production must also be organised to preventively manage emerging diseases such as TR4 fusarium wilt.

All this in a context of unrestrained production costs due to soaring prices for all intermediate consumption, energy and sea freight, and on top of that plunging value, especially on the European market. In the short term, the increase should be 10% to 25%, according to the products or services, with the highest inflation in the fields of sea freight and packaging. The impact will doubtless be even bigger in 2022 when the supply contracts are renewed for the production factors, and because the price trend is resolutely upward. Some professionals have made their calculations, and reckon that the surge in costs will have an adverse impact of at least 50 eurocents per box of bananas.

Resistance rating of trial plants in plant crop and first ratoon

Variety	Description	Rating	
		Plant	Ratoon
CIRAD 03	Novel hybrid	HR	HR
CIRAD 04	Novel hybrid	HR	HR
CIRAD 05	Novel hybrid	HR	R
Asia Pacific No. 1	Cavendish (slow offtype)	HR	R
Dwarf French Plantain	Cooking banana	R	HR
Goldfinger	Resistant TR4 reference	R	R
Asia Pacific No. 3	Cavendish	R	I
GCTCV 217	Cavendish	I	R
GCTCV 105	Cavendish	I	R
Formosana	Intermediate TR4 reference	I	S
CIRAD 06	Novel hybrid	VS	I
High Noon	Lady Finger hybrid	VS	I
Hom Thong Mokho	Gros Michel style; ex Thailand	VS	S
Pisang Ceylan	Mysore group	VS	S
PKZ	Highgate? Hybrid	VS	S
CJ19 Selection	Cavendish ex N. Qld	VS	S
Williams	Very susceptible TR4 reference	VS	VS

HR = highly resistant, R = resistant, I = intermediate, S = susceptible, VS = very susceptible

Source: Australian Bananas Magazine, August 2021, pages 16 & 17, abgc.org.au

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Varietal improvement to combat TR4

The arrival in Colombia (2019) of Panama disease tropical race 4 (TR4), and its subsequent spread across the zone (Peru, 2021) have boosted the appeal of all banana varietal improvement programmes. The absence of chemical solutions for managing TR4 means that it is essential to find one or more resistant varieties. In this context, we can be proud to see that in a trial conducted in Australia, among a long list of candidates, three of the four CIRAD hybrids earned the top three places in terms of TR4 resistance (see Australian Bananas Magazine, August 2021, pages 16 & 17, abgc.org.au). Especially since these hybrids cope very well with black sigatoka, the other major banana disease (<https://www.fruitrop.com/en/Articles-by-subject/Economic-analyses/2021/Mancozeb-as-a-banana-treatment-the-end-of-an-icon>). As a reminder, CIRAD’s hybrids were derived from conventional cross-breeding, and so do not fall under the European law prohibiting the sale of GMO variety fruit, including edited varieties (via NBT techniques (New Breeding Technology)). We can wager that these good results will bring in private partners (<https://www.fruitrop.com/en/Articles-by-subject/Agronomy/2020/World-Musa-Alliance>), to continue the work of varietal development, from field to consumption markets (export and/or local). At this point, we will doubtless need to review certain “absolute truths”, which underpinned the huge success of Cavendish, but which also ushered in its downfall. That is the price to pay for resolving the issue of TR4, and in so doing weaning the market off what is practically a monoculture variety.

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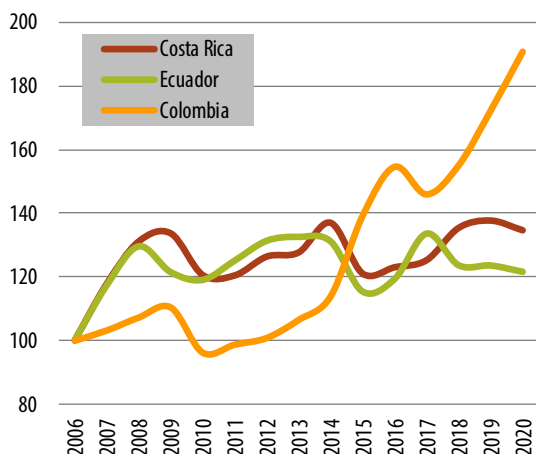
Consent for the worse

The drama in this story is that all the terms of the equation are well known, as is the result: European contract prices in 2022 will be down from 2021. And all for what? To combat inflation? Of course not. The banana already provides the cheapest calorie in the fresh produce section. So for what, then? Well, quite simply to look after the image of the chains which bring in their regulars by slashing retail prices on a few flagship products such as the banana. The banana is unfortunately a collateral casualty, albeit a consenting one, of a war that is not its own.

I say consenting, because while the situation is objectively difficult, we can nonetheless observe that the tenders issued by the big European supermarkets have always been borne fruit. So it is a good thing that there are operators ready to supply fruit whatever the asking price. Contrary to appearances, we should not see any contradiction with the severity of the current crisis. The trading terms are not the same everywhere in the banana world. We mentioned production systems. Some are more virtuous, even much more so, than others. And while this virtue is not always synonymous with an increase in production cost, it is nonetheless often the case. It is readily understandable that systematic air-spraying treatment against black sigatoka comes out cheaper, and reduces the risk of a productivity fall or being ripe on arrival, than refraining from using certain chemicals, applying rational treatment accompanied by manual leaf stripping, or employing fallow remediation, a technique which every year neutralises a considerable part (up to 20 %) of the plantable area. The production structure also differs between small-holdings in the Caribbean, and the sprawling plantations commonly found in the dollar zones. Economies of scale also play a huge part.

And then there are competition factors outside of the industry. Factors on which the operators rely to boost the competitiveness of their supply, outside of any direct relationship with the production or marketing systems. Exchange rate is one of these. It can make and unmake the income statement. The most iconic case is that of the Colombian peso's evolution against the euro. The weakness of the currency of Europe's no.2 supplier (1.5 million tonnes) enables it, by default, to gain competitiveness points (i.e. its appeal) and increase revenue to the export industry players in Colombia. The graph presenting the evolution of import price in local currency for three export origins, with different exposure to exchange rate against the euro, speaks volumes. Colombia has climbed from an index of 100 in 2014 to 191 in 2020. This is with all other things being equal (intermediate consumption costs, inflation), and with the same basic data (European price, Customs duty, etc.) as its rivals Costa Rica or Ecuador. It is easy to understand why 84 % of Colombian banana exports are now finding their way to the European market.

Banana - Europe - Import price less Customs tariff (local currency) (index 100 = 2006 | source: CIRAD-FruiTrop)





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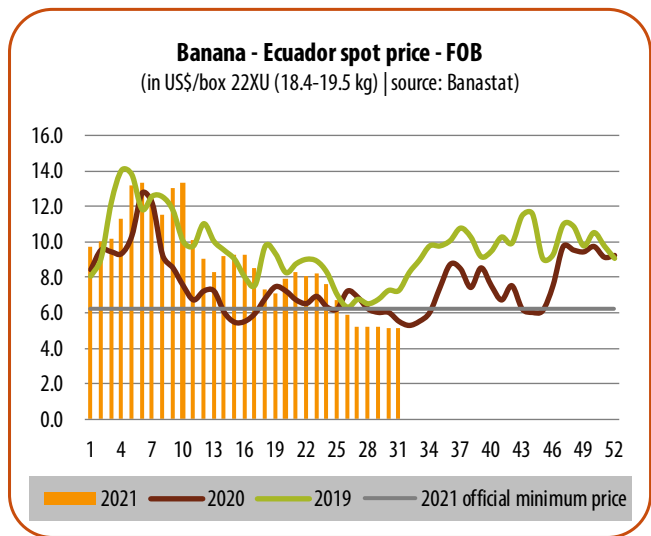
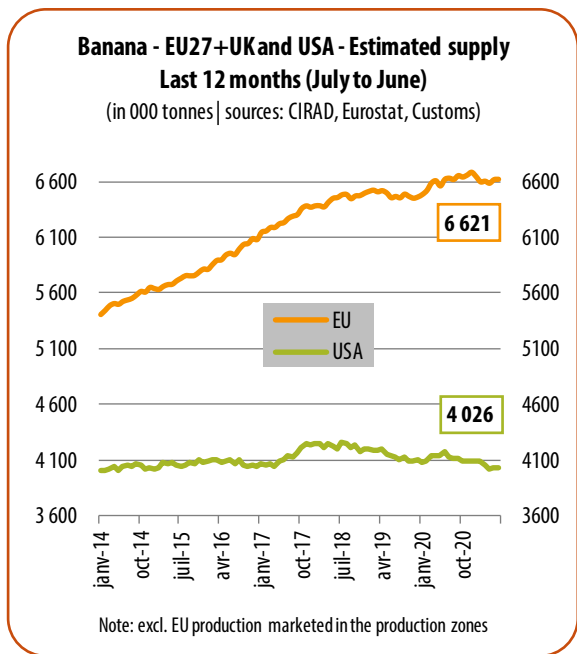
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The fact remains that there are rumblings of revolt from the fields. Recent protests in Ecuador by rice and banana growers against falling sale prices and increasing production factor costs (especially energy) provide a warning that little room for manoeuvre remains, if any. In August, the chartering of whole ships directly by a pool of exporters trying their luck, in the hope of beating the Ecuadorian spot price, which is tumbling, shows the despair which is driving some players. Since launching a spot ship (i.e. without customers at the time of departure) onto a European market with historically low prices really is an act born out of desperation than an objective analysis of the state of the market.



The spectre of the producers' cartel

Regulation could also be implemented through voluntary coordination of volumes placed on the market. A kind of banana cartel which the world market would manage. Everyone still remembers the crazy story of the UPEB (Union of Banana Exporting Countries). This initiative was created in the mid-1970s. The objective of the authorities of some Latin American countries was to take back control of their exports (levying an export tax) from the deeply rooted transnationals, accused of leaving the countries only the crumbs of the wealth created on their soil. Ultimately, the results were mixed, to say the least. The idea has recently re-emerged in the dollar zone. Except that while this is an intellectually alluring idea, this banana OPEC is just a mirage which fades as soon as the operators return to their fincas, or the authorities to their Ministry. Their reasoning follows their own interests, in the belief that they will hold out for the longest, and ultimately clean up in terms of market share.

However, there is a counter-example, of successful market management through solely the goodwill of the operators themselves. We are talking about the US market. The monopolistic nature of this market has resulted in particular in tightly-controlled volumes made available to retailers, a high price for the spot market (a good indicator of the annual contract price levels), and also the ease with which operators jointly imposed an Act of God clause (temporarily increasing the contract price) on the supermarkets when the two cyclones passed through Central America in late 2020. The banana supply can be heavily curbed by this control lever. While in the short term the effects of a reduction in the export potential from Central America had an even effect on the USA + Canada consumption zone on the one hand, and the EU27+UK on the other (between - 2 % and - 3 % over Q1 2021), over the longer term there is a clear difference in behaviour. Between 2015 and 2020, European consumption (at constant scope) increased by 830 000 tonnes, while US consumption fell by 18 000 tonnes.

It is impossible to have such a level of control over a market as heterogeneous as the vast and highly open economic area comprising the EU27+UK, Russia and its former satellites, the Mediterranean zone, etc. The battlefield is too vast to coordinate anything. The Banana CMO handled more than 500 million consumers. Yet we are talking about a bygone age, so ineffectual is the last line of defence, i.e. the Customs duty levied on dollar bananas (€75/tonne), in holding back the banana avalanche.



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Let's dare to innovate

To manage the market, there is no other alternative than scaling back the world export potential. The heavens occasionally do the job, by destroying production capacity in Latin America, the Caribbean, the Philippines or Africa. Except that, to take a highly cynical view, even when a heavy blow seems to have been dealt to production capacity (e.g. in late 2020 in Honduras and Guatemala), the market remains practically imperturbable. Like the Phoenix, production potential rapidly regains its pre-destruction level, or even exceeds it. The 350 000 or 400 000 boxes lost per week seemed like a big number, but set against world exports that gives us a tiny fraction, with less than 2 % destroyed.

And there remains what could be considered as the 4th plague of Egypt in the Old Testament: the spread of fusarium wilt tropical race 4. Presented like that, it might sound melodramatic, except that for the world banana sector it really is a disease that could compromise its agronomic and economic balance. Widely present in Asia, where it is hard to manage and generating high costs, it crossed the Pacific to establish itself in Colombia (2019), and then Peru (2021) on the border with Ecuador, the world's banana-growing powerhouse. Although bio-security measures have been adopted, and more or less applied, no-one is sufficiently optimistic as to believe that the disease can be contained forever. We will just have to find a remedy for this ill. Chemical solutions do not work. Which leaves us with the

varietal change route, i.e. finding a replacement or replacements for Cavendish, as was the case when Gros Michel was decimated. Again, it will be a long road, a very long one. Genetic engineering (genome editing, mutagenesis, etc.) promises some quick and effective solutions within the very short term. Namely, a resistant Cavendish, which from the operators' perspective, would have the advantage of not having to change anything in the paradigm on which the banana house of cards has been built for decades. The other way, advocated in particular by CIRAD, would be to take advantage of what could quickly turn into a huge disruption to the system (uncontrolled spread of the disease), to introduce greater biodiversity into this world, where it is cruelly lacking. Since while TR4 is here to stay, there is also a set of new constraints which will weigh down on production systems, and which could shuffle the deck even quicker than fusarium wilt. Among these we might mention the probable hardening of the rules on the maximum pesticide residue limits authorised on imports into Europe. Mancozeb, an omnipresent fungicide used to manage black sigatoka, is first on the list (<https://www.fruitrop.com/en/Articles-by-subject/Economic-analyses/2021/Mancozeb-as-a-banana-treatment-the-end-of-an-icon>). We can also consider stopping the use of a well-known herbicide, bearing in mind that even before its official ban, industries are already anticipating its elimination.

Whether by disease or regulations, the reason for changing practices is unimportant. In any event, it means rethinking the entire sector either partially or in depth, both upstream and downstream. However – and how do we stop them? – the economic decision-makers are focused on what seems easier in the short term: changing nothing, minimising risks and praying that the genetic engineers succeed. True, in marketing “being wrong is just being right too soon” (M. Yourcenar). But it is just as true that it would be wrong not to take the right train, and most of all not take it at the first opportunity. Since while pioneering operators will need to invest major resources to embark on a trial (learning curve theory), they will also be the first beneficiary of the innovation, and for a long time the only one. So we can forecast that a few pioneers will pick themselves up and transform the predicted shock into an opportunity to revalue the industry, while genuinely changing practices ■



TR4 damage

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Bananas – on the road to nowhere

by **Richard Bright**, consultant
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“Global banana oversupply is putting pressure on banana prices across all segments – conventional, organic and Fairtrade – and producer profitability is being reduced”, warned banana sector expert Ralph Fischer at Eurofruit’s World of Fresh Ideas (WOFI) online conference. He added that production should be cut to rebalance supply and demand, and that production costs should be shared across the supply chain.

How is the banana conundrum solved? Despite fears of the effects of oversupply on industry profitability, every year global production continues to rise and ever more bananas are traded. If the answer to the problem of profitability is to reduce supply as Mr. Fischer suggests, why is it that the polar opposite is happening?



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Let's break it down and start at the end of the chain in a search for clues. In October/November over the past 3 years there has been uproar across Europe and Latin America when the annual Aldi banana price is revealed for the following 12 months, largely because the price has trended lower year-on-year. The discounter is vilified in the national and international trade press, but shrugs its shoulders and ignores the opprobrium. Most importantly, it does not bow to public pressure - the price remains unchanged. The German discounter knows that there is a queue of alternative banana suppliers should one or more of its providers be unable to meet its terms and conditions. Aldi's stance is legitimate. Although it might acknowledge that the price it sets influences the rest of the European market, Aldi can rightly argue that it is not responsible for the purchasing behaviour of its competitors. Given its membership of the Global Banana Forum and its demands for GlobalGAP certification, Aldi's actions may well be hypocritical. Aldi would argue that under the circumstances, there is no moral imperative in determining the price.

What then of the banana supplier/distributors, who must, by definition, be complicit in the oversupply? What is their motivation? The banana multinationals will argue that the only way they can stay competitive in the zero sum game is through scale economies of production. Ironically and paradoxically therefore, the lower the price paid by the retailer to the distributor, the higher the entry barrier to the industry. The Cavendish banana is a commodity; if, unless or until this changes, there is no value to add to the product or in the chain - there are just costs to remove.

In order to raise their game, the multinationals have strengthened their Corporate Social Responsibility (CSR) and environmental credentials. This has turned out to be more of a defensive rather than a value-adding manoeuvre: it has not been possible to leverage the good works into the public consciousness - as yet, the CSR concept has yet to gain traction with the consumer. Meanwhile retailers have found that consumers are steadfastly unwilling to pay a premium for Fairtrade bananas. The only reason Fairtrade producers do actually benefit is because the retailer takes a hit on the margin. It is for this reason that retailers are reluctant to stock Fairtrade beyond a certain critical mass.

What role does logistics play in what NGO Bananalink famously coined 'the race to the bottom'? While it cannot be directly blamed for the current predicament, the containerisation of the banana trades following deregulation of the EU banana market in 2006 had a major contributory impact on the fate of both the banana trade and the specialised reefer industry. With carriers and containers entering the equation, suddenly the playing field was level: retailers keen to circumvent the big brands were free to do business with independent producers wanting to sell direct. The shipping container, the ultimate commodity, facilitated the process. The licence-based quota system, which had protected banana pricing (albeit principally to the benefit of the licence holders) disappeared and the banana brands diminished in size. The EU, which before 2006 had been the most profitable global banana market, overnight became the most price sensitive.



© Jean-Marc Dubois



As the banana supply chain was modified, so the majors first 'defected' to third party carrier services and then chartered in or built their own container ships in order to reduce costs so they could compete in a more fragmented market. The reefer was/is all about adding value – the specialised mode cannot compete on cost or price with the carriers.

And what of the head of the chain? The risk takers without whom the chain would not exist. The banana business stakeholders with the most to lose, but never the most to gain. Well, the rise in production has several causes. As well as the expansion of plantations, the improved fertilizers, nematocides and farming methods have resulted in significantly higher yields per hectare. European banana production is subsidized to compensate higher production costs due to European constraints (social and environmental) and ACP countries received in past years some aid from EU budget. For some, banana exports are a low-cost route out of extreme poverty. The problem is that the market isn't growing as quickly. If India, the world's largest banana producer, chooses to focus on exports, there will be real trouble. For perspective last year India exported 191K MT mainly to the Middle Eastern markets traditionally dominated by Ecuador and the Philippines.

In Latin America, the world's largest banana exporting region, governments impose an annual 'official' minimum reference price following consultation with producer representatives, who want to be paid more, and exporter representatives, who want to pay less. The final consensus figure appears to satisfy; there have been no strikes in recent years. Complaints only tend to come from the producers who choose not to sign contracts so they can speculate on the spot market.

On the basis of the above, it seems reasonable to ask the question: where precisely is the crisis? Commercially, the banana supply chain is lean and efficient. The trade is WTO compliant. Sure – there is an ethical issue: the powerful and rich first world is exploiting the poor developing world, but t'was ever thus... The collective dollar banana governments don't seem to be too bothered and the first world consumer definitely doesn't care. This is the reality. It is what it is. It may be unethical, but under current WTO trade rules, it is legitimate. Is it resolvable? Probably not from the moral angle – and expecting supply chain stakeholders such as EU retail to participate in a cost sharing exercise as Mr. Fischer suggests is wishful thinking.

The banana trade is an exercise in power and control. The problem is that it is the market and not the producer that has the control. The tail is wagging the dog. Banana industries are perpetuating the problem by producing more - and this is not going to change. Who, for example, is going to tell Ecuador to produce less for the benefit of a banana producer in Cameroon?

It's basic Darwinian economics: in the end it will be the strongest, fittest and most adaptable industries that survive. Unless Panama Disease TR4 intervenes, this may take some time and will continue to be painful for producer nations. The process has already started: with the exception of the Dominican Republic and the subsidised industries in Martinique and Guadeloupe, the banana industries in the Caribbean islands have all but disappeared. How long, for example, will it be before the majors permanently abandon hurricane prone Honduras?

There is an artificial alternative - that is the restriction, or management of supply. But how would that happen? Any attempt to create an Organisation of Banana Exporting Countries 'cartel' would be met by a lawsuit from the US government and expulsion from the WTO.

There is, therefore, no single answer, no silver bullet. There is no room for sentiment in a market based economic system. There is no option for the banana business but that it finds its own balance ■

A report by
Eric Imbert

Avocado

Avocado

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Avocado

World market review for summer 2020 and winter 2020-21

Stronger than the pandemic!

by **Eric Imbert**, Cirad
eric.imbert@cirad.fr

The world market was faced with a double pressure test in 2020-21, with the Covid-19 pandemic weighing down to various degrees on demand in a context of strong production growth. The overall result is highly positive, although prices dropped considerably on most markets.





**THINK
RESPONSIBLE
FARMING**



**THINK
ETHICAL
ORIGINS**



**THINK
INNOVATION
FROM PIP
TO PLATE**



**THINK
INTEGRATED
SUPPLY CHAIN**



**THINK
WESTFALIA FRUIT**

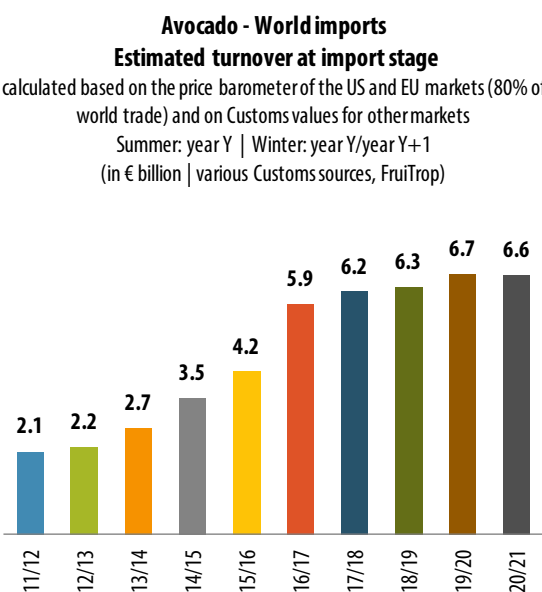
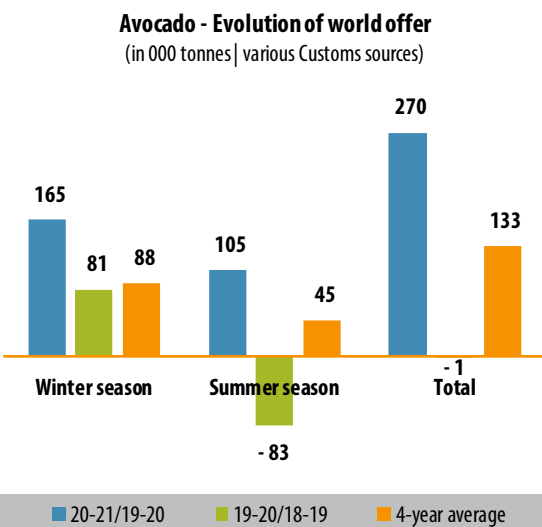
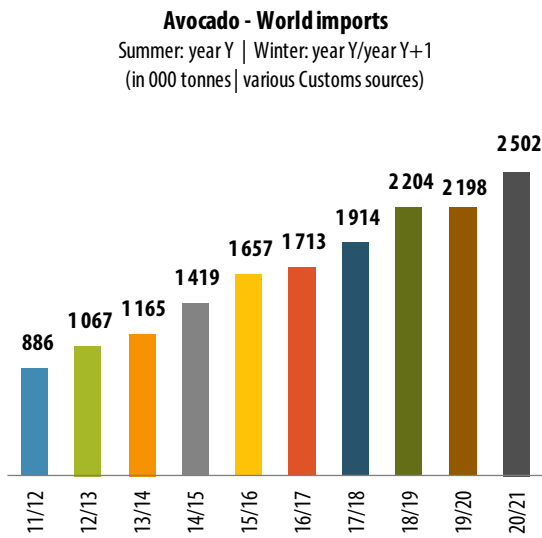


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Record growth in world trade, despite a very tough context

The 2020-21 campaign proceeded in a context of the worldwide Covid-19 pandemic from start to finish, with the disease starting to flare up in March 2020, just before the start of the summer season. This made for an atmosphere that was as unprecedented and peculiar as it was tough. Regarding the upstream segment, the production, packing and transport chain had to be reorganised, while the downstream segment had to face the big slowdown or even complete halt in activity on the OOH sector, which carries great weight in some countries (nearly 30 % in the USA, according to professional sources). The avocado showed once again that it was not “just another fruit”, by doing more than withstanding this challenge. As proof, in 2020-21 world trade had one of its better growth seasons in terms of volumes, with a rise of nearly 300 000 t from 2019-20. True, this exceptional performance must be put into some context, since 2019-20 was marked by an unprecedented state of affairs in the international trade. Smoothed over two years, the performance nonetheless remains a fine one (150 000 t/year, i.e. a level close to for the past 4 seasons). World trade is now slightly in excess of 2.5 million tonnes.

Of course, such a performance in as complex a context was achieved to the detriment of prices, which dropped on all markets in varying proportions. On this point, the pandemic only heightened a trend, seemingly becoming structural of a distinct slowdown in growth on the market in terms of value. The figures are clear: there was a 500 000 t gain between 2017-18 and 2020-21, but “only” just over 400 million dollars in terms of value. The volumes increased in similar proportions between 2014-15 and 2017-18, though the market had gained 2.7 billion dollars in terms of value...





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Growth in world production gathering pace!

There was an excellent world harvest in 2020-21, across most of the big exporter countries, which was readily able to feed the market both during the 2020 summer season and the 2020-21 winter season. It should be emphasised: the very high growth registered has only a little to do with the alternate bearing phenomenon, though it did have some effect during the summer season. Its origin lies above all in an increasingly rapid surge in world production. We need to be very aware of this trajectory, because it is set to continue (see complete original study in this edition: "World market prospects for the medium/long term (2021-2028)"). According to our estimate, volumes available for export have been increasing since 2020, derived from production corresponding to 20 000 ha at full potential, as opposed to approximately 11 000 to 12 000 ha five years ago.

Regarding Mexico, the dynamic has remained extraordinary. Exports across all destinations over the period between July 2020 and June 2021 probably exceeded 1 450 000 t (customs figure not yet finalised), marking a rise of nearly 200 000 t from 2019-20, and more than 500 000 t in six years. Jalisco confirmed that it was a significant contributor to this

growth, exporting nearly 120 000 t in 2020-21 (+ 25 000 t on 2019-20 and nearly 100 000 t more in the space of 6 years).

Peru, the world number two exporter, came back strongly in 2020 with volumes in excess of 400 000 t, up by nearly 100 000 t from the previous season! Colombia was not to be left out, with exports practically doubling between 2019-20 and 2020-21, to reach 84 000 t (figure based on the normal bloom fruit in 2020-21, and those from the "traviesa" bloom in 2019-20).

There are two black spots to note, both temporary in nature. Firstly, the near-stagnation in shipments from the Mediterranean origins. This trajectory bucks the trend in view of the expanding surface areas, and was due to unfavourable weather (summer heatwave). Secondly, and most of all, Chile – the world no.3 exporter – registered a really poor performance, with exports plunging to their lowest level since 2014-15 with 74 000 t. A cyclical collapse, although one of its dimensions, the water crisis, is clearly structural. The other major suppliers to the world market obtained near-average volumes.

Avocado, the number 8 fruit in the world rankings by volume, but no. 4 by value!

With an international market trade of 2.5 million tonnes in 2020-21, the avocado remains a long way off the leaders in terms of volume (more than 21.0 million tonnes for the banana, 7.6 million tonnes for the apple, and 6.1 million tonnes for the orange). It represents just under 4 % of a world fruit trade practically stagnant since 2017, at approximately 70 million tonnes. It occupies 8th position in the world rankings, or 2nd behind the pineapple if we look at exotics only. Yet its position is changing radically, and

is highly enviable if we look at the dynamic in terms of volume, and the classification in terms of value. The avocado is runner-up in terms of growth, with just over 10 % per year (four-year average). It is outperformed only by the cherry (+ 11.6 %), and comes out ahead of blueberries (9.6 %). The avocado trade is also 4th in value, with 6.6 billion dollars in 2020 (8 % of a world fruit market estimated at 85 million dollars). It comes behind the banana, grape and apple, but is the leading exotic.

Fruits – Top 10 world exports by volume

	in million tonnes	2020
1	Banana	21.4
2	Apple	7.6
3	Orange	6.1
4	Easy peelers	4.4
5	Grape	4.1
6	Pineapple	3.0
7	Pear	2.7
8	Avocado	2.5
9	Mango	2.3
10	Lemon	2.3

Data calculated on Comtrade bases, seeking to eliminate any double counting.

Fruits – Top 10 world exports by value

	in million US\$	2020
1	Banana	13 817
2	Grape	8 848
3	Apple	7 612
4	Avocado	6 600
5	Orange	5 294
6	Cherry	4 572
7	Cranberry/Blueberry	4 412
8	Mango	3 637
9	Kiwifruit	3 413
10	Easy peelers	3 126

Data calculated on Comtrade bases, seeking to eliminate any double counting.

Fruits – Top 10 in annual growth of traded volumes

	Average for period 2016-2020	
1	Cherry	11.6%
2	Avocado	10.1%
3	Cranberry/Blueberry	9.5%
4	Persimmon	5.9%
5	Papaya	5.3%
6	Lemon	4.9%
7	Peach/nectarine	3.1%
8	Banana	3.1%
9	Strawberry/Blackberry	2.7%
10	Kiwifruit	2.5%

Data calculated on Comtrade bases, seeking to eliminate any double counting.



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Avocado World Market

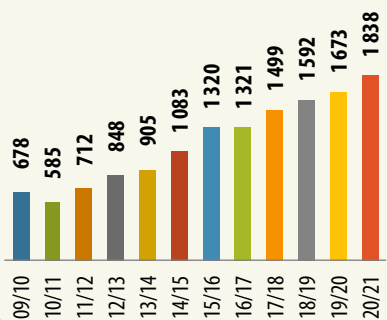
Main suppliers

export dynamic

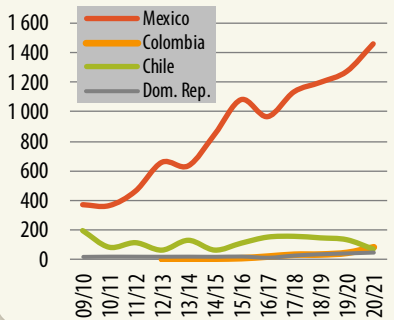
WINTER SEASON: 1 838 000 tonnes – 76 % of world market

Export calendar mainly centred on autumn and winter

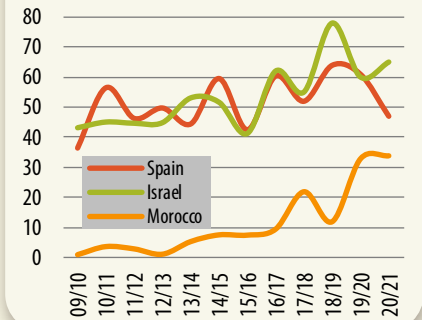
Avocado - World exports in winter season
(in 000 tonnes | professional sources)



Avocado - Latin America exports in winter season
(in 000 tonnes | professional sources)



Avocado - Mediterranean exports in winter season
(in 000 tonnes | professional sources)



Avocado – World – Exports

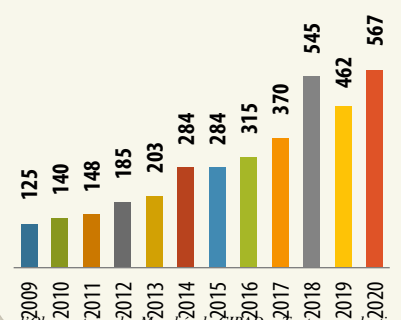
in 000 tonnes	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21
Total	693	803	725	860	1 032	1 108	1 367	1 604	1 636	1 869	2 137	2 135	2 405
Total winter season, incl.	571	678	585	712	848	905	1 083	1 320	1 321	1 499	1 592	1 673	1 838
Latin America	494	585	470	598	745	785	940	1 215	1 163	1 357	1 418	1 496	1 663
Mexico	401	371	364	463	657	633	847	1 081	966	1 134	1 198	1 272	1 458
Michoacán						615	820	1 026	910	1 055	1 108	1 177	1 338
Jalisco						18	27	55	56	79	90	95	120
Colombia					1	1	5	8	19	32	34	45	84
Chile	75	194	86	116	67	131	68	113	152	157	147	135	74
Dominican Republic	18	20	20	19	20	19	20	13	26	34	39	44	47
Mediterranean	69	80	105	94	96	103	119	91	132	130	158	157	152
Israel	32	43	45	45	45	53	52	41	62	55	78	60	65
Spain	35	36	57	46	50	44	60	43	60	52	64	61	47
Morocco	2	1	4	3	1	5	8	8	10	22	12	33	34
Portugal										1	4	3	6
New Zealand	7.7	12.4	9.6	20.4	6.7	17.3	24.7	14.0	26.0	12	16	20.0	23.0
in 000 tonnes	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total summer season, incl.	122	125	140	148	185	203	284	284	315	370	545	462	567
Latin America	53	51	62	85	88	119	185	179	199	254	369	321	416
Peru	51	48	60	81	84	115	179	174	194	246	361	311	409
Brazil	2	3	3	3	4	4	6	5	5	8	8	10	7
Africa	67	58	68	50	75	72	91	92	108	99	168	128	139
Kenya	16	19	20	22	24	25	29	39	47	52	72	63	72
South Africa	51	39	48	28	50	46	60	50	57	43	89	57	61
Tanzania		0	0	0	1	1	2	3	4	4	8	8	6
California	2	16	10	14	22	12	8	13	8	17	8	13	12

Source: Customs

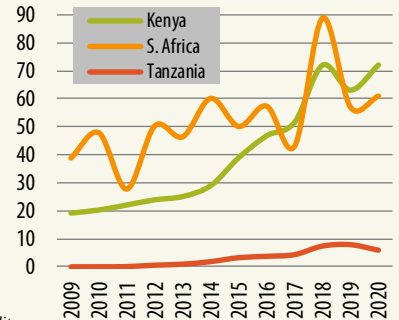
SUMMER SEASON: 567 000 tonnes – 24 % of world market

Export calendar mainly centred on spring and summer

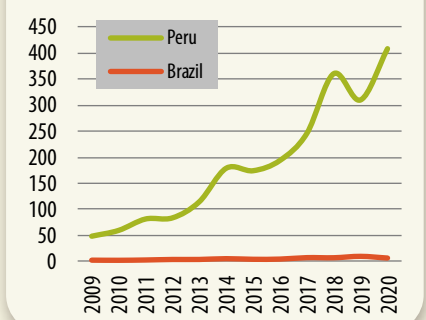
Avocado - World exports in summer season
(in 000 tonnes | professional sources)



Avocado - Africa exports in summer season
(in 000 tonnes | professional sources)

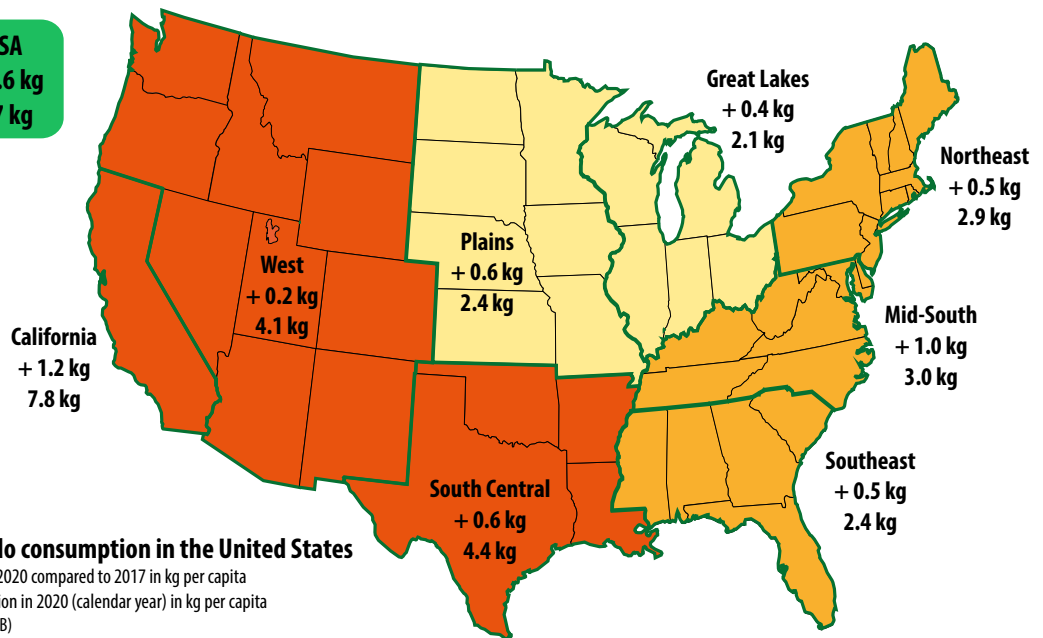


Avocado - Latin America exports in summer season
(in 000 tonnes | professional sources)



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USA
+ 0.6 kg
3.7 kg



Avocado consumption in the United States

Evolution 2020 compared to 2017 in kg per capita
Consumption in 2020 (calendar year) in kg per capita
(source: HAB)

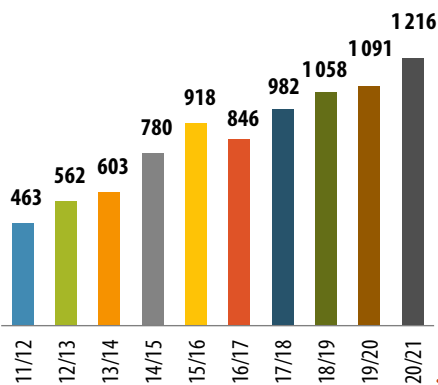
A really fine performance by the US market!

The USA remained the main architect of this growth in world trade. While the performance achieved in 2020-21 was not the biggest ever registered in terms of volume, it is nonetheless the finest! Despite the major impact of Covid-19 on a market where the OOH segment carries great weight, with 30 % of sales, imports increased by more than 12 % (+ 125 000 t)! The strongest ills call for the strongest cures: professionals adjusted prices heavily, in order to invigorate retail sales. Our campaign average barometer, calculated at the import stage, dropped to \$31.8/11.14-kg box, a level 26 % below the four-year average. Hence according to the latest data published by the HAB, the price tags registered their lowest level since 2016, with on average \$1.05/piece during 2020. This commercial aggressiveness was driven mainly by the 4/5-fruit net bag segment, which saw an even more explosive rise than in previous years (+ 43 % on 2019), establishing its position as the country's leading reference, accounting for more than 50 % of total sales on its own. The fact that US consumers subscribed to this sudden change in consumption habits, by accepting to pay more for the avocado themselves, undoubtedly highlights their near-visceral attachment to the product. The intake per capita approached 3.9 kg in 2020 nationwide, with the range remaining very broad between the highest and lowest consuming regions (from nearly 8 kg/capita in California to approximately 2.4 kg in the Plains or the South-East). The rise was very variable according to the regions, with the highest consuming not necessarily the least dynamic (+ 11 % in California!). The complete analysis can be found in FruiTrop no.275 (May-June 2021).



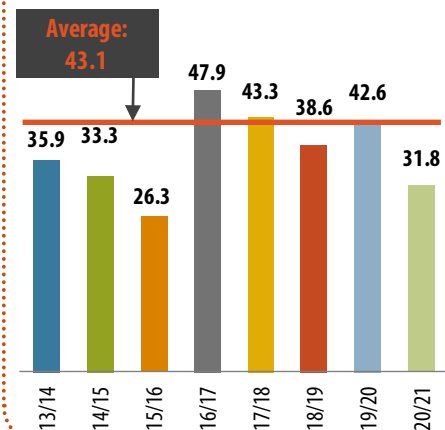
Avocado - United States - Imports

July to June, excluding Peru (calendar year)
(in 000 tonnes | source: US Customs)



Avocado - USA - Average price indicator

(in \$/11.14-kg lug | source: USDA)



TROPS

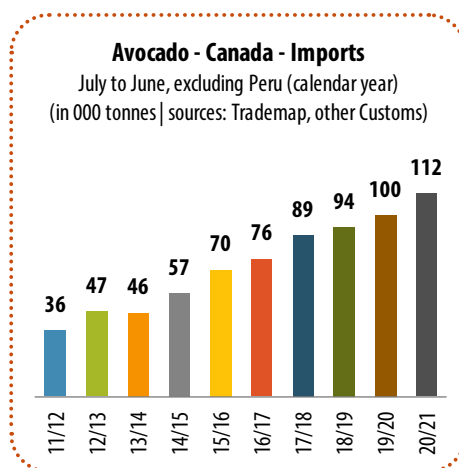
AVOCADO TROPS

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LETS YOU DOWN**



The Canadian market continued to follow in the footsteps of the USA, once again this season demonstrating a solid dynamic (10 % per year on average over the past 4 seasons). Imports reached 112 000 t, up by more than 10 000 t from 2019-20. Consumption is now close to 3.0 kg/capita. The APEAM, a body whose activities include promotion of the Mexican avocado, continued to invigorate the market through promotion campaigns (in particular during very well-viewed ice hockey matches).



© Guy Böhmer



© Cereña Dawson

Avocado – Canada – Imports

in tonnes	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Total	45 193	56 365	78 621	75 109	88 088	95 022	100 048	111 907
Mexico	33 451	44 958	72 004	71 540	82 951	91 111	94 135	104 877
Peru	2 905	5 542	2 627	1 130	3 567	1 955	3 224	4 082
USA	7 964	4 925	3 308	1 843	507	746	922	911
Others	873	940	682	596	1 063	1 210	1 767	2 037

Source: Comtrade

Basics practically unchanging in terms of supply

The market players remained unchanged. Michoacán retains its near-monopoly, controlling approximately 90 % of the supply. For the first time, imports from this origin exceeded the symbolic one-million tonnes mark (and by some distance with just over 1.1 million tonnes). Peru, the market's number two supplier, practically stood still in what was a context of strong Mexican competition in June, and also Californian competition throughout the summer. The 2020-21 season also marked the end of an era for Chilean exporters. This country, formerly the leading supplier to the market in the mid-2000s with more than 100 000 t, has now practically fallen off the radar in North America. The collapse in its production has accelerated a downward trajectory well established over a long period. The breakthrough by Colombia remained very hesitant. Exporters sent just under 3 000 t for their fourth campaign to this market, opened to them in September 2017.

Avocado – United States – Imports

in tonnes	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Total	351 120	462 777	561 892	603 160	780 412	917 667	846 414	982 227	1 058 084	1 090 704	1 216 303
Mexico	281 672	360 924	515 143	512 276	686 404	853 617	764 680	862 596	917 730	963 539	1 103 321
Peru	137	9 157	15 860	21 617	64 448	46 284	31 573	64 420	81 893	85 174	77 400
Dom. Rep.	14 956	17 204	16 150	15 958	15 548	7 393	20 805	25 757	29 560	27 823	31 798
Colombia	-	-	-	-	-	-	-	-	889	1 951	2 847
Chile	54 355	74 701	14 721	53 305	10 600	10 362	29 354	29 454	28 001	12 216	937
Others	-	791	18	4	3 412	11	2	-	19	1	40

Source: Comtrade



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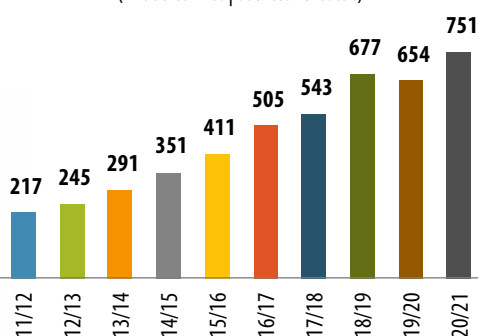
ely@galil-export.com





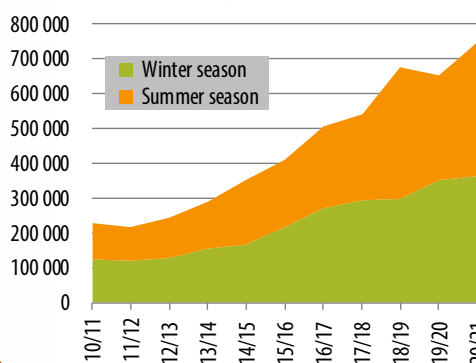
Avocado - EU27+UK - Imports + Spanish shipments

Summer: year Y | Winter: year Y/year Y+1
(in 000 tonnes | source: Eurostat)



Avocado - EU27+UK - Supply by season

(in tonnes | source: Eurostat)



Europe too doing better than holding up

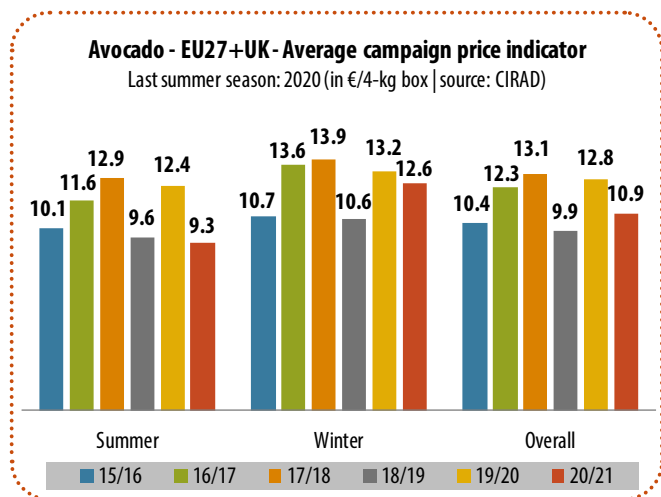
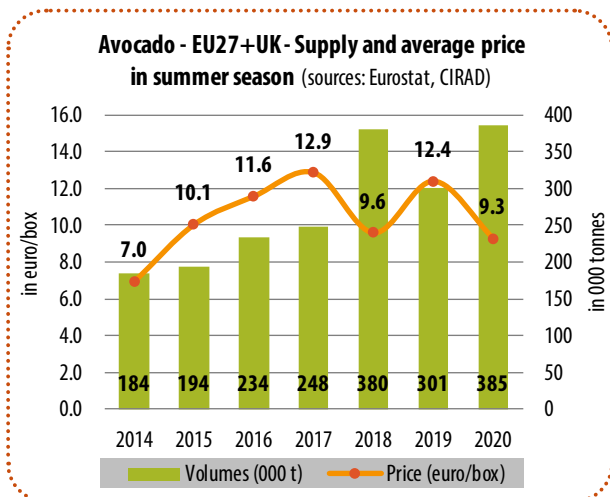
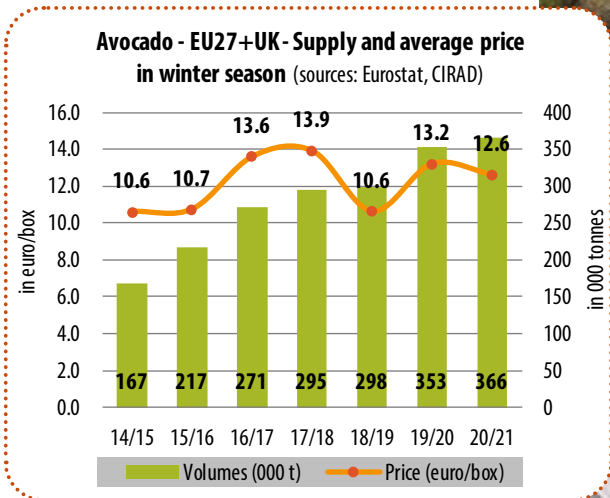
The EU27+UK market did not flag either in the face of the pandemic. Volumes imported in 2020-21 marked a new record at approximately 750 000 t (785 000 t if we add the countries in the zone with the same economic profile, such as Switzerland, Norway and Iceland). There was a fine rise of more than 100 000 t from 2019-20, taking the market's annual growth to an average of 10 % per year between 2016-17 and 2020-21. Just as in the USA, this rise was achieved to the detriment of prices. With €10.90/box, our import barometer registered a level 15 % lower than last season, and 15 % below average. Nonetheless, it is difficult to know to what extent this fall is attributable to the effects of Covid, as the supply was particularly heavy – if not unreasonable – at certain periods (May-June and October 2020 in particular). While the slowdown or halt of the OOH was a heavy blow, its impact was more moderate than in the USA, since this market segment is distinctly less developed (estimated at between 5 and 20 %, according to the markets).

Avocado – EU27+UK – Imports

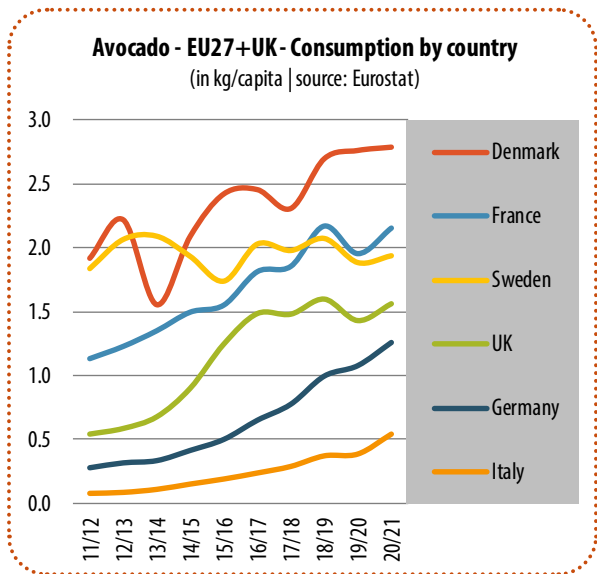
in tonnes	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	230 420	217 440	245 102	291 118	350 948	410 937	504 775	542 508	677 292	654 494	750 581
Total N. Hemis.	123 439	120 414	128 824	154 339	167 281	216 907	271 146	294 861	297 674	353 070	365 567
Mexico	3 371	2 909	9 085	6 293	12 918	45 593	36 884	60 993	47 561	71 645	103 560
Colombia (Oct.-April)	121	121	486	1 142	3 613	9 908	18 324	22 602	28 559	38 379	67 130
Chile	25 244	32 637	41 074	62 968	42 797	78 244	90 138	92 467	87 571	95 210	54 752
Israel	38 512	40 448	35 175	42 844	46 086	34 995	56 600	41 567	60 101	43 465	44 997
Spain	48 600	38 900	38 500	33 305	48 984	34 455	52 276	45 894	50 135	54 730	42 763
Morocco	3 346	2 803	840	4 766	7 798	7 115	9 552	21 746	11 237	32 649	32 451
Dominican Republic	3 794	1 467	2 503	1 647	3 059	4 526	5 529	7 344	8 710	11 341	13 504
Portugal				632	1 258	1 034	1 160	813	2 457	2 408	5 611
Guatemala							256	300	859	2 408	2 734
Others	451	1 129	1 161	743	768	1 037	426	1 135	484	835	1 996
Total S. Hemis.	106 980	97 026	116 279	136 779	183 667	194 030	233 630	247 647	379 618	301 424	385 014
Peru	56 345	66 155	62 618	86 260	101 971	114 321	144 367	157 744	228 769	184 109	246 753
Southern Africa*	47 836	27 408	49 149	45 165	58 304	50 962	54 289	43 942	87 959	54 949	59 177
Kenya					15 865	20 728	23 740	25 392	41 699	35 550	44 447
Colombia**					130	631	3 908	10 114	8 003	11 035	22 692
Tanzania	21	6	133	968	1 643	3 278	2 948	2 987	6 244	6 612	5 979
Brazil	2 665	3 006	3 959	3 928	5 265	3 535	3 908	7 189	6 680	8 158	4 974
Mozambique								56	168	975	992
Others	113	451	420	458	490	575	470	224	96	36	-

* South Africa, Zimbabwe, Swaziland | ** Traviata (mid-September) | Sources: Eurostat, UK Customs

In detail, the economic results during the 2020 summer campaign were the worst ever recorded since 2014. The Peruvian supply pressure was extreme, with Kenya simultaneously reinforcing its presence as a Colombian summer supply emerged (more than 20 000 t of “traviesa”). In parallel, the winter campaign was not better than average in economic terms. The rise in supply was more limited than during the summer season, though the narrowing trend for the trading window was confirmed (extension of the summer campaign), while the swelling of the supply in October-November is tending to become structural with the production surges from Jalisco and Colombia. The early – and unexpected – fall in Chilean shipments was a welcome surprise which helped ease the pressure, but what will 2021-22 bring?



© Catherine Sanchez



Germany and Italy driving EC market growth

Which countries absorbed these additional volumes? Analysis of the consumption data for the 2020-21 campaign confirms that the driving forces for the EC market are not completely the same as four or five years ago. France remains the number one consumer on the Old Continent, though its downward dynamic was confirmed. The growth registered in 2020-21 was no more than making up for a downturn in the 2019-20 season. Consumption per capita for the past three seasons has remained within the range 2.0 to 2.2 kg.

This is a levelling-out phenomenon very familiar to the Nordic markets, 3rd in the ranking by volume, and which are also high consuming (from 2 kg/capita in Sweden to 2.8-2.9 kg in Denmark and Norway). The rise was minimal again in 2020-21 (gain of just 5 000 tonnes over the past 4 years).

Avocado – Consumption in Europe (June 2020 to May 2021)

	Estimated marketed volume in 2020-21 (t)*	Population in millions	Consumption per capita (g)	2020-21 compared to	
				2019-20	2015-16
EU27+UK+Norway+Switzerland	738 482	527.5	1 400	+ 17 %	+ 69 %
EU15+Norway	664 427	416.9	1 594	+ 17 %	+ 65 %
France	144 975	67.4	2 151	+ 11 %	+ 41 %
United Kingdom	104 364	67.0	1 558	+ 1 %	+ 29 %
Germany	104 476	83.2	1 256	+ 15 %	+ 156 %
Scandinavia	60 043	27.1	2 216	+ 4 %	+ 19 %
Sweden	20 109	10.4	1 934	+ 4 %	+ 19 %
Denmark	16 175	5.8	2 789	- 1 %	+ 18 %
Norway (non-EU)	15 634	5.4	2 895	+ 12 %	+ 26 %
Finland	8 125	5.5	1 477	+ 3 %	+ 6 %
Spain**	113 617	47.4	2 397	+ 27 %	+ 203 %
Netherlands**	49 953	17.5	2 854	+ 70 %	- 2 %
Italy	31 968	59.3	539	+ 39 %	+ 179 %
Belgium	13 839	11.6	1 193	+ 78 %	+ 133 %
Austria	10 987	8.9	1 234	+ 13 %	+ 100 %
Greece**	10 150	10.7	949	- 3 %	+ 230 %
Ireland	4 913	5.0	983	- 11 %	- 7 %
Portugal**	11 749	10.3	1 141	+ 12 %	+ 383 %
Cyprus	2 228	0.9	2 475	+ 23 %	+ 91 %
Luxembourg	1 165	0.6	1 942	- 3 %	+ 230 %
Eastern NMs	55 151	101.9	541	+ 17 %	+ 154 %
Poland	20 350	37.8	538	+ 23 %	+ 161 %
Baltic states	8 100	6.0	1 350	+ 1 %	+ 80 %
Romania	10 021	19.2	522	+ 24 %	+ 205 %
Czech Republic	5 601	10.7	523	+ 26 %	+ 174 %
Hungary	3 237	9.7	334	+ 23 %	+ 164 %
Slovakia	2 813	5.5	511	+ 2 %	+ 164 %
Bulgaria	2 400	6.9	348	+ 5 %	+ 167 %
Croatia	1 640	4.0	410	+ 1 %	+ 80 %
Slovenia	989	2.1	471	- 11 %	+ 110 %
Switzerland (non-EU)	18 904	8.7	2 173	+ 17 %	+ 45 %

* Import-export+production | ** Figure questionable due to the very high level of re-exports
Professional sources, Eurostat, Customs

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The United Kingdom did not really shine either, stagnating at approximately 105 000 t sold for the past three years, despite a consumption level of 1.6 kg/capita which remains well below that of France and the Nordic countries.

It was once again Germany which played a major part in the dynamic (+ 14 000 tonnes), and now disputing the title of number one in the EU27+UK market with the United Kingdom. The still moderate consumption level per capita, doing no more than approach the EC average with 1.3 kg, leads us to believe that there are major prospects still.

Italy too made another big contribution to overall growth (+ 8 000 tonnes). The market which currently accounts for “barely” more than 30 000 t, probably has strong prospects, with a consumption level of barely more than 600 g/capita.

Once again this season, the figures were extremely troubling for Spain, with the local production level still very hard to identify, and the country reinforcing its role as a hub (more than 155 000 tonnes in 2020-21, with volumes received during the winter season now approaching those of the summer season).

The EU's Eastern contingent also recorded a rise, doing more than catching up to volumes consumed in 2018-19. Their consumption level is now close to 550 g/capita.

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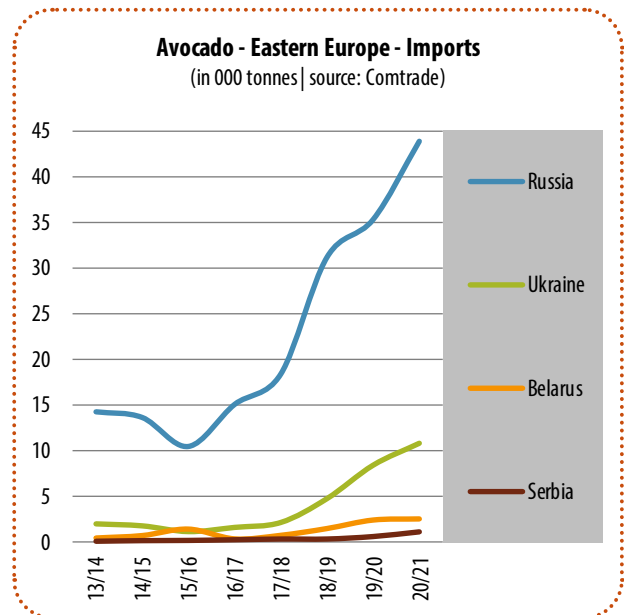
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East European markets taking advantage of appealing prices!

The East European markets (non-EU27) also worked well. The acceleration in the growth trend was confirmed in Russia. Imports rose by more than 8 000 t, to reach nearly 44 000 t. The boom was particularly considerable during the summer season. However, the consumption of its 144 million inhabitants remains very modest, at around 330 g/year.

We can also note a considerable growth from the other countries in the zone. Ukrainian imports exceeded the 10 000-t mark (+ 3 000 t per year approximately since 2018). Volumes remained moderate in the other countries (a combined total of less than 4 000 t for Belarus and Serbia, with other States such as Moldova, Albania and North Macedonia not exceeding the 1 000-tonnes mark). The fine growth by the leaders should be attributed to the more attractive export prices available during this bumper season.



Avocado – Russia – Imports

in tonnes	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	13 619	10 445	15 046	18 365	31 146	35 286	43 852
Total N. Hemis.	8 209	5 914	9 763	10 652	16 754	18 749	17 795
Israel	8 123	5 814	9 614	10 234	15 216	15 055	12 049
Colombia (Oct.-April)	-	-	25	186	962	1 402	4 750
Others	86	99	123	232	576	2 292	996
Total S. Hemis.	5 208	3 763	5 223	7 317	13 635	14 925	24 543
Peru	982	1 069	1 586	2 100	3 089	7 540	14 482
Kenya	232	497	1 735	4 260	7 191	4 589	6 443
South Africa	3 994	2 197	1 902	957	3 355	2 796	3 618
Colombia*	-	-	-	-	47	314	1 596
Others	202	768	60	396	757	1 612	1 514

* Triviesa (May-September) | Source: Comtrade



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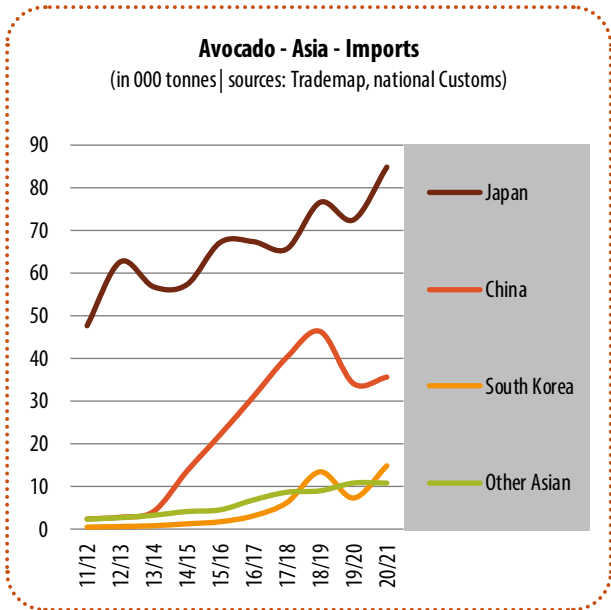


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Asia disappoints once again, except for Japan

This campaign, in an extraordinary context because of the pandemic, was also an auspicious one for the Japanese market, more than ever Asia's number one importer with approximately 85 000 t in 2020-21. This represented a growth of approximately 12 000 t, which though a modest level, is distinctly better than in previous seasons. This acceleration should probably be attributed to the more competitive export prices available. Mexico, which readily dominates the supply with a market share of nearly 90 %, has also remained highly active in terms of promotions via the campaigns organised by APEAM (online campaign with the local e-commerce giant Rakuten, collaboration with local youtubers, or with the actor Mokomichi).

Conversely, there are no nice surprises to report from the other big markets in the region! Still all quiet on the Eastern front, with a context of a very gradual awakening, not only in South Korea, but also in

China and the other medium-sized Asian markets. The 2020-21 season brought no change for China, with imports levelling out at between 35 000 and 45 000 t since 2017-18 (figure determined according to data from exporter countries to China and Hong Kong). Regarding Korea, imports saw a distinct rise from 2019-20, but did no more than return to a level barely higher than in 2018-19. The authorisation

to import Peruvian and Chilean fruit, since 2020, and Colombian fruit since summer 2021, could still shuffle the deck, in this populous country of more than 50 million inhabitants, where annual consumption remains less than 300 g/capita. Imports from the other main countries in the zone remained stable and minor (combined total just under 11 000 t for Singapore, Malaysia and Thailand).

Avocado – China + Hong Kong – Imports

in tonnes	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Total	13 774	21 113	28 483	40 228	46 236	34 064	35 582
Peru*	1 154	520	2 802	6 437	17 073	13 589	16 357
Mexico*	10 794	14 223	10 919	17 690	13 952	8 070	12 697
Chile*	1 092	5 783	13 405	15 029	13 616	11 012	4 176
United States	547	262	1 048	650	1 084	165	1 261
Others	187	325	309	422	511	1 228	1 091

* Estimate from Customs of the exporting country | Sources: Trademap, national Customs

Avocado – Japan – Imports (July to June)

in tonnes	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Total	56 836	57 372	67 243	67 394	65 703	76 616	72 514	82 967
Mexico	50 278	52 758	63 986	63 549	59 192	69 701	64 549	73 020
Peru	-	-	25	969	3 369	5 166	4 480	8 360
United States	4 971	2 124	2 467	1 174	2 585	1 099	2 300	1 399
Colombia	-	-	-	-	-	-	44	186
Chile	892	786	80	175	118	118	573	-
New Zealand	695	1 704	683	1 527	461	512	528	-
Others	-	-	2	-	-	20	40	2

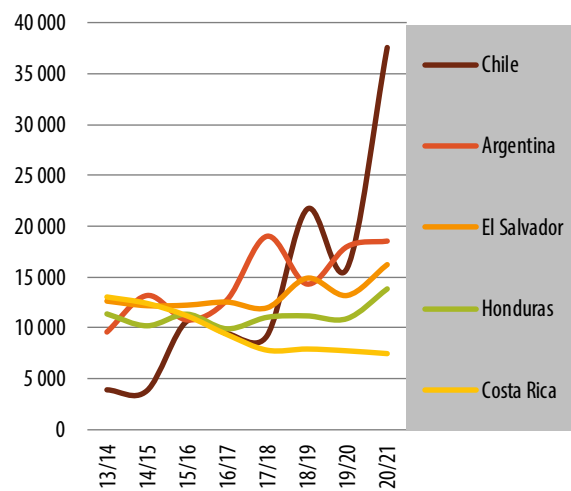
Source: Japanese Customs



Chile driving the Latin American markets

Latin America confirmed that it is no longer only a production and export zone, but also a considerable import centre. The region's markets imported more than 100 000 t in 2020-21, a figure up by 40 000 t in the space of three years. This flow is aimed at three countries or main zones. Chile is the main driving force in the region, with imports of nearly 40 000 t, mainly to assuage the country's enormous appetite for avocado during the summer season, when there is no local production. The water crisis, with its adverse consequences on the harvest, caused a distinct acceleration in the trend. Argentinean imports are also tending to increase, though at a much slower tempo. Finally, Central America is also an upwardly mobile major centre (45 000 t imported in 2020-21, after growth of just over 5 000 t in the space of 5 years).

Avocado - Latin America - Main importer countries
(in tonnes | sources: Comtrade, ODEPA)



Avocado – Chile – Imports

in tonnes	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Total	3 857	3 774	10 629	9 414	9 195	21 657	15 850	37 583
Peru	760	2 680	8 237	7 961	5 409	19 712	15 629	32 649
Mexico	-	1 093	2 392	283	3 786	1 595	221	4 774
Others	3 097	-	-	1 170	-	350	-	160

Sources: Comtrade, ODEPA

What we need to take away from this extraordinary campaign

First of all, the extreme resilience of the industry, which managed to do much better than withstand the pandemic, even if it meant reinventing both the upstream and downstream segments. There was also the near-magnetic attraction of the product, with consumers accepting to overturn their consumption habits in order to stay loyal. The highly positive reaction from demand in a context of falling prices should also be highlighted, especially in countries with intermediate revenue (Eastern EU27, Russia, etc.), or highly price-sensitive markets (Japan, etc.). These three points are important before addressing the fourth: the 2020-21 season also demonstrated the acceleration in the growth tempo of world production. This is a challenge for which professionals must prepare ■



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Avocado

2021 winter forecasts on the European market

Gathering pace!

by **Eric Imbert**, Cirad
eric.imbert@cirad.fr

The 2021-22 winter season profile confirms the acceleration trend in world production growth, already clearly perceptible during the summer season which has just finished. Export potential is registering a record level across practically all the market players, with this extraordinary dynamic due rather to young orchards entering production or coming into their prime than to alternate bearing effects. The pressure should be much lower on the large and medium fruit market than on the small fruit market. FruiTrop offers an overview of the main supplier countries to the European market.



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The fruit of our
"Savoir-faire"

CHILE

A major bounce-back in production

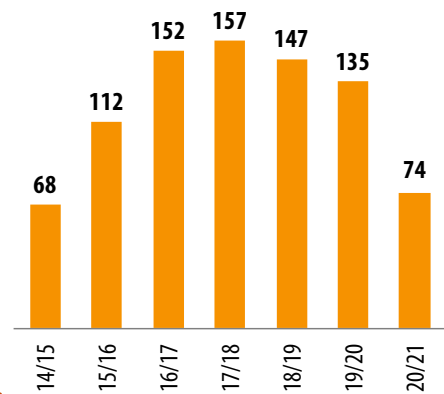
2021-22 should enable Chilean professionals to forget the dark days of the 2020-21 season in terms of volumes (barely 74 000 t exported, i.e. 50 % of average sales for the previous 4 seasons). While the water stress remains acute, and is also still leaving its mark on fruit size, no noteworthy climate accidents have been recorded. So the harvest could return to footings of between 220 000 and 240 000 t (as opposed to 135 000 t in 2020-21), a spectacular rise, but one which is actually just a return to volumes seen in the latter half of the last decade. The local market should remain particularly attractive (more than 60 000 t sold locally in 2020-21, i.e. 45 % of the harvest). The avocado has become an essential product for the country's 19 million inhabitants, with consumption still dynamic even in the particularly high price contexts (\$6.5 to \$8.5 per kg in retail since early 2021, once and for all bringing down the curtain on the era of the "poor man's butter"). The export potential could be around 110 000 to 120 000 t. With Europe, which usually takes in 60% to 75% of its volumes, set for a heavy supply, exporters are seeking to diversify their outlets. Nonetheless, the task is set to be arduous. It should be able to make a comeback in the USA, but the trading window will be limited to a few weeks between September and early October. Furthermore, the scale of the other markets remains relatively small, except for Argentina and China (11 000 to 15 000 t apiece, in a normal production year).

CHILE

Nearly 25 500 ha of Hass
World No. 5 exporter
in 2020-21

Avocado - Chile - Exports

(in 000 tonnes | source: Chilean Customs)



Avocado - Chile - Exports

in tonnes	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
EU27+UK	32 929	42 571	64 247	43 481	79 421	91 385	93 496	88 200	96 034	55 521
USA	73 795	14 710	53 297	12 341	11 428	29 204	29 389	27 999	12 189	955
Latin Am.	7 342	8 888	11 735	9 943	15 762	17 397	15 801	16 328	14 902	10 253
Japan + Asia	1 638	1 283	1 978	1 877	5 878	13 594	15 147	13 734	11 586	4 471
Australia	-	-	-	-	-	-	-	-	-	2 253
Total	115 703	67 452	131 257	67 643	112 489	151 580	157 111	146 994	134 848	73 991

Source: Chilean Customs



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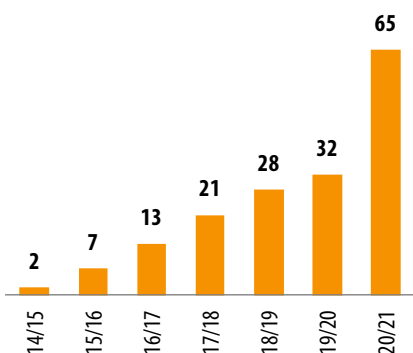
COLOMBIA

Rise to prominence set to continue

COLOMBIA

Nearly 35 000 ha of Hass
World No. 4 exporter
in 2020-21

Avocado - Colombia - Exports
From August to March (main harvest)
(in 000 tonnes | source: DIAN)



In the space of five seasons, exports have gone from less than 10 000 t to more than 80 000 t, taking Colombia to 4th in the world market supplier rankings! These figures say it all about the extreme growth dynamic seen by the Colombian Hass industry... which is a long way from reaching its full expression. Furthermore, the volumes expected in 2021-22 should continue in the same trajectory as previous seasons. Nonetheless, the climate conditions have not been optimal, with abnormally high rainfall in recent months (nearly 400 mm in Medellín from June to August, normally fairly dry months), possibly affecting yields. Hence while certain operators are contemplating steep growth in the exportable potential, thanks to the new orchards entering production or coming into their prime, there are also those, fewer in number, who are predicting no more than stability. This possible growth is to be particularly significant in the first part of the season (October to December by date of arrival into Europe), since it is in these early zones that expansion has been greatest (Cauca, Quindío, coffee growing zone). The difficult climate conditions described previously could also have an impact, slightly delaying this calendar and extending the season. The list of countries open to the Colombian avocado was further extended in 2021 (South Korea and Chile, following on from China and Japan in late 2019). Nonetheless, Europe will remain the top outlet (90 % of volumes in 2020-21). There is still a highly restrictive protocol for exporting to the high-potential US market (less than 3 000 t last season). Small fruit will continue to represent a large part of the supply.

Avocado – Colombia – Exports (August to March period: main harvest)

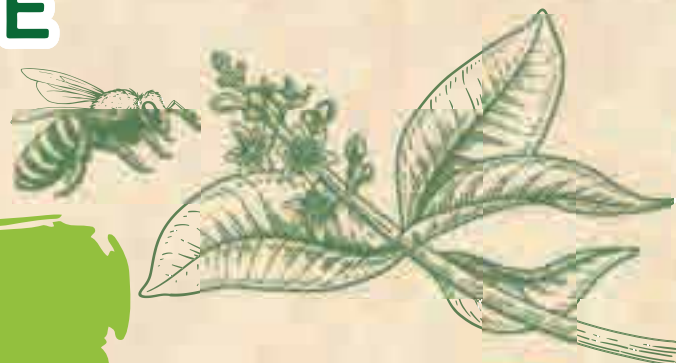
in tonnes	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
EU27+UK	441	1 933	6 904	13 229	20 733	26 383	29 486	58 789
USA + Canada	5	-	-	18	32	491	900	2 454
Latin America	5	14	31	210	193	358	1 160	2 086
Asia	-	-	-	-	22	24	34	282
Persian Gulf	-	-	-	2	44	336	99	222
Eastern Europe	-	-	-	-	41	81	102	775
Others	-	-	-	1	1	1	-	-
Total	451	1 947	6 935	13 460	21 066	27 674	31 781	64 608

Source: DIAN





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MICHOACÁN

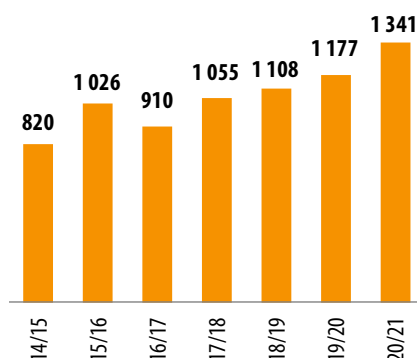
A bit behind schedule... but a big presence nonetheless!

With nearly 1.5 million tonnes, Mexico exported record volumes during the 2020-21 campaign (running from July 2020 to June 2021)! With every passing year, the Mexican giant is taking on even more colossal proportions, with a leap last season of nearly 200 000 t from the sales made in 2019-20. It now controls 60 % of world trade. The hesitant start to the 2021-22 season by Michoacán must not be misinterpreted, since the volumes are there. The harvest from the first bloom "flor loca", was just below normal. Furthermore, the fruit bulking was more gradual, since there was a very marked dry period running over a good part of the first half, and approximately 60 % of the orchards are not irrigated. Availability will see a distinct increase from the second half of September, with the gradual transition to fruit from the later blooms ("aventajada", and the rest). The harvest is set for a good overall level for this type of production, while cultivated surface areas are continuing to expand. The impact of the frosts in early 2021 could perhaps limit availability at the end of the season, though this remains to be confirmed.

MICHOACÁN

Nearly **175 000 ha** of Hass
World No. **1** exporter
in 2020-21

Avocado - Michoacán - Exports
(in 000 tonnes | source: Mexican Customs)



Avocado – Michoacán – Exports

in tonnes	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
USA	359 262	522 488	516 085	693 344	862 457	759 318	861 393	938 953	999 541	1 112 693
Canada	27 431	35 044	33 632	44 958	62 148	71 607	83 346	88 854	89 010	94 273
Japan	42 354	55 883	51 626	53 175	64 864	62 459	60 455	69 960	66 150	72 541
EU27+UK	4 153	9 137	5 690	12 996	47 689	38 768	62 146	48 348	73 097	104 164
Others	29 537	34 893	26 386	42 597	44 092	33 820	66 306	51 465	44 213	77 368
Total	462 737	657 445	633 418	847 070	1 081 250	965 972	1 133 646	1 197 580	1 272 012	1 461 039

Source: Mexican Customs

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JALISCO

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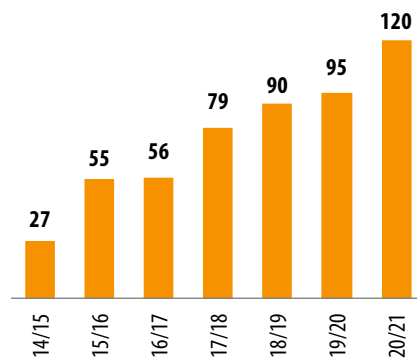
Jalisco too is booming. Though its proportions are still a long way short of Michoacán's, this recent export centre is now one of the world market leaders. With exports of 120 000 t in 2020-21, it now occupies 3rd place on the podium, behind Michoacán and Peru, but ahead of Chile, albeit the latter did suffer a primarily cyclical fall in its production during this campaign. This growth will continue in 2021-22, with a harvest increase evaluated at approximately 15 % by the professionals, due to young orchards entering production or coming into their prime. There should be barely any change in breakdown of volumes by destination, with the EU27+UK remaining the top destination (approximately 40 % of volumes in 2020-21, i.e. just over 46 000 t), ahead of Asia (34 % of volumes, primarily bound for Japan) and Canada (approximately 30 % of volumes). The opening up of the USA's borders to the Jalisco avocado could of course radically shuffle the deck, given the ease of working this market for exporters based in Ciudad Guzmán, and so complementary is this region's export calendar with Michoacán. As a reminder, while the sanitary protocol has been set since 2016, it has still not been ratified by the US authorities, which in exchange want to see Mexican borders open to US potatoes. A decision by the Mexican Supreme Court, adopted in April 2021, finally enabled these imports, but for the moment only on paper, since it is associated with highly partial sanitary control measures (it is the Mexican potato growers' union which controls the analyses). Will we reach the epilogue of the "potato war", and as a consequence, see the arrival of the Jalisco avocado in the USA in the near future? Opinions are divided. In any event, the consequences for the 2021-22 campaign could be limited, given Jalisco's early production calendar (export peak from August to February), especially since, if there is an opening-up, it should be gradual, and apply only to certain production zones initially.

JALISCO

Nearly **35 000 ha** of Hass
World No. **3** exporter
in 2020-21

Avocado - Jalisco - Exports

(in 000 tonnes | professional sources, Apeajal)



Avocado - Jalisco - Exports

in tonnes	2018-19	2019-20	2020-21
Canada	31 500	30 763	33 670
EU27+UK	26 974	36 612	46 216
Asia	31 026	27 585	38 168
Others	446	496	1 556
Total	89 587	94 959	119 610

Professional sources, Apeajal



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ISRAEL

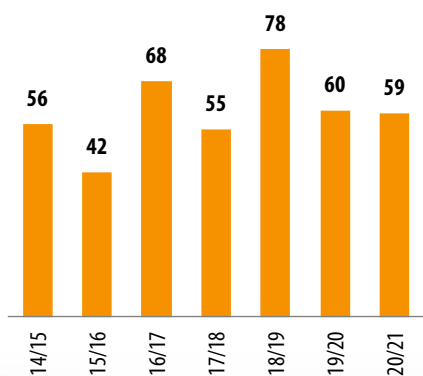
The latent production boom has now arrived!

ISRAEL

Nearly **13 500 ha**, 60% of Hass and 40% of green varieties
World No. **7** exporter
in 2020-21

Avocado - Israel - Exports

(in 000 tonnes | professional sources, Eurostat)



Latin America is not the only export centre to see a big production rise in 2021-22. Export potentials are also registering record levels in the Mediterranean. The new year getting underway in the Hebrew calendar is synonymous with the Israeli avocado industry breaking into the world of the future. The upscaling of the sector, practically imperceptible in the export figures from recent seasons because of climate vagaries and the local market coming to the fore, stands out clearly in a record production forecast for 2021-22 (with a wide range from 180 000 to 245 000 t, depending on the sources). Alternate bearing is on the upswing, and the climate conditions have been ideal, enabling a near-full production expression of a cultivation area now in excess of 13 000 ha. The export volumes level will be closely linked to the prices available internationally, with the “extended” local market increasingly sensitive, competitive and profitable. On the strength of 15 million potential consumers, if we include the Gaza Strip and the West Bank, this market is closed to imports, and is benefitting from reinforced efforts by the supermarket sector to make the avocado more attractive (increasing share of “Ready to Eat”, and quality criteria on a distinct rise). Nonetheless, the export potential should reach 110 000 to 120 000 t, if prices prove sufficiently high. Volumes will remain mainly focused on the EU27+UK, with Eastern Europe probably taking in 15 to 20 % of the potential (mainly green varieties). The explosion of the sector will be an additional challenge, with the two big cooperatives now representing 50 % of export volumes alongside twenty or so other small to medium-sized exporters.

Avocado – Israel – Export

in tonnes	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
EU27+UK	40 355	35 117	42 844	46 086	34 995	56 600	41 567	60 101	43 465	44 997
Others	5 887	8 177	10 100	9 888	6 224	11 773	12 945	17 688	16 535	14 313
Total	46 242	43 294	52 944	55 975	42 067	68 373	54 512	77 789	60 000	59 310

Sources: Eurostat, professional sources





Fresh & Delicious
Avocado

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SPAIN

A growing potential... subject to water reserves

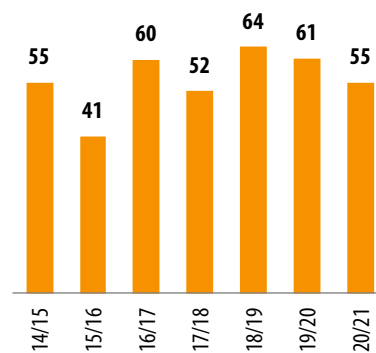
2020-21 was a lean season for Spanish growers, although it is hard to determine the exact level of locally produced avocados, such is the extent to which Spain has become a hub for European trade, and no longer just during the summer season (more than 155 000 t imported in 2020-21, with more than 70 000 t during the winter season, mainly from Mexico, Morocco and Colombia). 2021-22 augurs better... if the rains come. In the main, historical zone of Axarquía, the tree load is irregular, though mainly with a good level. The heatwaves that occurred in July (at the start of the month, and around 20 July) do not seem to have had major consequences, with temperatures fairly quickly dropping back. Conversely, the production sizing is still uncertain. The Viñuela dam, the main supply source for the irrigated area, has recorded one of its worst levels (less than 24 % of its capacity in early September, as opposed to nearly 32 % in 2020, and more than 50 % for the ten-year average). The winter rainfall level will not only govern the degree of harvest growth (which could be as much as 15 to 20 %), but also the trading calendar. In case of low rainfall, growers will probably harvest fairly early, the better to conserve the available water reserves. We must also reckon with the new production areas, where fairly significant surface areas of young orchards should provide their first harvest. Combined, these zones reportedly cover around 4 500 to 5 000 ha (approximately 1 000 to 1 300 ha in Cadiz and Huelva, and 2 300 ha in the Valencian Community), with just a fraction of these surface areas entering production this season. The production calendar for some of this stock is rather late (significant proportion of areas planted with Lamb Hass in the Valencian Community, with the cooler climate resulting in somewhat later production in certain zones). Neighbouring Portugal should see its export potential increase by approximately 30 %.

SPAIN

Nearly **15 500 ha**
World No. **9** exporter
in 2020-21

Avocado - Spain - Exports

(in 000 tonnes | professional sources, Eurostat)



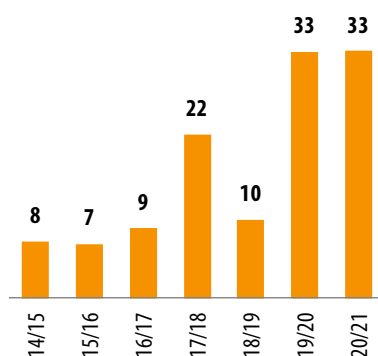
Avocado – Spain – Exports

in tonnes	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Intra EU27+UK	36700	50600	37600	54600	48600	57100	57100	50200
Extra EU27+UK	3100	4000	2900	5800	3718	6600	3750	4475
Total	39800	54600	40500	60400	52318	63700	60850	54675

Professional sources, Eurostat

Avocado - Morocco - Exports

(in 000 tonnes | sources: Comtrade, Eurostat)



Avocado – Morocco – Exports

in tonnes	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
EU27+UK	4766	7293	7141	9237	21787	10334	32692	32451
Others	562	301	131	122	190	157	444	700
Total	5328	7594	7272	9359	21977	10491	33100	33151

Sources: Comtrade, Eurostat

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MOROCCO

A fine rise, though not as big as predicted

In 2021-22, Morocco will confirm that it is now a major player on the European market. The export potential should approach 40 000 t, marking a rise of approximately 15 to 20 % from the previous season. However, just as in Spain, the heatwave which occurred in mid-July could have raised fears for the worst (46°C recorded on 10 July in Larache, in the heart of the main avocado zone). However, while the orchards situated in the pioneering zones inland suffered (with unfortunately some structural damage on certain plantations), those situated under the cooling influence of the coastal region held up rather better. Furthermore, very significant surface areas of young orchards are entering production. Just as in 2020-21, nearly all volumes should remain aimed at the EC market (99 % of shipments in 2020-21, despite an upward trend in Russia). The sizing appears to be satisfactory on plantations with good technical expertise.

MOROCCO

Nearly **8 000 ha** of Hass
World No. **11** exporter
in 2020-21



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Big rise in supply, though varying according to sizing and calendar

If these forecasts are proven correct, the overall supply will reach a very high level. Under all the hypotheses considered, there is a big rise from the previous season (from 20 %, according to a highly conservative scenario, to 40 % under the high hypothesis). Nonetheless, it should be emphasised that it this pressure will be exerted primarily on the small-size market. A large part of the rise can be attributed to supplier countries with a sizing profile mainly focused on this type of production, for structural or cyclical reasons, such as drought or the very high tree loads (Chile, Israel, Colombia). The increase in volumes appears significant, but more restrained, for medium and large avocados. There could well be a big price differential between these segments, especially since one of the main supply sources for this type of product, Mexico, has alternative markets, enabling it to be a bit more demanding, both in terms of purchase price and trading conditions.

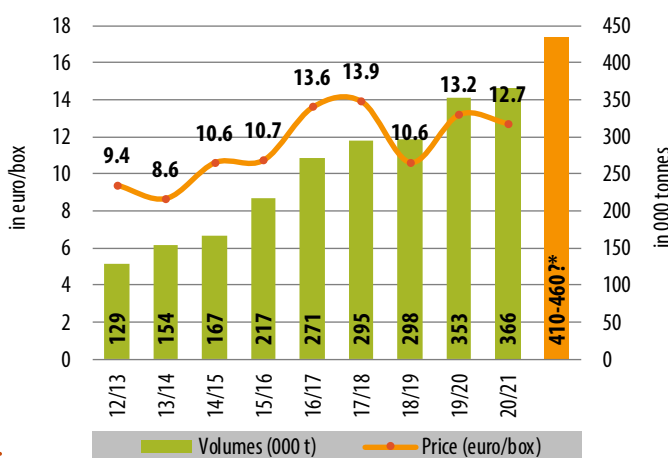


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A late handover, and early part of the season very heavily laden with small fruit

In terms of the calendar, the handover between the summer and winter seasons will come even later than in 2020, and even than in 2018. Peruvian shipments will remain at more than 1.5 million boxes until week 39 at least. Hence the doors to the EC market will only start to open wide to winter supplier produce during the first half of October. That means at least three trading weeks lost in comparison to 2020, leading to a concentration of the winter season over the period ranging from mid-October to mid-April (rather than mid-September to mid/late April, as was still generally the case until 2017-18). After mid-October, the now-structural trend for a big increase in supply during the first part of the campaign should intensify. Some Customs figures can help represent this: October and November, which represented just under 27 % of the total winter campaign supply in 2014-15, packed in nearly 30 % of volumes in 2020-21. That makes an additional 33 000 to 39 000 tonnes for each month, hidden behind a trifling rise of 3 %. If we look at the monthly supply curve, the market exhibits a “deformity” which every year becomes a little more pronounced! This season, it is at this period in particular when the small fruit supply should be highly abundant, with the low water reserves levels also encouraging growers to harvest early, despite the small sizing. This trend is being boosted by the magnitude of the volumes to be packed, which will require the packing stations to operate at full throttle from the start of the season.

Avocado - EU27+UK - Supply and average price in winter season
(* estimate | professional sources)



Avocado – Supply trend in 2021-22

in 000 tonnes	Exports 2020-21	of which to EU27+UK	2021-22 / 2020-21 trend
Chile	74.0	55.5	+ 40 to + 50 %
Israel	59.3	45.0	+ 60 to + 100 %
Spain	54.6	50.2	0 to + 20 %
Morocco	33.2	32.5	+ 10 to + 20 %
Colombia	64.6	58.8	0 to + 30 %
Jalisco	119.6	46.2	+ 10 to + 20 %
Total, 6 supplier countries	405.3	288.2	+ 20 to + 40 %
Michoacán	1 341	57.9	+ 5 to + 10 %
Total EU27+UK			+ 15 to + 30 % ???

Professional sources, Eurostat



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An increased need for promotions during the winter season

The enormous consumption dynamic which established itself during the summer season is a very positive point, since it provides reassurance over the market's capacities, and should have a driving effect. However, we need to consider an important point, since it is a structural point. The additional supply available during the summer season has a greater likelihood of breaking onto the market than the supply imported during the winter season. The difference between the summer diet, with a greater focus on raw vegetables and salads, is just one of the distinguishing points. The difficulty of post-harvest management, which is even greater during the winter season since a larger proportion of the supply comes from wet zones, is a major point. It affects consumer satisfaction, and therefore their likelihood of repeat purchases.

But the main factor is down to size. In the summer, apart from at the start of the season, it is mainly large fruits which enter the market: references which can for at least some of them (size 14 in particular) join the mid-range on a large proportion of the big European markets (size 16/18), and ride its big commercial current, albeit painfully and to the detriment of prices, but that is a lesser evil. It is much more difficult during the winter season, since it is mainly small fruit that really surges to the fore, as we can see again this season (size 22/24 and others). While the range has been significantly enriched for this type of reference thanks to the massive work undertaken by the operators (net bags, trays), the boundary with the mid-market remains closed off, and this fruit remains restricted to the most marginal references, representing a distinctly lower market share. This is at the very least the case on most European markets. The USA, where small fruit sold in net bags have in the space of a few years become the number 1 segment, provides an interesting counter-example. This solution is not necessarily transposable to Europe, because of the very different sizing profile of the supply provided during the summer and winter seasons. While there is nonetheless some discussion over segmentation, the debate relates mostly to greater flexibility by the distributors, and to increased promotion efforts that need to be directed toward the product during the winter season.



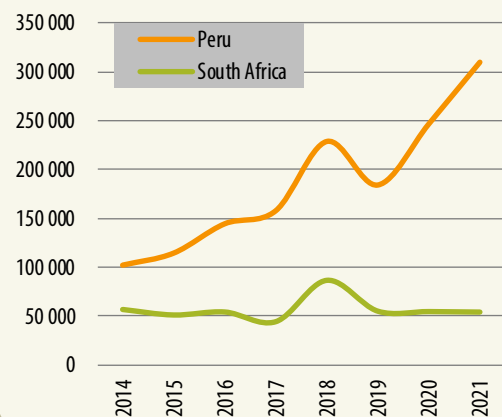
Review of the summer 2021 season

A losing gamble... which paid off!

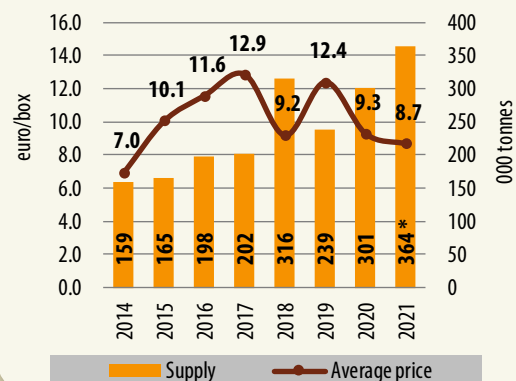
As we knew from the start of the season, the boom in Peruvian production provided a tough obstacle to clear, far too tough. There is no arguing with the initial review: the 2021 summer campaign was the worst seen in Europe since 2015, in economic terms. According to figures still to be confirmed, our market barometer, with €8.70/box, is registering an even lower level than in 2020, and 20 % below the four-year average. It is true that there was a colossal surge in volumes (probably more than 360 000 t for the combined imports from Peru and South Africa alone, i.e. a rise of more than 60 000 t).

However, Peru managed big rises on its other export markets, achieving or even exceeding its objectives in Asia (exports probably more than 50 000 t, i.e. a rise of more than 50 % from 2020) and Latin America (exports more than 60 000 t, with volumes therefore doubling from the previous season, thanks to a famished Chilean market). The only dark spot was in the USA, where volumes should ultimately only slightly exceed last season's 80 000 t (as opposed to the predicted 100 000 t). However, production was too heavy to avoid flooding the EC market. With practically stable volumes of approximately 55 000 t, South Africa could only follow suit, and saw its market share continue to wane. Supply management was much better than in past seasons, with no major fits and starts. Nonetheless, some very big price concessions had to be agreed to sell off weekly volumes which were fairly stable overall, but comprised more than 4 million boxes across all varieties from early May to late August. As per usual, it was on the large avocados market that the pressure was highest. Nonetheless, a positive point does emerge from this campaign: the huge volumes sold, which shows the possibility of consumption increases even in tough price contexts.

Avocado - EU27+UK - Imports
(in tonnes | source: Eurostat)



Avocado - EU27+UK - Supply and average price during summer season
(* estimate | source: Eurostat)



Planting dynamic in the Mediterranean not flagging

This heavily laden 2021-22 campaign illustrates the acceleration in world production growth. The survey conducted in 2021 shows that planting has maintained its momentum. The dynamic has remained strong in Israel, with the cultivation area now reaching 13 500 hectares. 1 500 hectares of young orchards have been planted, as opposed to approximately 1 000 hectares in previous years. Nevertheless, this tempo change does not reveal an acceleration in growth, but rather anticipates the fallow year expected in 2022 for religious reasons ("Shmita", sabbatical year as prescribed by the Torah, which prohibits planting or pruning every 7 years). Hass remains favoured (approximately two thirds of planting), although the economic profitability is now often higher for green varieties, by virtue of their higher productivity and the lucrative prices charged on the local market. The West Negev zone is continuing to make rapid progress, although new plantations are being set up across the country.

The boom is also continuing in Morocco, where the cultivation area could be around 8 000 ha. Approximately 1 000 ha were planted in 2020-21. All the production centres are making progress: the historic Kenitra/Moulay-Bousselham centre, where the proximity of the sea provides good protection against excessive summer and winter temperatures, the Larache zone (small and large projects, often as diversification or replacing the strawberry), the Beni Slimane/ Beni Ayat zone (lower water stress and land constraints, but perhaps on the temperature limit), and the recent Azemmour zone south of Casablanca (good potential, but saline water). The surface areas also seem to have continued to rise in Spain, especially in the new production centres (Huelva, Cadiz and the Valencian Community).

Latin America still pressing the accelerator, with one exception

According to official sources, planting has regained a higher rate in Michoacán (up by just over 5 000 ha in 2021, as opposed to 1 200 to 2 200 ha in the previous two years). Nonetheless, the dynamic remains a long way off that seen between 2015 and 2018 (10 000 ha/year on average). In recent years, development has been concentrated mainly in the Uruapan zone (especially the East), but also outside of the traditional avocado zone, in the north of the State. The Michoacán cultivation area now occupies 175 000 ha, i.e. 42 % of world export avocado surface areas.

Jalisco is not about to be left out. While water availability is still limiting, the planting dynamic is still considerable, thanks in particular to replacing other crops. The cultivation area is in excess of 30 000 ha, with nearly 40 % planted in the past five years. The development has mainly been concentrated in the Ciudad Guzmán province (Zapotlán el Grande and the zone further east – Zapotiltic, Tuxpan) in recent years, according to official statistics. The closer prospect of Jalisco Hass gaining entry to the USA could increase the dynamic.

Avocado – Estimate of world cultivation area of export varieties (Hass and Hass like, green varieties excl. West Indian)

in hectares	Cultivation area in 2021	Annual growth (2019-20 average)
Michoacán	175 000	+ 3 600
Peru	41 000	+ 4 000
Jalisco	35 000	+ 4 100
Colombia	35 000	+ 4 900
Chile	25 500	- 1 000
Brazil	5 400	+ 1 950
California	19 000	+ 200
Latin and North America	335 900	+ 17 750
of which summer suppliers	65 400	+ 6 150
of which winter suppliers	270 500	+ 11 600
Israel	13 500	+ 1 300
Spain (mainland)	15 500	+ 900
Morocco	8 000	+ 1 000
Portugal	2 300	+ 400
Mediterranean	39 300	+ 3 600
South Africa	14 700	+ 700
Kenya	11 250	+ 1 250
Tanzania	1 400	+ 200
Mozambique	700	+ 50
Africa	28 050	+ 2 200
New Zealand	4 200	+ 200
Australia	13 900	+ 1 100
Oceania	18 100	+ 1 300
Total	421 350	+ 24 850
of which summer suppliers	107 350	+ 9 450
of which winter suppliers	314 000	+ 15 400

in green: winter suppliers | in italics: estimate | Guatemala and Dominican Republic are missing | Professional sources, official surveys

Colombia too remains in the leading pack of the most active planting countries, although the pandemic and social instability seem to have reduced the rate slightly in 2021 (approximately 10 000 to 12 000 ha planted from 2019 to 2020). The Hass cultivation area now reportedly exceeds 35 000 ha, according to professional sources. Foreign investment, a big driving force in recent years in this dynamic, should continue to push this growth, especially since the context has become or remains less favourable in climate or political terms in countries such as Chile or Peru.

Only Chile remains withdrawn from this overall dynamic, because of an ongoing drought that is still a limiting factor. Surface area expansion is limited, and concentrated in zones with an assured water supply, though less secure in climate terms since they are further south (San Antonio centre, which increased by more than 2 000 ha between 2014 and 2020, hence the results are decent). Trials/developments are continuing in zones even further south, situated in Region VI (Peumo, Pichidegua, etc.) ■

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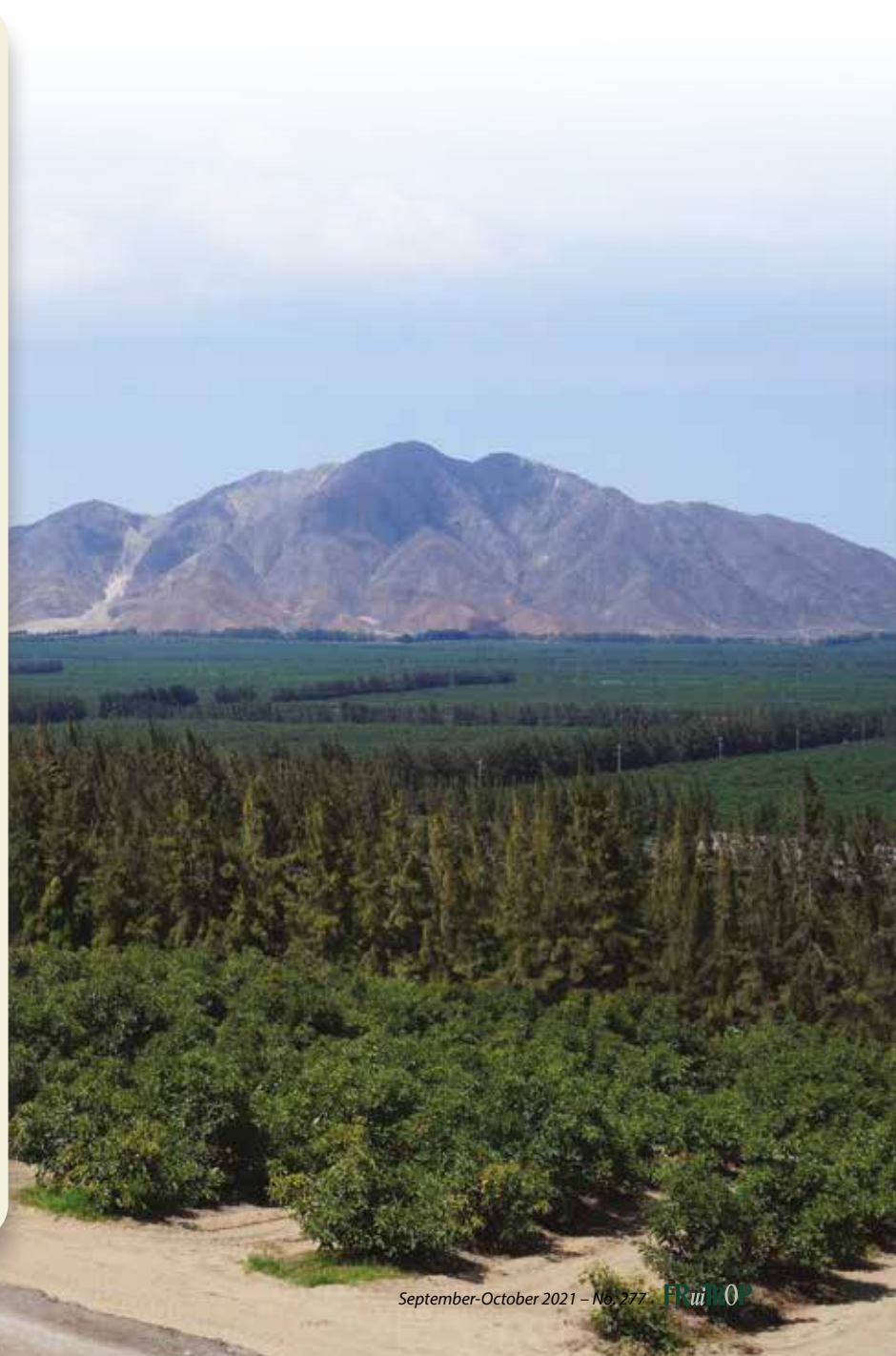
Avocado

World market prospects for the medium/long term (2021-2028)

Paradigm shift

by **Eric Imbert**, Cirad
eric.imbert@cirad.fr

Has the avocado market lost one of the characteristics that made it so unique in the fruits and vegetables trade: being governed by demand? In any event, the massive surface area expansions in recent years are raising questions. Bearing in mind the economic and social challenges posed by this major fruit industry, FruiTrop has decided to initiate a prospective work, the objective of which is to analyse the evolution between supply and demand over the medium/long term (2021-2028). Also taking into account the intrinsically fraught nature of this type of exercise, we have opted to build this study based on field data (cultivation areas, production systems, yields), an approach which seems less haphazard than the purely statistical analyses presented in some works. The initial trends arising from this exploratory work indicate that the supply growth dynamic is now greater than the demand growth dynamic. This study is intended to be an initial step towards a more advanced and ideally collaborative model, built with the help of and for professionals from the avocado world.





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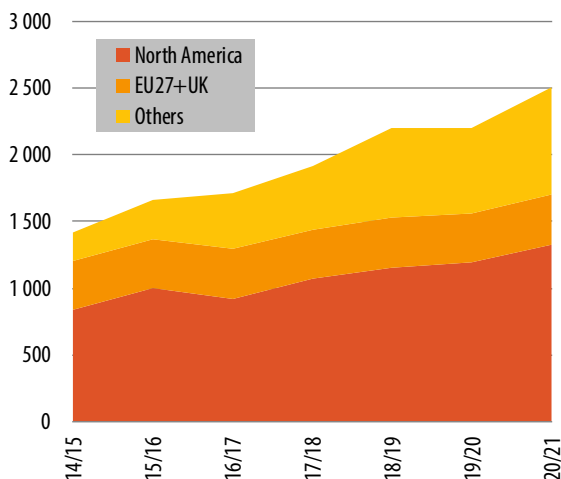
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Demand dynamic still extraordinary, but on a narrow base

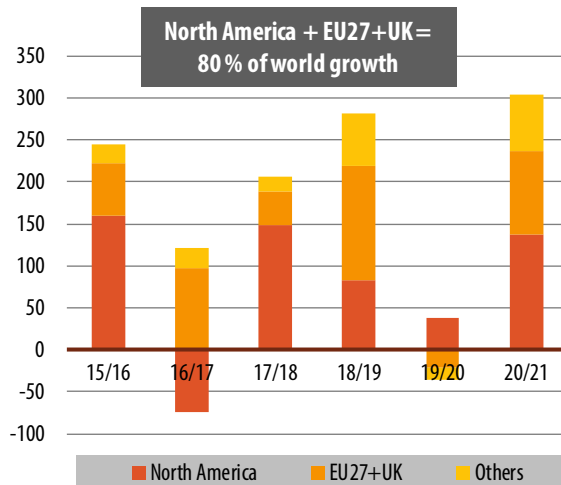
Why embark on such a study, when the host of parameters to factor in and the difficulty – or even impossibility – of measuring some of them make for a wide margin of error? Although aware of the challenge, we believed it was essential to try to determine a medium-term evolution trend, since of course the fundamentals of the world market have undergone great changes in recent years. True, demand might indisputably continue to be given as an example – if not “The Example” – of the vitality in the fresh fruits and vegetables trade. The massive background work carried out by professionals to promote the product and modernise the supply available to consumers, with ripening and varietal enrichment, has undeniably borne fruit. As proof, even the Covid-19 pandemic, despite cutting off the market from a large part of the major OOH segment (more than 30 % in the USA), did not manage to even shake the growth trend in volumes sold (+ 11 % in the EU27+UK, and + 6 % in the USA in 2020!).

Nonetheless, we should emphasise that the world avocado trade still relies on a narrow base of just two big markets, namely the USA and EU27+UK, which take in 80 % of international trade, and were behind 80 % of the growth in imports over the past five years. To what extent will they continue to act as the driving force in the coming years, with no major relays for growth clearly apparent? The question has to be asked, especially since the rate of rise in consumption is inversely proportional to volumes taken in.

Avocado - Evolution of major world markets
(in 000 tonnes | source: Customs)



Avocado - Growth of major world markets
(in 000 tonnes | source: Customs)



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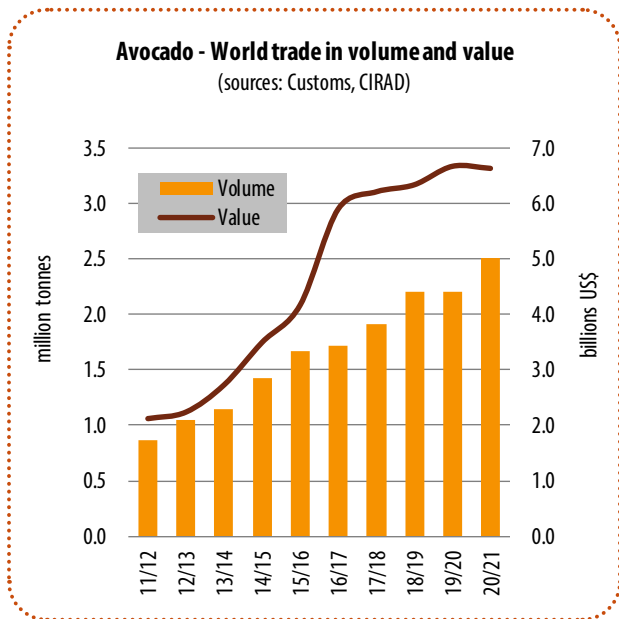
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The first signs of a change in tempo upstream

But we also need to turn our attention to the upstream segment, indeed probably all the more so. Visit practically any producer country, and you can observe the practically generalised planting dynamic... often on a massive scale. We should add that these new cultivation areas are in most cases set up on solid foundations, combining high-quality plant stock (clonal plants) and a good technical level or even high-tech production system, guaranteeing good productivity. The first signs of this production surge have started to emerge: the market balance, so strong during the latter half of the 2010s that we often registered simultaneous two-figure growth in both volumes and sale price, has clearly weakened.

Periods of oversupply have started to appear, especially on a European market that is more open and much less active in promotional terms than its US counterpart. The late May/early June period has for the past several years become high-risk on the Old Continent, with combined shipment peaks from the summer origins, especially from Peru. Similarly, the pressure is seeing a distinct rise during Q4, with the expansion of the Jalisco and Colombian cultivation areas.

This weakening seems to be a worldwide phenomenon, affecting everywhere from Europe to the other side of the world: in 2021-22 Australia is preparing to see its green gold transform into a green tide, with the arrival of an extraordinary first season of local production, which seems no more than an icebreaker given the planting carried out in recent years. This trajectory will not be without consequences for New Zealand, and possibly the neighbouring markets in Asia, the main marketing alternative for Kiwi exporters.

Other examples could be mentioned, and a major global indicator can summarise this weakening trend: since 2017-18, world trade turnover has risen much less quickly than volumes. It actually stagnated between 2018-19 and 2020-21, while imports increased by approximately 300 000 t in terms of volume – true, in the highly particular context of the Covid pandemic in 2020-21.

This ray of converging trajectories pointing to a market deterioration, though fortunately still temporary for now, emphasises the need to assess the direction that world production could take in the coming years. Is there any need to reiterate that the stakes are particularly high? In economic terms of course, since arboriculture deals in big investments which are calculated over the long term. But also in social terms, in particular in the case of the avocado, whose production base largely comprises small and medium growers (more than two-thirds of the cultivation area of Michoacán, by far the world's leading production region, are farmed by growers owning less than 10 ha), and given the volume of labour necessary (generally between 3 and 5 ha per FTE, not to mention packing and all the associated services).



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Methodology: particular attention paid to basic data

We should set out the working method adopted for this study – although it might seem daunting – to properly understand its strengths and weaknesses. To make a projection of production, we took particular care to identify and collect the most reliable data possible to evaluate the cultivation areas and their expansion prospects in each country. In the first instance we used the survey statistics from the professional organisations or official surveys (cross-checking information with other sources for some countries). In the absence of this information, we relied on the most representative professionals, cross-checking their information or in exceptional cases relying on proxies (such as plant sales of the main nurseries). Overall, we believe that the information gathered ranged from good to decent in terms of reliability, for more than 90 % of world surface areas. The countries with a significant export potential over which there is large uncertainty are Kenya and Morocco.

We then worked in three steps to go from raw surface area data to the production projection. The first step consisted in estimating, for each year in the projection, the actual productive surface areas, as opposed to those comprising young cultivation areas not yet in production. To do so, we opted for a simplified overall hypothesis to estimate how the young orchards come into their prime: first production in the 3rd year of the cycle, with 10 % of the production potential, a third of the potential in the 4th year, two-thirds in the 5th year and 100 % in the 6th year. These “active” surface areas were then increased by an average export yield in full production defined for each country, again thanks to the information collected in the field or from professionals (with a hypothesis of this yield increasing from 2025 for certain countries, given the improvement in production systems).



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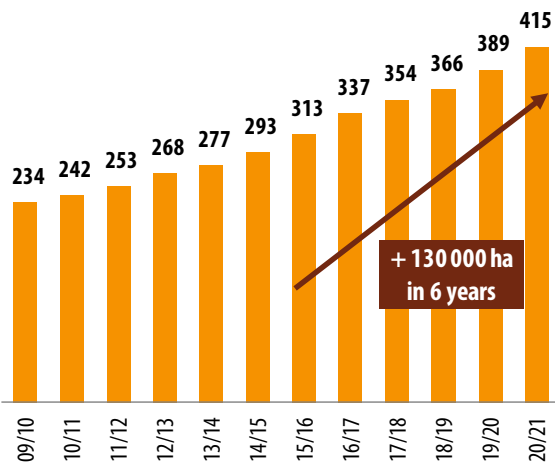
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Avocado - World planted areas of export varieties
(in 000 hectares | professional sources, CIRAD)



World cultivation area evaluated at 415 000 hectares

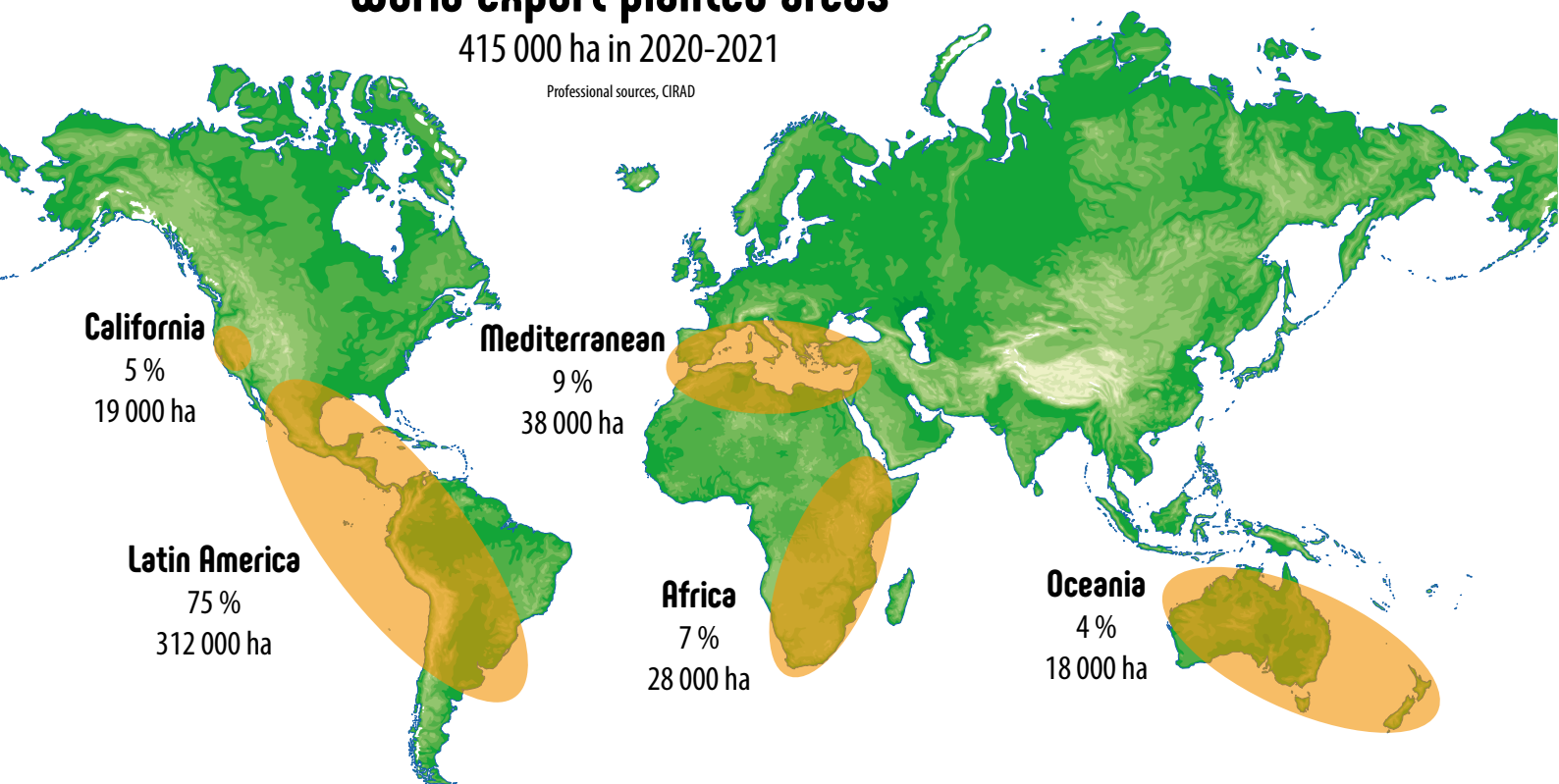
The panorama of the world industry arising from this study is as follows: the world export avocado cultivation area (Hass, Hass like and green varieties excluding the West Indian races) covers approximately 415 000 ha in 2021. The apple never falls far from the tree, as the saying goes, and three-quarters of surface areas are situated in Latin America, the avocado's zone of origin (with half of surface areas in Mexico alone). The Mediterranean, Africa, California and Oceania follow in the rankings in decreasing order, with for each of these regions a proportion of the world cultivation area estimated at between 9 and 4 %. The expansion in surface areas has distinctly gathered pace since 2015, with the world cultivation area gaining nearly 130 000 ha during these six years (i.e. an average of 21 500 ha/year). Latin America was behind three-quarters of growth registered in the past five years (+ 74 000 ha), followed by the Mediterranean (+ 12 000 ha), Africa (+ 8 000 ha) and Oceania (+ 6 000 ha).

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World export planted areas

415 000 ha in 2020-2021

Professional sources, CIRAD



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Entering a period of strong production growth

The analysis shows two important points. On the one hand, the theoretical annual growth rate (i.e. derived from calculation) in exportable potential has increased considerably in the past few years, going from approximately 160 000-175 000 t in 2018 and 2019 to 275 000 t in 2021. On the other hand, this rate should maintain a similar or even higher level, throughout the projection (range of 270 000 to 310 000 t/year).

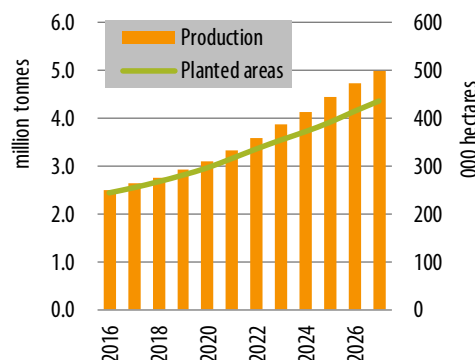
This marked change is due to the combined rise in two parameters. On the one hand, the "active surface area"* added onto the world cultivation area every year practically doubled between 2016 and 2021, going from approximately 11 000 ha/year to 20 000 ha/year since 2020. It should maintain a similar, very high footing throughout the projection period, to peak at 22 000-23 000 ha in 2025 and 2026. On the other hand, we factored into our hypotheses an overall yield increase in certain countries, reinforcing this upward trend (average world yield going gradually from 10.5 t/ha in 2021 to 11.4 t/ha from 2026).

* sum of all surface areas in production, weighted by production level for young orchards not yet reaching their full potential. By way of example, a one-hectare orchard in its fifth year is equivalent, according to our hypotheses, to an active area of two-thirds of a hectare.

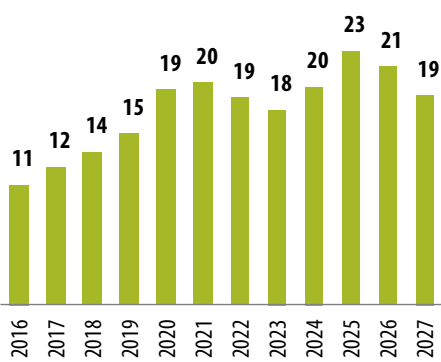


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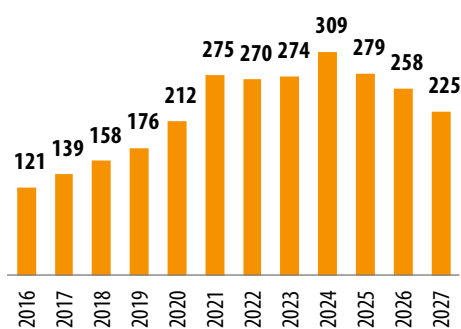
Avocado - Projection of global exportable production and planted areas in full production
(source: CIRAD)



Avocado - Annual growth of world planted areas expressed in hectares at full production
(in 000 hectares | source: CIRAD)



Avocado - Annual growth of world exportable production linked to the annual growth of planted areas and the growth of yields applied to the entire planted areas
(in 000 tonnes | source: CIRAD)



Projecting demand

What about the evolution in demand? The evaluation method is more basic, and more fallible. For lack of a methodological alternative, we extended the evolution trends of the world's main markets for the past four seasons (disregarding the atypical 2020-21 season marked by the Covid pandemic, although it ultimately remains on the same lines as in previous years in terms of volumes). Nonetheless we chose to keep a critical eye to these data, in particular for the major world markets.

We decided to retain the very high growth rate for the US market (+ 60 000 t/year on average over the last 4 seasons), despite already very high consumption per capita levels (national average 3.7 kg/capita in 2020). Several parameters led us to make this rationalised choice. On the one hand, the promotion budgets are enormous, with approximately 100 million dollars in 2020, combining all the contributors), while the avocado's major health assets, due to a unique combination of high-quality fatty acids and fibres, should be an increasingly powerful promotion lever thanks to the results expected from the ongoing clinical studies. On the other hand, the population will increase by 30 million additional potential consumers by 2030, the small-size net bag segment is a powerful growth vector, and the base of "super consumers" (28 % of households, with 70 % of sales) is expanding, and winning over the non-Hispanic population. So all the ingredients are there for a "Conquest of the East", where consumption remains well below the national average and consumption in the West Coast States (between 2.1 and 3.0 kg/capita in 2020, as opposed to 4.1 to 7.8 kg).



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For the EU27+UK market, we decided to moderate the growth rate (75 000 t average in recent seasons) from 2023-24. The factors leading us to take this decision are as follows. While there is a major reservoir for growth given the difference in consumption from the USA (1.3 kg/capita in 2020 in the EU27+UK, and 1.5 kg for Western Europe, as opposed to 3.7 kg/capita in the USA), the product's promotion budgets are incomparable ("only" a few million euros for the EU27+UK). Furthermore, analysis of the dynamic of the main markets in the region over recent seasons shows slowdown phenomena in terms of consumption growth, or even levelling off, in countries where intake volumes per capita are highest, in excess of 2.0 kg (the Nordic countries since 2015 and France since 2019). Germany, the market's main driving force in recent years, and where intake volumes per capita could reach this level during the period in question, could therefore see its dynamic slow down. In addition, unlike the USA, demographics will not play a driving role (population practically levelling off between 2020 and 2030, according to the latest Eurostat projection, dating from 2019).

Conversely, we chose to bank on the hypothesis of renewed growth on the UK market, which has been practically at a standstill since 2017, considering the end of the uncertainties relating to Brexit and the high purchasing power of the population. Similarly, we adopted the option of the Chinese market emerging from its slumber, given the investment in infrastructures (ripening, cold chain) and in consumer edu-

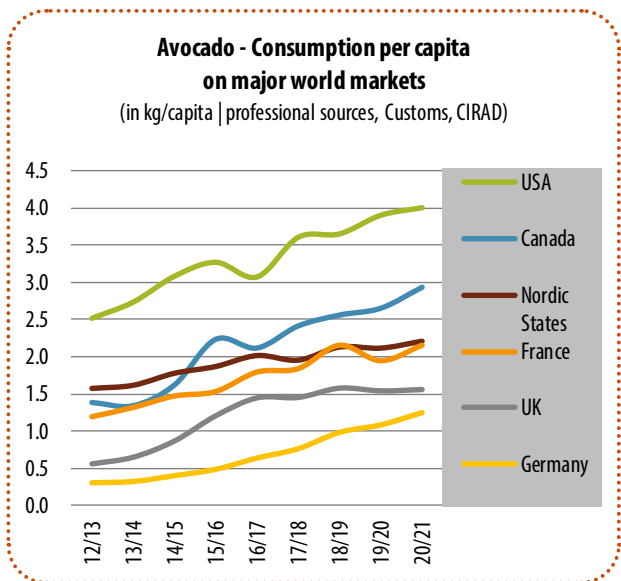
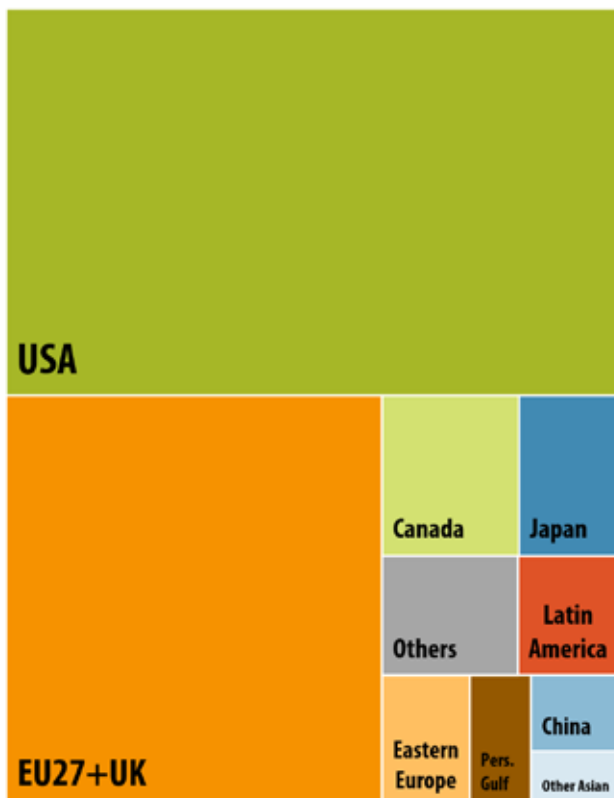


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cation made by big international avocado specialist groups. We arbitrarily selected a growth of 20 000 t/year throughout the period in question. For all other world markets, we extended the trend from the last four seasons.

The results are as follows. The average rise in world demand, over the four-year reference period in question, from 2015-16 to 2019-20, was approximately 165 000 t. According to our hypotheses, it should rise in the short term to reach approximately 175 000 t, with in particular a return to growth in China and the United Kingdom. Conversely, a deceleration is expected from 2023, with the slowdown in growth in the EU27+UK.

WORLD AVOCADO MARKET 2.5 MILLION TONNES (2020-21)



Avocado – Market share in 2020-21 and annual average growth rate (period 2016-17/2020-21) of world main markets

	Market share	Growth rate
USA	49 %	9 %
EU27+UK	31 %	10 %
Canada	4 %	10 %
Japan	3 %	6 %
China	1 %	3 %
Latin America	3 %	4 %
Eastern Europe	2 %	35 %
Other Asian	2 %	27 %
Persian Gulf	2 %	1 %

Professional sources, Customs, CIRAD

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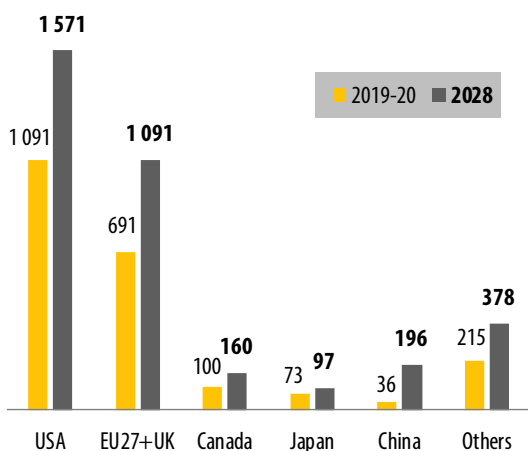
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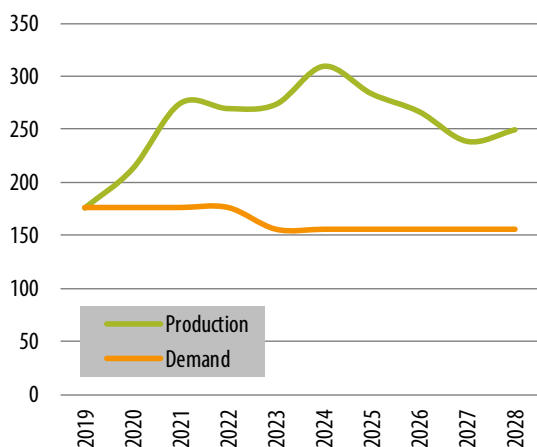
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Avocado - Evolution of world imports from 2019-20 until 2028
(in 000 tonnes | source: CIRAD)



Avocado - Scenario 2028 : additional production and demand
(in 000 tonnes | source: CIRAD)



Toward a supply considerably in excess of demand, albeit with some pending questions

In view of the uncertainties inherent in this type of exercise, the ambition of this study can only be to describe a trend, as accurately as possible. What emerges is a break with the previously prevalent equilibrium, between a supply which since 2021 has entered a period of increased annual growth of approximately 275 000 t/year, and a slightly rising demand (at least until 2023), but with a much lower level, of approximately 175 000 t/year. This is a major gap of approximately 100 000 t from 2021, which could exceed 150 000 t in 2024, before dropping back to a footing of close to 100 000 t at the end of the period. Every scenario appears to be beyond the margin for error, confirming an oversupply trend, or at the very least an equilibrium point between supply and demand on a lower price footing than those seen in recent years.

Nonetheless, we have to emphasise that other factors, currently impossible to quantify, could contribute to widening or narrowing this gap. All we can do is mention them in the form of questions. Will climate change mitigate the predicted growth in production? It already has a major impact, especially in certain countries like Chile or in California. Zones with Mediterranean type pedoclimatic conditions, which represent approximately 20 % of the world's cultivation area, could in particular be exposed to a big increase in water stress, leading to a big fall in yields, or even uprooting of orchards. The increase in the frequency of extreme climate phenomena (floods, heat-waves) could also have an impact. Furthermore, will the shift toward more local consumption, reinforced by the pandemic, contribute to slowing down demand for imported products, which generally includes the avocado? Similarly, will regulatory changes (in terms of packaging and the possible implementation of sustainability criteria such as carbon balance), or the upgrading of the certification expectations of the big supermarkets reduce access to certain markets, and thereby scale back the export dynamic? Finally, what about the impact on sales of attacks on the product's image, especially on a market such as Europe where it is insufficiently defended?





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A world market rich in resources

This alarm signal must not be interpreted as pointing to a shipwreck, since the market has many more resources. Nonetheless, it needs to be heard. Promotion budgets must be boosted in Europe, while the industry has the financial resources, to break the glass ceiling which the highest-consuming markets on the Old Continent seem to be approaching. The Asian diversification markets, but also the regional markets in Latin America or local markets, also have a large and under-exploited growth potential. Furthermore, processing is another strong avenue for development (guacamole, frozen pieces, but also cooking oil or oil for industry, demand for which is increasing steeply).



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A participatory model to be fine tuned

FruiTrop proposes to continue working on this model, and regularly publish updates, with full transparency. On the one hand, the survey data for some countries need to be refined, as do the hypotheses for the young orchards entering their prime, using data specific to each producer country. On the other hand, it seems important to specify the times of year when production will see the biggest changes, which means having more precise information on changes in surface areas at regional level for many of the countries in question. Finally, the sizing dimension also seems important, and requires the definition of a standard size profile for each country or major production zone. To ensure that these ambitions become a reality, FruiTrop will continue to reach out to professionals worldwide, to make regular contributions to enriching this model ■



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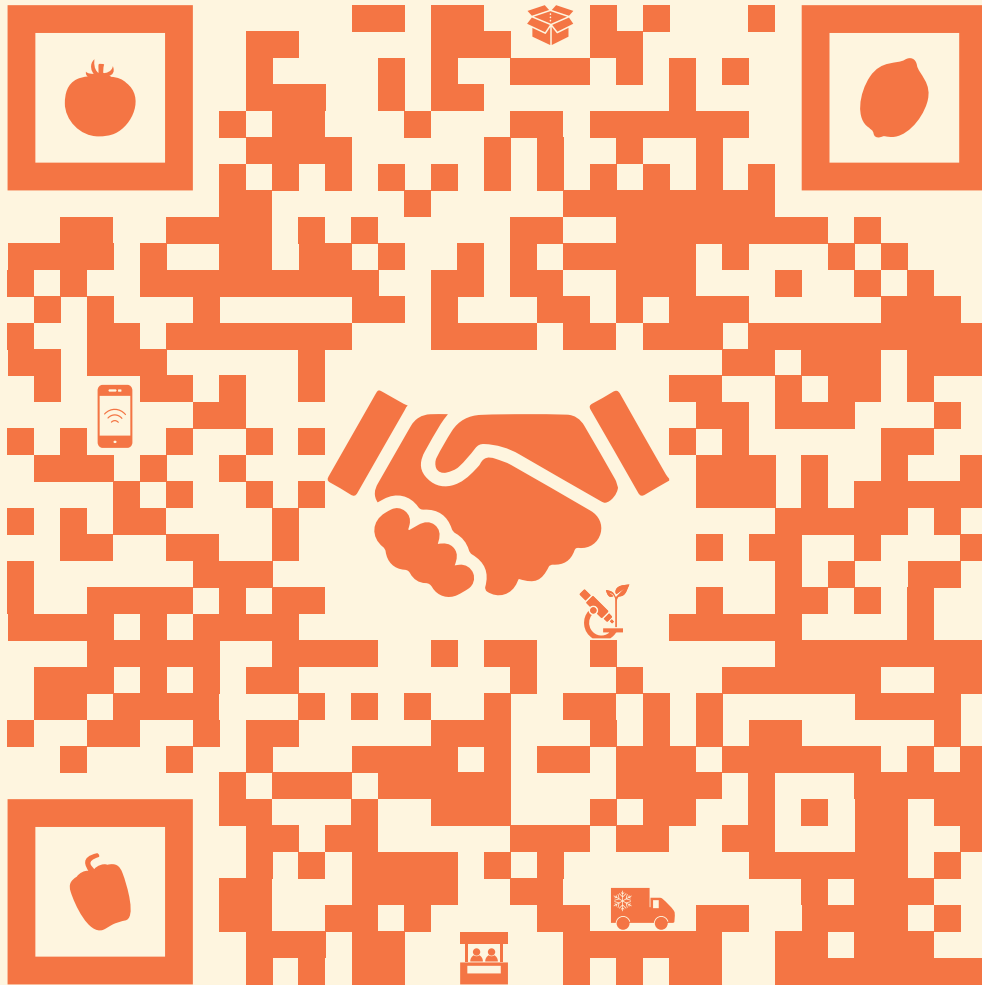
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Producer country file

The avocado in Guatemala

by **Eric Imbert**, Cirad
eric.imbert@cirad.fr

Guatemala remains a minor player on the world avocado market, with exports of 8 000 tonnes in 2020-21. However this country, the cradle of one of the three avocado races, possesses great growing potential for this crop. With stock meeting international quality standards entering its prime, a turnaround could be on the cards.

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History and production

One of the birthplaces of the avocado, but with a recent export industry

Guatemala gave birth to one of the three avocado races, naturally the one bearing its name. The avocado is an ancestral crop, with the fruit part of the local diet since Mayan times. It is based on a wide range of varieties, derived from the West Indian race in the hot coastal regions, and the Guatemalan and Mexican races in the cooler high-altitude regions. Nonetheless, the introduction of commercial cultivars is relatively recent (in the 1970s for Hass in the Sacatepéquez region). No reliable recent information on surface areas in cultivation is available, with the latest survey conducted in 2002-2003 (5 600 ha across all varieties). However, the crop has made distinct progress over the past two decades, especially under a governmental programme aimed at developing the horticultural sector, with free distribution of plants to very small growers. Nonetheless, until recently it retained a local or regional outlook. In recent years, the industry has followed an upscaling trend. Production adhering to good quality standards is emerging, enabling it to deal with big international markets. This produce is from medium-sized plantations, and also some large units set up by big local international groups, or more recently by a multinational

specialised in the sector. Hass surface areas are estimated at between 6 000 and 15 000 hectares, with more than 2 000 hectares between four big plantations. According to certain professionals, Hass could be the new driving force of the Guatemalan agricultural sector, given the difficulties faced by the markets of the country's big specialities, sugar and coffee (250 000 ha suitable for avocado growing, according to a study by the Ministry for Agriculture). Some of the big groups too have large-scale expansion plans.



Location

Great growing potential in the high-altitude zones, but with a highly variable technical level

The Hass orchards are concentrated mainly on the high mountainous volcanic plateaux, in zones situated at between 1 000 and 2 500 metres above sea level (generally 1 400 to 1 700 metres). The growing potential in this altitude range is excellent: satisfactory temperatures, soils of generally volcanic origin, which are rich, deep and filtering, rainfall level enabling cultivation without irrigation (1 300 to 1 700 mm, mainly from May to October). Conversely, the sanitary pressure is relatively high, and cases of extreme climate phenomena are significant. The majority of surface areas are situated on the Sierra Madre, which crosses the country from west to east (Departments of Guatemala, Sacatepéquez, Chimaltenango, Sololá, Huehuetenango, San Marcos, etc.). There are also large orchards further

north, in the Department of Alta Verapaz. The size of the plantations and the production systems vary greatly. The production base comprises traditional non-irrigated smallholdings, with a very low-tech level, lacking sanitary and fertilisation management, etc., a low investment capacity and with no certification. They coexist alongside medium-sized facilities (tens of hectares) which have better technical management, and also four big plantations built to international production standards (approximately 2 000 ha of orchards in total, generally young or very young). The sector is playing an increasing economic and social role, in particularly deprived rural areas which are generating a large flow of migrants, in particular heading for North America.

Avocado Guatemala



The avocado in Guatemala

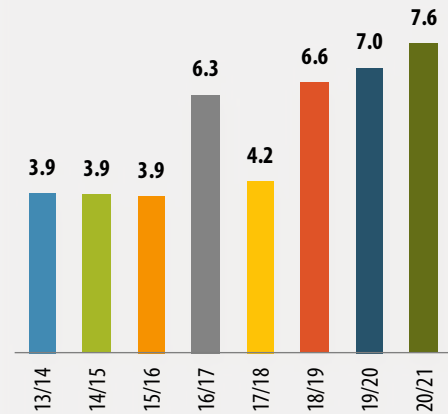


Outlets and exports

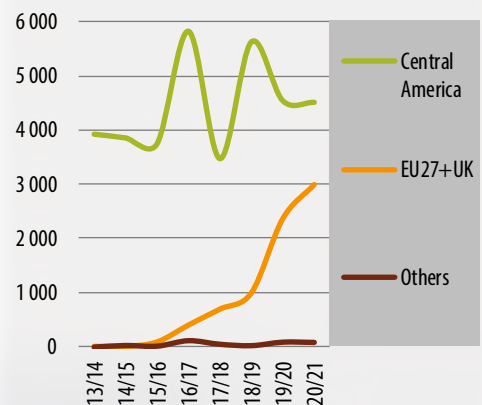
Breakthrough onto the European market, though still hesitant

The industry maintained a local or regional outlook right up until the last few years. The Guatemalan domestic market has a particularly high consumption of this product, which is part of its traditional diet. However, the emergence of production adhering to international quality standards, from the medium and large-sized plantations, is starting to turn things around. Exports are still maintaining a fairly modest level (just under 8 000 t in 2020-21), though they are on an upward trend (doubling in the space of 5 years). Furthermore, its customer country portfolio is expanding. The regional market remains the main outlet: according to Customs figures, 60 % of shipments in 2020-21 went to Honduras, Costa Rica and El Salvador. However, the Guatemalan Hass has been making a comeback, albeit hesitantly, on the European market for the past few years (approximately 3 000 t in 2020-21), after an aborted attempt in 2008. This developing “long-haul” export flow can be attributed to the big producer groups, or packing/exporter groups, working mainly with medium-sized growers on a contract basis. The sector has initiated an export authorisation process to the USA, under the aegis of the sector’s representative body (Comité de Aguacate/Agexport). The country has several high-tech guacamole manufacturing units (HP system), to exploit the large volumes of category two fruit available.

Avocado - Guatemala - Exports
(in 000 tonnes | source: Comtrade)



Avocado - Guatemala - Exports by destination
(in tonnes | source: Comtrade)



Calendar and varieties

The country has a particularly rich genetic diversity. More than twenty local “creole” varieties are still cultivated today. The most common cultivars are Hass, Booth 8 (a Guatemalan-West Indian hybrid, present in the hot coastal zones), Panchoy (Guatemalan race) and Azteca. Hass is harvested during two periods. The fruit from the main bloom matures from September/October to March. Production from the “loca” bloom is available from June to August/September. The level varies fairly significantly from year to year, and can make up 15 to 20 % of the annual total harvest.

Avocado – Guatemala – Production calendar

	A	S	O	N	D	J	F	M	A	M	J	J
Main bloom												
“Flor loca”												



Logistics

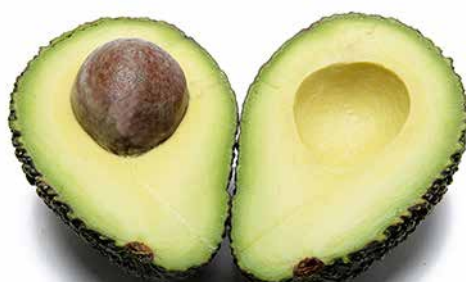
Fruit for the European market is brought by road-freight to the east coast. It is then exported by sea-freight via the port of Santo Tomás de Castilla, situated near Puerto Barrios. Several shipping companies serve Northern Europe, within approximately 17 to 18 days.

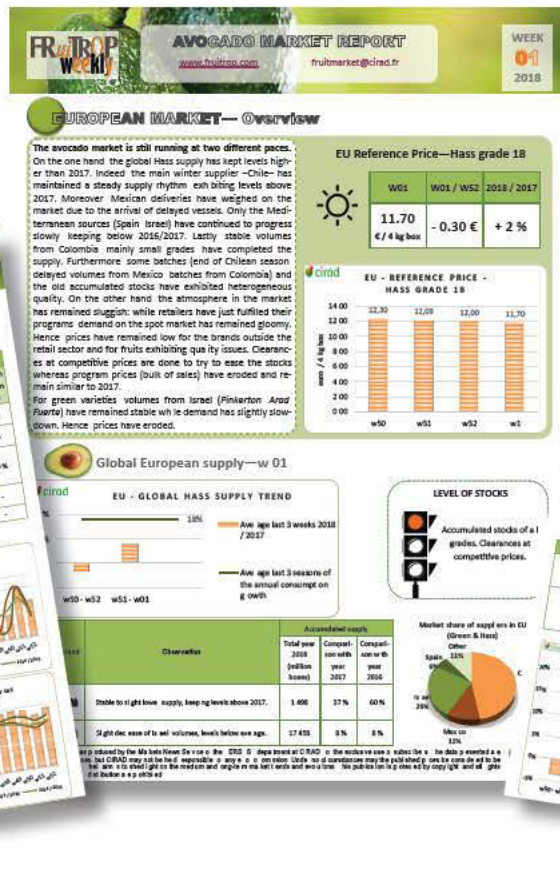


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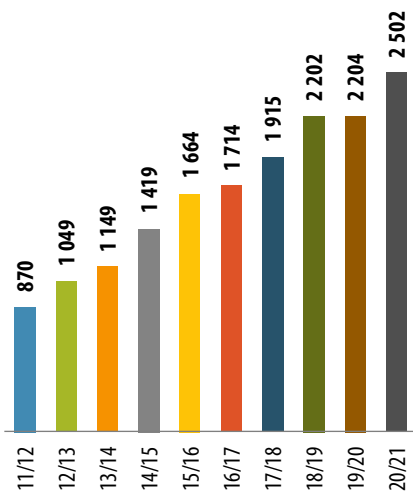
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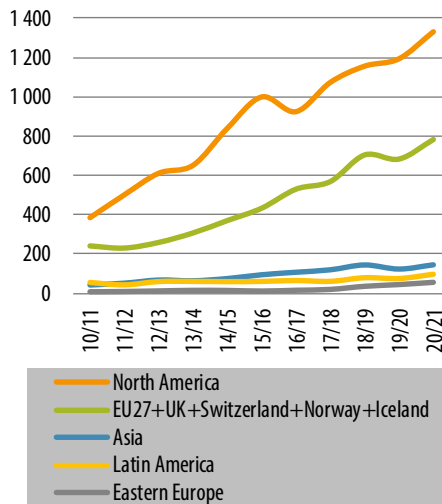


Imports

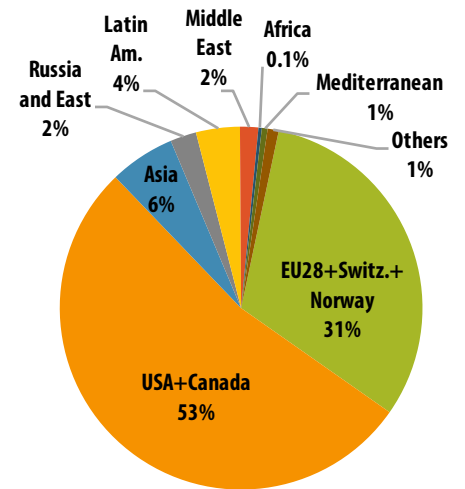
Avocado - World - Evolution of imports
 (in 000 tonnes | sources: Comtrade, Eurostat)



Avocado - World - Main importer markets
 (in 000 tonnes | source: Customs)

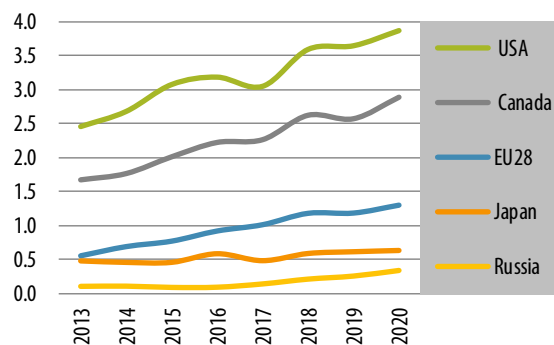


Avocado - World - Main importer markets
 (sources: Comtrade, Eurostat)

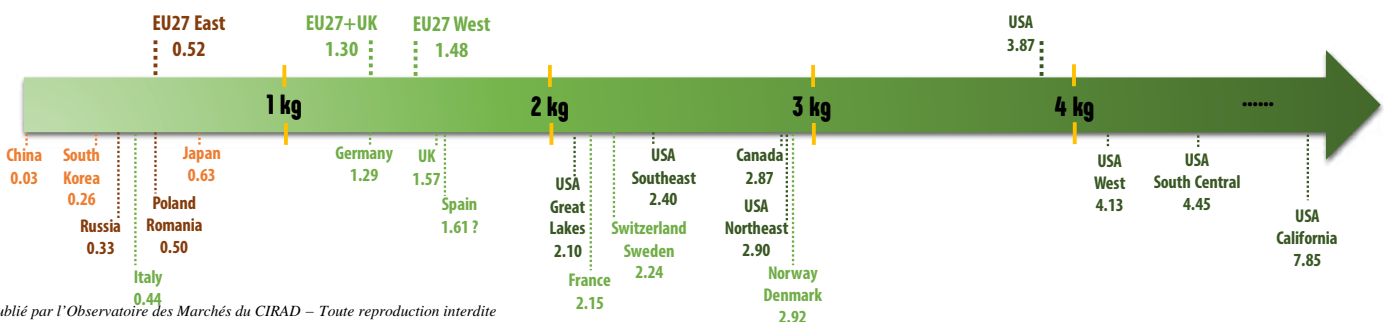


Consumption

Avocado - Consumption in main import markets
 (in kg/capita | sources: Customs, professionals)



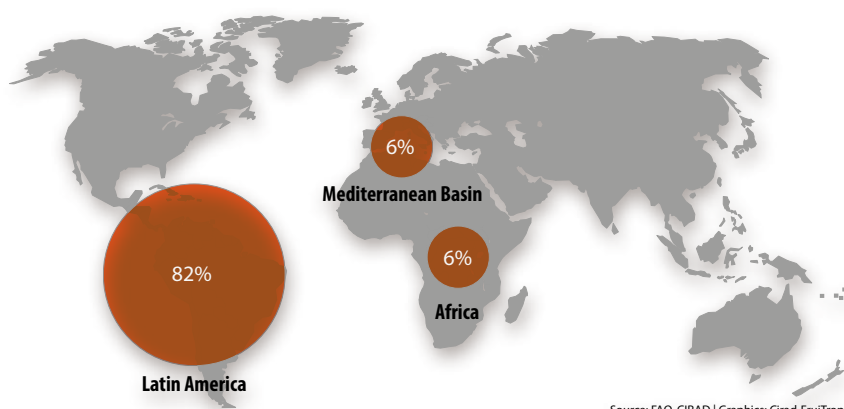
Avocado - Consumption on main import markets in 2020 - in kg per capita



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Exports

World exports 2 500 000 tonnes



Source: FAO, CIRAD | Graphics: Cirad-FruiTrop

Avocado – World – Main exporter countries

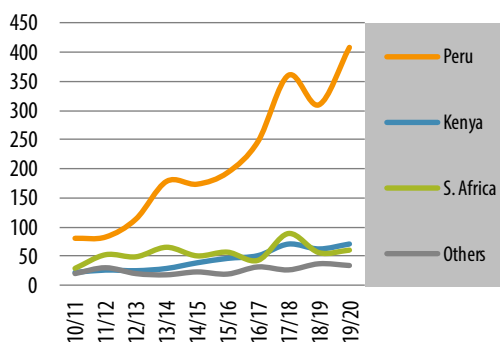
in tonnes	2020-21
Mexico - Michoacán	1 337 517
Peru	408 860
Mexico - Jalisco	119 600
Colombia*	84 100
Chile	73 991
Israel	65 000
South Africa	60 900
Dominican Rep.	50 000
Spain	47 237
Kenya	72 000
Morocco	33 500

* traversia 2020 + normal 2020-21
Sources: national Customs, professionals

Seasons

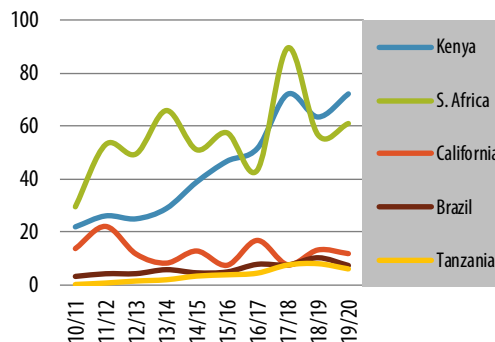
Avocado - World - Exports of main sources during summer season

(In 000 tonnes | sources: Eurostat, Comtrade)



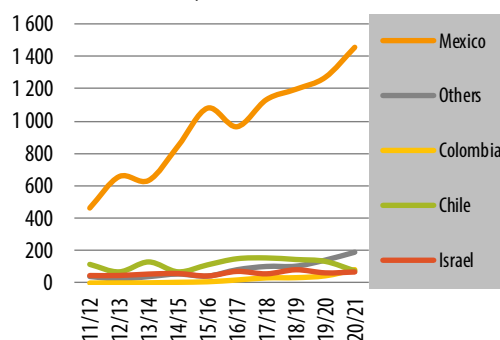
Avocado - World - Exports of main sources during summer season - In detail

(in 000 tonnes | sources: Eurostat, Comtrade)



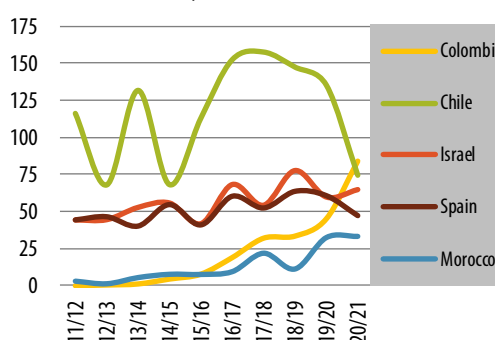
Avocado - World - Exports of main sources in winter season

(in 000 tonnes | sources: Eurostat, Comtrade)



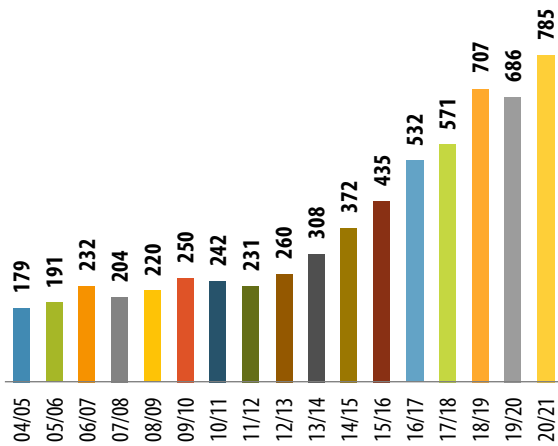
Avocado - World - Exports of main sources during winter season - In detail

(in 000 tonnes | sources: Eurostat, Comtrade)

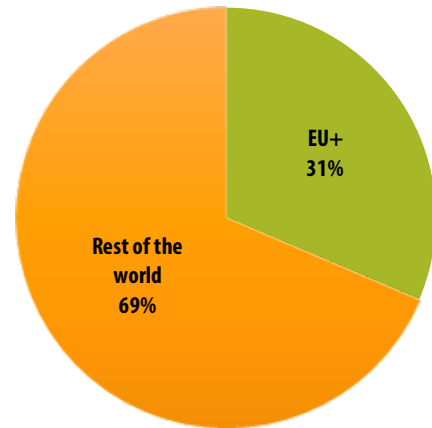


EU27 + UK + Switzerland + Norway + Iceland

Avocado - EU27 + UK + Switzerland + Norway + Iceland
Evolution of imports (July to June)
(in 000 tonnes | sources: Eurostat, Comtrade)

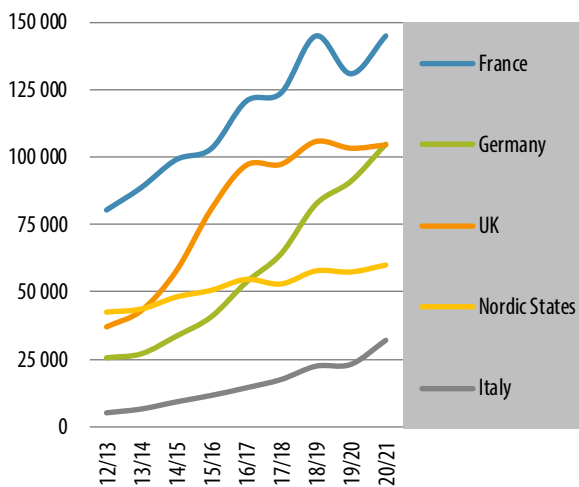


Avocado - EU27 + UK + Switzerland + Norway + Iceland
Markets share in 2020-21
(sources: Eurostat, Comtrade)

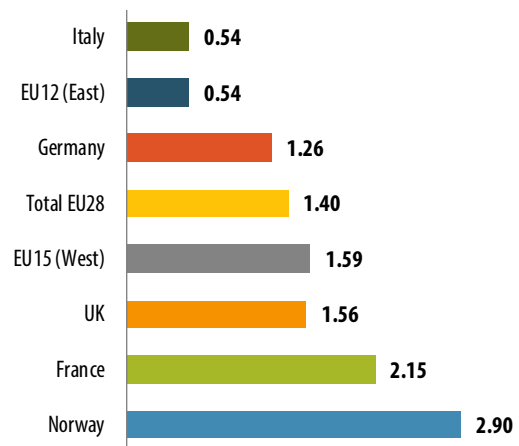


Consumption

Avocado - Europe - Consumption on main markets
(in tonnes | sources: Eurostat, Comtrade)



Avocado - Europe - Consumption per capita in 2020-21
(in kg/capita | sources: Eurostat, Comtrade)



Imports by origin

Avocado – EU27+UK – Imports by origin

in tonnes	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	230 420	217 440	245 102	291 118	350 948	410 937	504 775	542 508	677 292	654 494	750 581
Winter season	123 439	120 414	128 824	154 339	167 281	216 907	271 146	294 861	297 674	353 070	365 567
Mexico	3 371	2 909	9 085	6 293	12 918	45 593	36 884	60 993	47 561	71 645	103 560
Colombia (Oct.-April)	121	121	486	1 142	3 613	9 908	18 324	22 602	28 559	38 379	67 130
Chile	25 244	32 637	41 074	62 968	42 797	78 244	90 138	92 467	87 571	95 210	54 752
Israel	38 512	40 448	35 175	42 844	46 086	34 995	56 600	41 567	60 101	43 465	44 997
Spain	48 600	38 900	38 500	33 305	48 984	34 455	52 276	45 894	50 135	54 730	42 763
Morocco	3 346	2 803	840	4 766	7 798	7 115	9 552	21 746	11 237	32 649	32 451
Dominican Rep.	3 794	1 467	2 503	1 647	3 059	4 526	5 529	7 344	8 710	11 341	13 504
Portugal				632	1 258	1 034	1 160	813	2 457	2 408	5 611
Guatemala							256	300	859	2 408	2 734
USA	5	100	687	3	3	50	2	575	0	28	1 196
Greece	446	1 029	474	740	765	987	424	560	484	807	800

in tonnes	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Summer season	106 980	97 026	116 279	136 779	183 667	194 030	233 630	247 647	379 618	301 424	385 014
Peru	56 345	66 155	62 618	86 260	101 971	114 321	144 367	157 744	228 769	184 109	246 753
South Africa	47 323	26 897	48 441	44 073	56 855	49 568	52 441	41 608	83 478	50 749	54 532
Kenya					15 865	20 728	23 740	25 392	41 699	35 550	44 447
Colombia (May-Sept.)*					130	631	3 908	10 114	8 003	11 035	22 692
Tanzania	21	6	133	968	1 643	3 278	2 948	2 987	6 244	6 612	5 979
Brazil	2 665	3 006	3 959	3 928	5 265	3 535	3 908	7 189	6 680	8 158	4 974
Zimbabwe	110	145	490	676	1 121	1 253	1 517	2 126	4 196	3 864	4 384
Mozambique								56	168	975	992
Eswatini	404	366	218	416	328	141	330	208	285	336	261
Others	113	79	306	300	447	497	337	224	-	-	-
Argentina	-	372	114	158	43	78	133	-	96	36	-

*Traviesa | Source: Eurostat

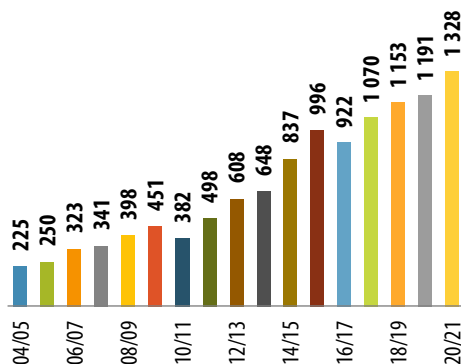
Avocado – Switzerland + Norway + Iceland – Imports

in tonnes	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL	11 538	13 644	14 779	17 148	20 600	23 746	27 120	28 215	29 360	31 130	34 769
Switzerland	6 152	6 789	7 340	7 915	9 516	11 376	13 823	14 694	15 528	16 090	18 904
Norway	5 154	6 555	7 090	8 787	10 496	11 673	12 411	12 422	12 779	13 960	14 833
Iceland	232	300	349	446	588	697	886	1 099	1 053	1 080	1 032

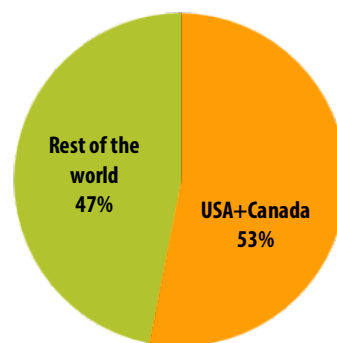
Source: Comtrade

Imports

Avocado - USA + Canada - Evolution of imports
(July to June) (in 000 tonnes | source: US Customs)



Avocado - USA + Canada - Market share in 2020-21
(source: US Customs)



Avocado – United States – Imports by origin

in tonnes	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	351 120	462 777	561 892	603 160	780 412	917 667	846 414	982 317	1 058 084	1 090 704	1 216 303
Mexico	281 672	360 924	515 143	512 276	686 404	853 617	764 680	862 596	917 730	963 539	1 103 321
Peru	137	9 157	15 860	21 617	64 448	46 284	31 573	64 420	81 893	85 174	77 400
Dominican Rep.	14 956	17 204	16 150	15 958	15 548	7 393	20 805	25 757	29 560	27 823	31 798
Colombia								89	899	1 951	2 847
Chile	54 355	74 701	14 721	53 305	10 600	10 362	29 354	29 454	28 001	12 216	937
Others	0	0	18	4	56	11	2	0	19	0	40
New Zealand		791			3 356			1	1	1	

Source: Comtrade

Avocado – Canada – Imports by origin

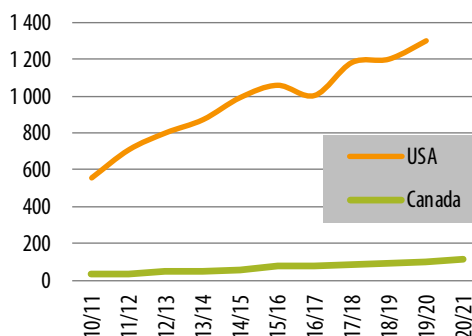
in tonnes	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	30 873	35 510	46 086	45 193	56 365	78 621	75 114	88 126	95 021	100 048	111 907
Mexico	22 687	27 431	36 299	33 451	44 958	72 004	71 540	82 951	91 111	94 135	104 877
Peru	1 266	2 483	2 282	2 905	5 542	2 627	1 130	3 567	1 955	3 224	4 082
Colombia							53	23	136	342	927
United States	5 134	4 033	6 273	7 964	4 925	3 308	1 843	507	746	922	911
Dominican Rep.	314	255	351	456	534	483	379	629	581	752	799
Others	132	253	222	156	341	196	166	429	472	627	311
Chile	1 340	1 055	659	261	65	3	3	20	20	48	0

Source: Comtrade

Consumption

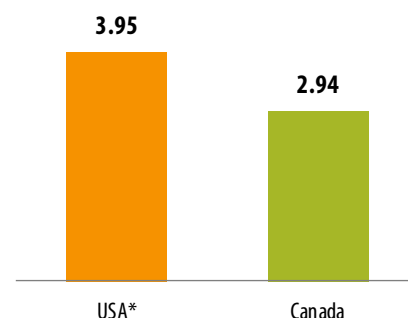
Avocado - USA + Canada - Consumption
(incl. California production)

(in 000 tonnes | source: US Customs)



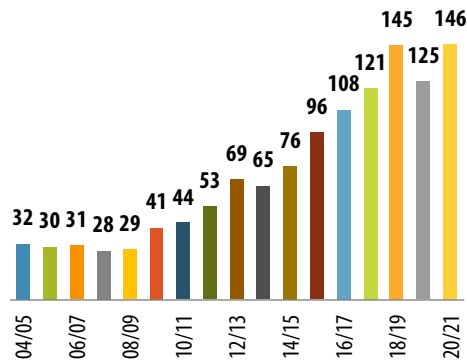
Avocado - USA + Canada - Consumption per capita
in 2019-20* or 2020-21

(in kg/capita | source: US Customs)

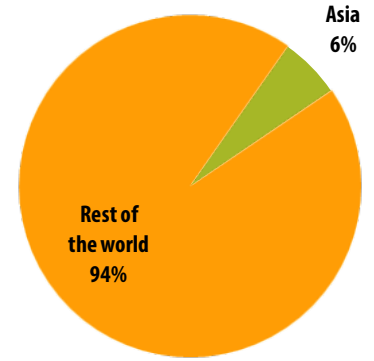


Imports

Avocado - Asia - Evolution of imports
(July to June) (in 000 tonnes | source: Comtrade)



Avocado - Asia - Market share in 2020-21
(source: Comtrade)



Avocado – China + Hong Kong – Imports by origin

in tonnes	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	13 629	22 165	31 068	40 228	46 236	34 064	35 582
Peru	1 154	520	2 802	6 437	17 073	13 589	16 357
Mexico	10 794	14 223	10 919	17 690	13 952	8 070	12 697
Chile	1 092	5 783	13 405	15 029	13 616	11 012	4 176
USA	547	262	1 048	650	1 084	165	1 261
Others	187	325	309	422	511	1 228	1 091

Source: exporter countries Customs

Avocado – Japan – Imports by origin

in tonnes	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	57 372	67 243	67 394	65 703	76 614	72 514	84 841
Mexico	52 758	63 986	63 549	59 192	69 701	64 549	73 020
Peru		25	969	3 347	5 166	4 480	8 360
USA	2 124	80	1 174	2 585	1 099	2 300	1 399
Colombia						44	186
Others		2			18	40	2
New Zealand	1 704	2 467	1 527	461	118	573	0
Chile	786	683	175	118	512	528	0

Source: Comtrade

Avocado – South Korea – Imports by origin

in tonnes	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	1 170	1 658	3 044	6 145	13 371	7 218	14 783
Mexico	64	391	472	1 943	4 279	3 615	7 062
Peru							4 181
USA	665	893	1 630	3 382	7 991	2 716	3 009
New Zealand	441	374	943	819	1 103	887	275
Chile							256

Source: Comtrade

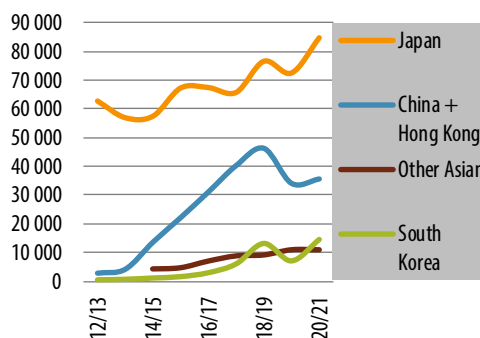
Avocado – Other Asian countries – Imports for main markets

in tonnes	2014	2015	2016	2017	2018	2019	2020
TOTAL	4 205	4 598	6 887	8 663	8 989	10 778	10 766
Singapore	2 815	2 991	4 210	5 737	5 070	5 468	5 553
Malaysia	956	1 075	2 076	2 327	3 156	3 914	3 436
Thailand	434	532	601	599	763	1 396	1 777

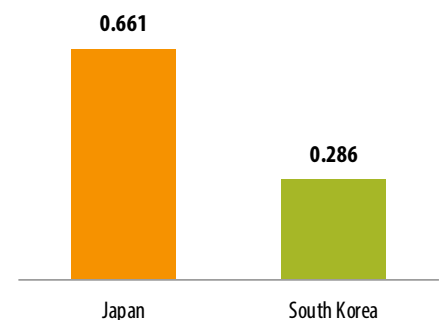
Source: Comtrade

Consumption

Avocado - Asia - Evolution of imports
on main markets
(in tonnes | source: Comtrade)

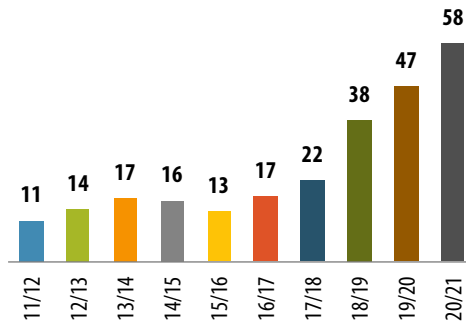


Avocado - Japan + South Korea - Consumption
per capita in 2020-21
(in kg/capita | source: Comtrade)

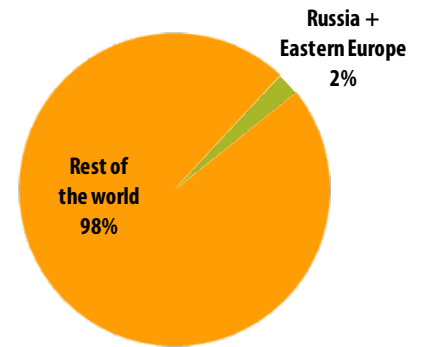


Imports

Avocado - Russia + Eastern Europe (Ukraine, Belarus, Serbia) - Evolution of imports
(in 000 tonnes | source: Comtrade)



Avocado - Russia + Eastern Europe
Market share in 2020-21
(source: Comtrade)



Avocado – Russia – Imports by origin

in tonnes	2010	2011	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	8 299	9 441	12 026	14 238	13 619	10 445	15 046	18 365	31 146	35 286	43 852
N. Hemisphere, incl.	281 672	360 924	515 143	512 276	686 404	853 617	764 680	862 596	917 730	963 539	1 103 321
Israel	5 135	5 794	7 512	9 004	8 123	5 814	9 614	10 234	15 216	15 055	12 049
Colombia (Oct.-April)							25	186	962	1 402	4 750
Morocco									21	425	651
Mexico										1 512	571
Chile	27	22	66	147	86	99	123	232	576	780	425
Spain	183	405	305	280	1	0	0	0	0	0	0
S. Hemisphere, incl.	2 861	3 087	3 934	4 545	5 208	3 763	5 223	7 317	13 635	14 925	24 543
Peru	597	1 475	1 259	1 462	982	1 069	1 586	2 100	3 089	7 540	14 482
Kenya	280	291	330	405	232	497	1 735	4 260	7 191	4 589	6 443
South Africa	1 984	1 321	2 345	2 678	3 994	2 197	1 902	957	3 355	2 796	3 618
Colombia* (May-Sept.)								0	47	314	1 596
Others	93	133	209	262	202	768	60	396	757	1 612	1 514

*Travesia | Source: Comtrade

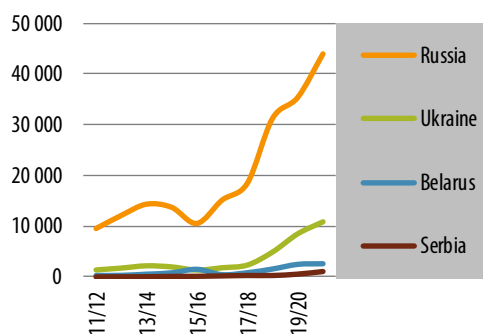
Avocado – Ukraine + Belarus + Serbia – Imports

in tonnes	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL	1 254	1 529	1 948	2 636	2 749	2 850	2 324	3 321	6 627	11 433	14 441
Ukraine	1 026	1 249	1 623	2 068	1 852	1 231	1 685	2 218	4 793	8 411	10 782
Belarus	177	229	255	482	744	1 441	388	770	1 501	2 417	2 537
Serbia	51	51	70	86	153	178	251	333	333	605	1 122

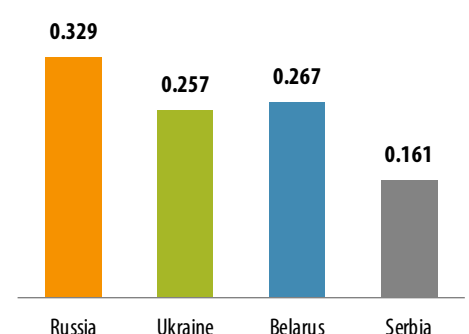
Source: Comtrade

Consumption

Avocado - Russia + Eastern Europe
Evolution of imports
(in tonnes | source: Comtrade)

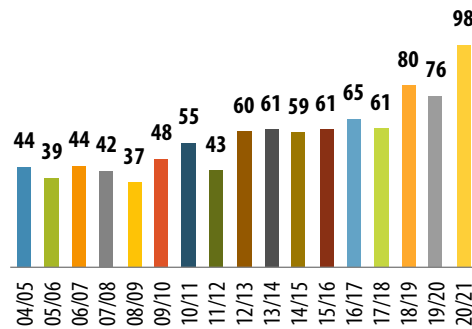


Avocado - Russia + Eastern Europe
Consumption per capita in 2020-21
(in kg/capita | source: Comtrade)

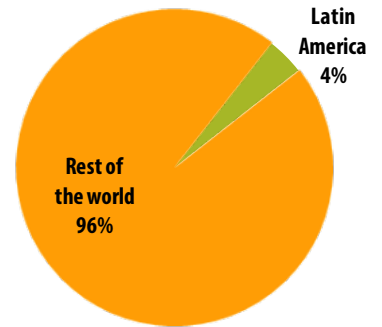


Imports

Avocado - Latin America - Evolution of imports
(July to June)
(in 000 tonnes | source: Comtrade)



Avocado - Latin America
Market share in 2020-21
(source: Comtrade)



Avocado - Chile - Imports by origin

in tonnes	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	299	1 464	698	3 857	3 774	10 629	9 414	9 195	21 657	15 850	37 583
Peru	281	913	678	760	2 680	8 237	7 961	5 409	19 712	15 629	32 649
Mexico					1 093	2 392	283	3 786	1 595	221	4 774
Others	18	551	20	3 097	-	-	1 170	-	350	-	160

Source: Comtrade

Avocado - Other South American - Main markets

in tonnes	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
TOTAL	18 578	13 168	16 972	14 521	18 466	12 475	13 001	19 173	14 346	18 254	19 368
Argentina	8 357	5 493	9 179	9 621	13 208	10 807	12 784	19 033	14 334	18 016	18 557
Colombia	9 044	7 190	6 023	3 904	3 128	1 130	217	133	-	238	811
Ecuador	1 177	485	1 770	996	2 130	538	-	7	12	-	-

Source: Comtrade

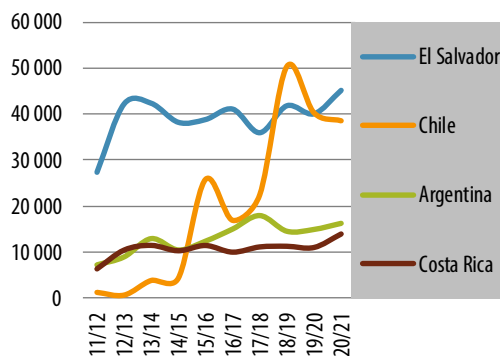
Avocado - Central America - Main markets

in tonnes	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL	35 956	27 486	42 132	42 266	38 184	38 777	41 018	35 959	41 735	40 007	45 029
El Salvador	9 308	9 262	13 754	12 666	12 213	12 269	12 570	12 005	14 931	13 225	16 268
Honduras	9 032	6 426	10 412	11 405	10 263	11 379	9 972	11 079	11 215	10 958	13 813
Costa Rica	9 638	9 958	13 731	13 061	12 424	11 187	9 334	7 783	7 899	7 720	7 445
Guatemala	1 380	900	3 312	2 923	3 211	3 942	6 081	2 110	4 916	3 949	5 052
Bolivia							1 082	1 207	1 438	2 000	1 943
Panama							1 961	1 775	1 336	2 155	508
Mexico	6 598	940	923	2 211	73	-	18	-	-	-	-

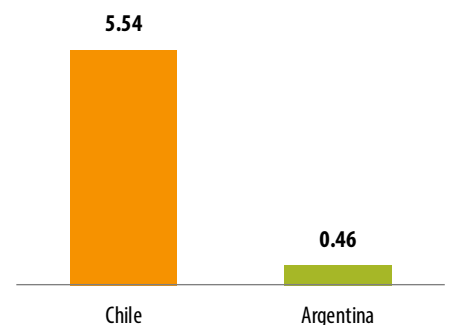
Source: Comtrade

Consumption

Avocado - Latin America - Evolution of imports
(in tonnes | source: Comtrade)

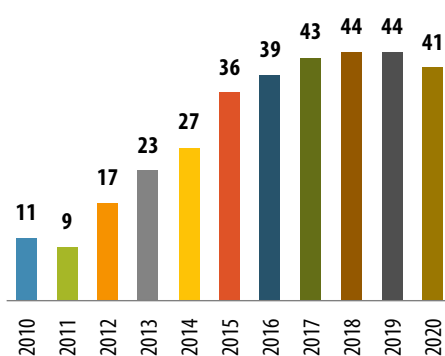


Avocado - Chile + Argentina - Consumption
per capita in 2020-21
(in kg/capita | sources: Comtrade, Comité de Palta, FAO)

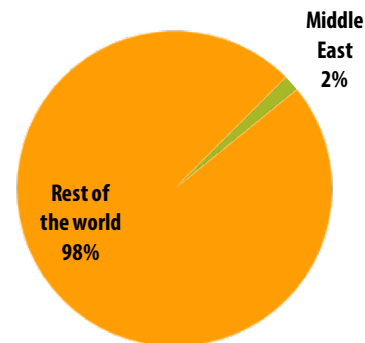


Imports

Avocado - Middle East - Evolution of imports
(in 000 tonnes | source: Comtrade)



Avocado - Middle East - Market share in 2020
(source: Comtrade)



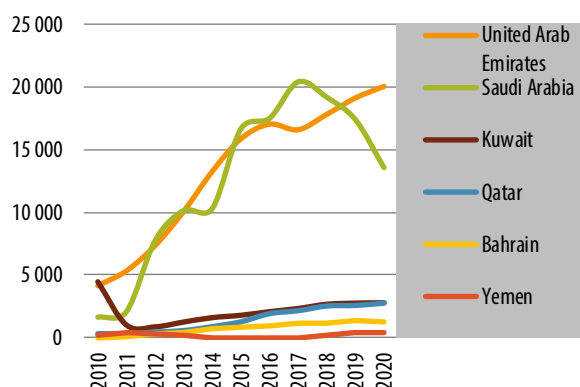
Avocado – Middle East – Main markets

in tonnes	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL	10 859	9 228	16 985	22 604	26 818	36 400	39 476	42 676	43 579	43 528	40 799
Saudi Arabia	1 610	2 056	7 736	10 156	10 312	16 697	17 527	20 451	19 217	17 420	13 578
United Arab Emirates	4 160	5 347	7 352	10 077	13 250	15 841	17 000	16 555	17 777	19 081	20 000
Kuwait	4 494	1 001	857	1 247	1 601	1 791	2 084	2 341	2 680	2 770	2 800
Qatar	366	360	486	598	904	1 280	1 910	2 135	2 500	2 545	2 721
Bahrain	9	116	266	382	726	791	955	1 194	1 180	1 330	1 300
Yemen	220	348	288	144	25	-	-		225	382	400

Source: Comtrade

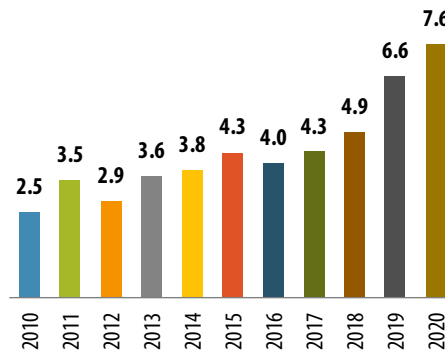
Consumption

Avocado - Middle East - Evolution of imports
(in tonnes | source: Comtrade)

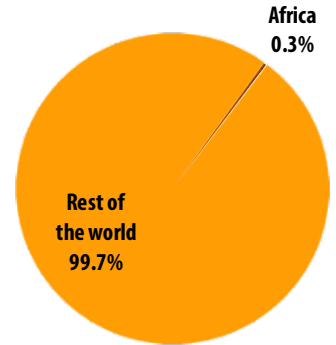


Imports

Avocado - Africa - Evolution of imports
(in 000 tonnes | source: Comtrade)



Avocado - Africa - Market share in 2020
(source: Comtrade)



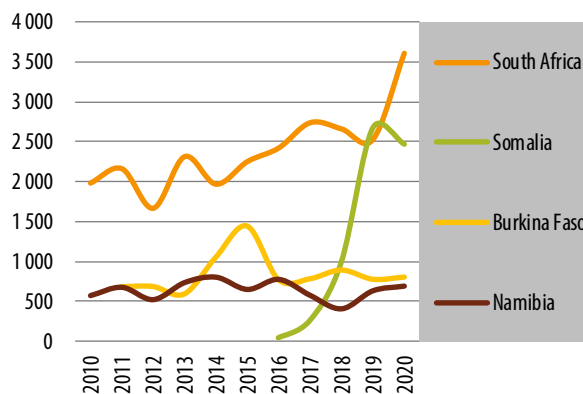
Avocado – Middle East – Main markets

in tonnes	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL	2 545	3 509	2 861	3 631	3 810	4 329	3 998	4 340	4 933	6 591	7 555
South Africa	1 976	2 156	1 660	2 308	1 962	2 246	2 416	2 733	2 655	2 522	3 603
Somalia							41	256	988	2 666	2 463
Burkina Faso		679	683	589	1 046	1 436	767	779	888	773	800
Namibia	569	674	518	734	802	647	774	572	402	630	689

Source: Comtrade

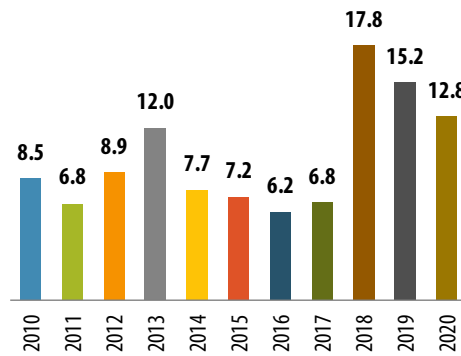
Consumption

Avocado - Africa - Evolution of imports
(in tonnes | source: Comtrade)

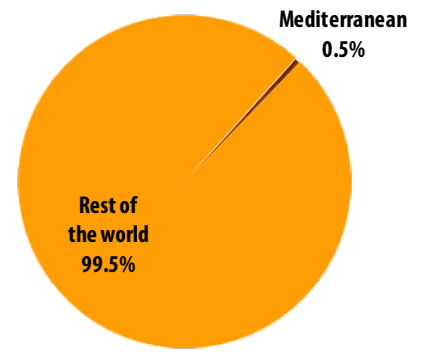


Imports

Avocado - Mediterranean - Evolution of imports
(in 000 tonnes | source: Comtrade)



Avocado - Mediterranean - Market share in 2020
(source: Comtrade)



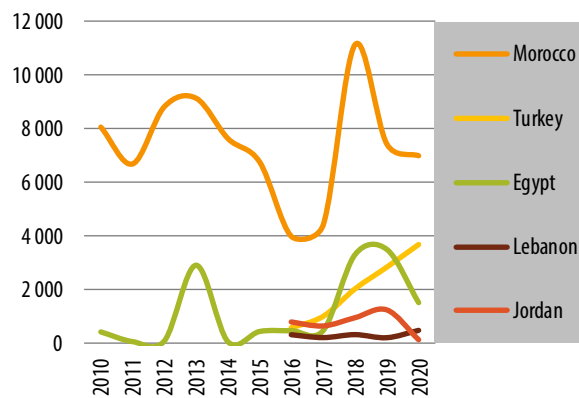
Avocado – Mediterranean – Main markets

in tonnes	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL	8 500	6 768	8 929	12 044	7 707	7 211	6 203	6 819	17 763	15 221	12 838
Morocco	8 055	6 683	8 817	9 130	7 627	6 749	3 975	4 417	11 130	7 425	6 987
Turkey							610	1 026	2 038	2 841	3 677
Egypt	445	85	112	2 914	80	462	487	500	3 309	3 500	1 528
Lebanon							326	218	329	214	488
Jordan							805	658	957	1 241	158

Source: Comtrade

Consumption

Avocado - Mediterranean - Evolution of imports
(in tonnes | source: Comtrade)



Avocado post-harvest

Post-harvest management of fruits is of prime importance. It affects both quality and yield, as losses can range from 5 to 50%.

The special features of climacteric fruits

Climacteric fruits have special physiological characteristics. They must be harvested after reaching a sufficiently advanced stage of development and hence of maturity. It is only then that they are capable of synthesising sufficient amounts of ethylene to be able to start ripening (a strong increase in respiration that physiologists refer to as 'climacteric' marks the start of deep-seated physiological changes). Only mature fruits will display satisfactory organoleptic characteristics once they have ripened. The avocado is a singular climacteric fruit. It can only start the ripening process after it has been picked. One of the best ways of storing the fruit is therefore to leave it on the tree. Some varieties can remain on the branch for several months, depending on the season. Suitability for 'tree storage' is generally very low or non-existent for West Indian cultivars but marked for hybrids, especially for Guatemalan x Mexican crosses. Nevertheless, prolonged storage can have a negative effect on production in the following season. These physiological considerations highlight the importance of the harvest date. Several variables that depend on the variety and the producer country concerned are to be taken into consideration to judge the optimum stage of maturity. Visual appraisal, fruit weight and diameter and the number of days after flowering give useful information but this is not accurate enough. Determining the matter content—strongly correlated with the oil content—is the most commonly used method. Appraisal of the stage of maturity is completed by analysis of enzyme activity, electrical conductivity, aromatic compounds or precursors or by tasting tests when the fruits have ripened.



Photos © Eric Imbert

Storage

Cooling

The temperature is lowered to slow the metabolism of the fruit so that it can be stored. This slows ethylene synthesis and its effects. It is therefore sought to bring the fruits to the best temperature for storage as rapidly as possible after harvesting (ideally in less than 6 hours). The duration of cooling depends on the initial and final temperature of the fruit and on the ambient air conditions (temperature, wind velocity and relative humidity). The time necessary varies from 8 to 10 hours. It is important to halt the cooling phase 2°C before the final temperature desired to be sure not to reach temperatures that are too low and that might damage the produce.

Refrigeration

Optimum storage temperatures vary according to the variety, the period of the season (maturity) and the storage period desired. In general, the temperature for mature avocado ranges from 5°C to 12°C with atmospheric relative humidity of 85% to 95%. The more delicate end-of-season fruits are stored in the lower part of the temperature range. For 'Hass', physiologists advise maintaining fruits at 5°C to 7°C at the beginning of the season and 4.5°C to 5.5°C at the end. More than four weeks of storage at these temperatures is not recommended. The optimum temperature range for 'Fuerte' is 6°C to 8°C but for no more than three weeks. In practice, professionals keep all the classic commercial varieties at between 5°C and 6°C. Temperatures must be strictly controlled to prevent any fluctuation. Movement of air is also regulated. Heat is released during the beginning of the ripening process and this must be taken into account. Maintaining the cold chain is of crucial importance.

Controlled atmosphere

Controlled atmospheres are widely used for long transport and can lengthen the duration of storage. Low O₂ levels combined with high CO₂ reduce respiration and ethylene production. An O₂ content of 2% to 5% and CO₂ of 3% to 10% are generally used. The main classic commercial varieties can thus be stored for 5 to 6 weeks and even longer for 'Hass'. The effects of unsuitable O₂ and CO₂ levels are described in the paragraph entitled 'Main types of post-harvest physiological deterioration' below.

Alternative technologies for long storage

Treatment with 1-MCP. Application of 1-MCP (1-methylcyclopropene) is reported to limit the internal symptoms of chilling injury (dulling of the pulp, vascular browning) in fruits stored for more than four weeks. The technique is said to give good results especially for the green varieties that are less suitable than 'Hass' for long storage (with regard to the standards in force). It has been used on a proportion of the South African harvest for three years.

Step Down Temperature. This technique has been used in the South African avocado sector for several years to conserve fruit quality and reduce internal symptoms of chilling injury. The storage temperature is lowered in steps (1°C to 2°C each week) during transport, with care taken not to descend below 3.5°C. There are procedures (temperature and duration) for the different cultivars and regions of South Africa.



Photos © Eric Imbert

Packing

Fruits with the desired maturity index are sorted, washed and graded before packing. Each market has its own packing requirements.

Avocado – United States (5.67-kg box)	
Weight (g)	Size
422	14
377	16
340	18
298	20
241	24
196	30
156	35

Avocado – United States (11.34-kg box - 43 x 32.6 x 17.50 cm)	
Weight (g)	Size
422	28
377	32
340	36
298	40
241	48
196	60
156	70
122	84
102	96

Avocado – Europe (4-kg box - 35 x 28.5 x 9 cm)	
Weight (g)	Size
461-475	8
366-400	10
306-365	12
266-305	14
236-265	16
211-235	18
190-210	20
176-189	22
156-170	24
146-155	26

Avocado – Japan (6-kg box - 43.9 x 33.1 x 11 cm)	
Weight (g)	Size
340	18
298	20
241	24
196	30
156	35

Ripening

The ideal temperature for ripening is 15°C to 20°C. Above 25°C, ripening is irregular, unpleasant flavours appear and the risk of rot increases. This natural process can also be controlled. Treatment with ethylene (100 ppm at 20°C for 12 to 72 hours depending on the maturity of the fruit) speeds up ripening by 3 to 6 days. It is possible to obtain fruits at an even stage of ripeness in chambers in which temperature, relative humidity and ethylene content are the main parameters controlled. Nevertheless, ripening still depends on the initial stage of maturity of the fruit.

The main precautions to be taken in shops

Avocado fruits are very sensitive to impacts and to pressing by consumers. Ripe and nearly ripe fruits must be stored at lower temperatures (1°C to 6°C). Misting is not recommended.



Photos © Eric Imbert

Main types of post-harvest physiological deterioration of avocado

Storage-related damage

Chilling injury. This damage is caused by low temperatures—generally below 3°C—or by prolonged storage. The symptoms may appear three days after packing during storage and more often when the fruits are removed from the cold room. Two forms of chilling injury are observed. The symptom of internal chilling injury is a browning of the pulp starting at the base of the fruit and sometimes vascular browning in the same area. In 'Fuerte', this disorder takes the form of small dark spots in the pulp. The symptoms of external chilling injury are irregular black spots on the epidermis. They may appear during storage and most frequently when the fruits are removed from cold storage.

O₂ deficit and excessive CO₂. Too great a decrease in the O₂ level (in particular to less than 1%) can cause irregular brown spotting of the epidermis that can spread to the pulp. Too high a CO₂ level (over 10%) can cause discoloration of the epidermis and the development of unpleasant flavours, especially when the O₂ level is low.

Fungal infection in the field revealed during or after storage

The control of fungal diseases requires effective orchard management and appropriate pre-harvest treatments. Any bruising of the fruits must be avoided at the post-harvest stage, they must be refrigerated rapidly and the cold chain maintained.

Anthraco**se.** This is the most frequent disease during storage and is caused by infection of the fruit by *Colletotrichum gloeosporioides* in the orchard and appears only during ripening. It causes serious necrosis. Ordinary small, scattered injuries develop into large circular brown spots on the epidermis. The underlying pulp blackens and the rot reaches the seed. The rate of development of this rot depends on the transport and storage temperature and above all the state of maturity of the fruits.

Stem-end rot. This disease is also caused by infection by a fungus, *Botryodiplodia theobromae*. Small pale brown spots appear initially in the stem zone. The rot spreads rapidly to the rest of the fruit. The pulp is then infected to the seed. Any injury on the epidermis favours infection by the pathogen.

Avocado – Post-harvest diseases caused by pathogenic fungi	
Pathogens	Diseases
<i>Alternaria</i> spp	Black rot
<i>Botryodiplodia theobromae</i>	Stem-end rot
<i>Botryosphaeria ribis</i> (<i>Dithiorella gregaria</i>)	Stem-end rot
<i>Colletotrichum gloeosporioides</i>	Anthraco se: Black rot
<i>Fusarium</i> spp	Stem-end rot
<i>Penicillium expansum</i>	Blue mould
<i>Pestalotiopsis perseae</i>	Brown spots
<i>Phomopsis perseae</i>	Brown rot
<i>Phytophthora citricola</i>	Small surface injuries
<i>Pseudocercospora purpurea</i>	Soft rot
<i>Rhizopus stolonifer</i>	Corky patches on epidermis
<i>Trichothecium roseum</i>	Pink rot

The harvest stage in the case of climacteric fruits

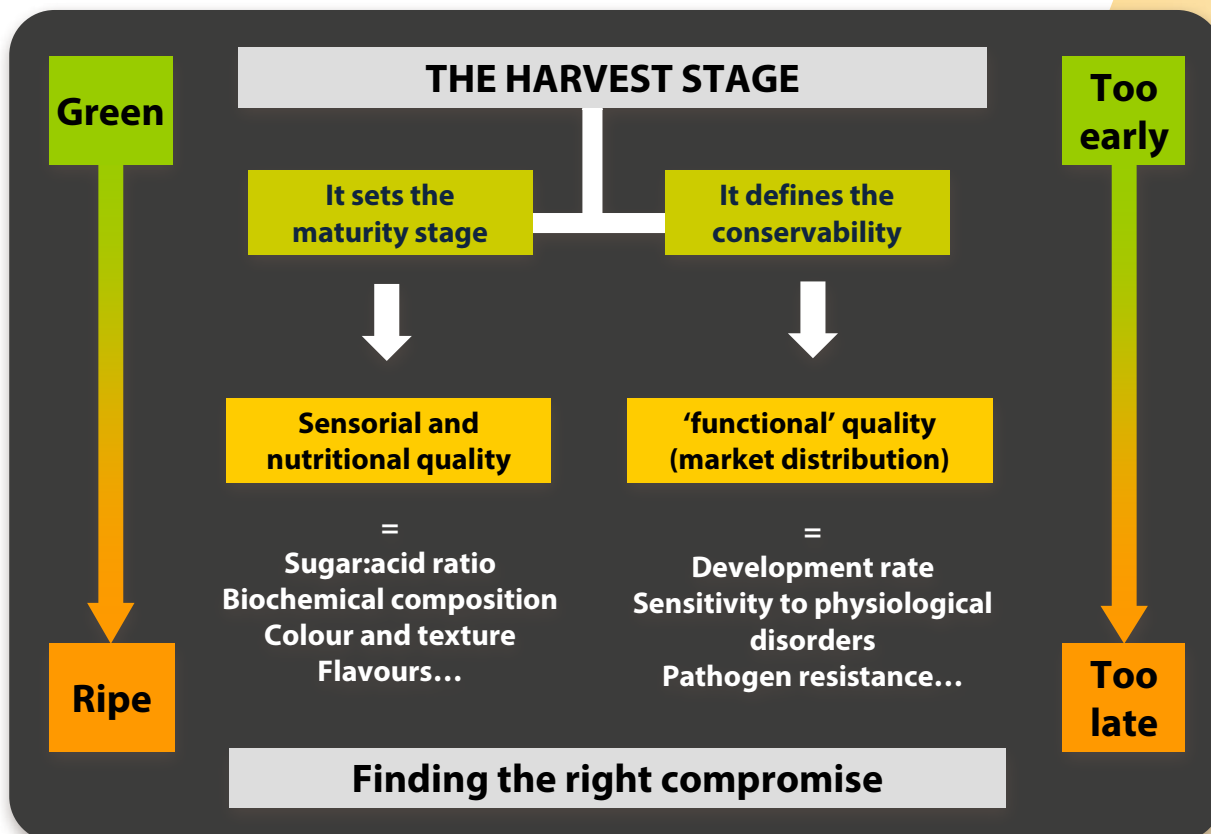
This stage is particularly important since the state of maturity of the fruit is “set” upon harvesting (see FruiTrop No.198, page 29, maturation article). The impact of the harvest stage is split into two aspects (see diagram):

- in qualitative terms, the earlier a fruit is harvested, the less taste properties it will exhibit, with a fairly low sugar content (enrichment in sugars is linked to the length of time on the plant) and a poor ability to develop flavours;
- in commercial terms, a fruit harvested at a stage too close to the fruit’s true maturity will have a lower conservability. But if the fruit is harvested too early, its ability to ripen may be insufficient, and it will not be able to go through the correct maturation development.

Importers are dependent on the compromise which may be found to reconcile taste quality and market distribution. Defining an optimum harvest stage is a real challenge, since there are not necessarily any clear visual descriptors indicating with acceptable precision the stage of maturity before maturation of climacteric fruits (known as the preclimacteric stage).

In parallel, with the markets constantly changing, the development of triggering (avocado, mango) becomes singularly complicated: how to be sure that the fruits have reached their ability to ripen? How to adapt the triggering process to the fruit’s stage of maturity, in the knowledge that the batches are heterogeneous?

There are possible alternatives for improving batch homogeneity, but this calls for a high degree of interaction between the production and distribution industries. Eventually, we will need to take into account the changes to cropping techniques on fruit physiology (conservation, metabolism of maturation). We will also need to assess the possibility of sorting fruits using non-destructive measures, to obtain homogeneous batches in order to adapt and ensure the performance of the triggering techniques.



Main avocado varieties

Avocado is a dicotyledon of the genus *Persea* of the Lauraceae family. There are more than 200 varieties divided between three races. The Mexican race is of little commercial interest as most of the fruits are too small. However, its agronomic qualities mean that it is widely used as rootstock or as a parent. Practically all sales of fruits of the West Indian race are on domestic markets. International trade handles mainly varieties belonging to the Guatemalan race or crosses between the Guatemalan and Mexican races.

The Guatemalan race

Persea nubigena L. Wins var. *guatemalensis*

This race probably originated not only in the highlands of Guatemala but also in the Chiapas in Mexico. The leaves are large and uniformly dark green on both faces. Although it is not as tolerant to cold as the Mexican race, it is useful for marginal cultivation zones. The fruits are roundish and have thick, very hard warty skin. The size may vary considerably but they are generally larger than fruits of the Mexican race. The seed is fairly small and almost always clings. Pulp oil content is medium at 10 to 20%. Flowering to harvest time is 8 to 10 months. It can be longer in the cold parts of California (12 to 14 months). The race is a good parent for crosses (contributing genes for small seeds). Nearly 40% of avocados belong to this race, including 'Anaheim', 'Corona', 'Sharwil' and the major commercial varieties such as 'Edranol', 'Gwen', 'Hass', 'Nabal' and 'Reed'.

The West Indian race

Persea americana Miller var. *americana*

In spite of its name, this race probably originated in Colombia. It is well suited to humid tropical regions where it is used to supply local markets. The tree has large green leaves. The fruits are elongated, usually large and weigh 400 g to 900 g. The epidermis is fairly thin (0.8 mm to 1.5 mm) and is smooth and shiny, soft green or greenish yellow or reddish when mature. The pulp is watery with a low oil content (< 10%). The seed—often free—is large and has a more or less corrugated surface. All these characteristics make the fruits delicate. They often display pulp browning (caused by chilling injury) at the temperatures generally used for the storage and refrigerated transport of fruits of the other races (+ 6°C, + 8°C). The race is the most sensitive one to cold and aridity but the most tolerant to salinity. The flowering to harvest time is only 5 to 7 months. The West Indian race groups about 15% of avocado varieties and the best known among them are 'Peterson', 'Pollock' and 'Waldin'.

The Mexican race

Persea americana Miller var. *drymifolia* Schlecht and Cham.

This fairly hardy race is adapted to low temperatures originated in the Mexican highlands. It differs from the two other races in several botanical characteristics:

- the leaves are generally small and release a characteristic aniseed odour when crumpled;
- flowering is earlier than in the other races and the flowering to harvest time is 7 to 9 months;
- the fruits are small and elongated and rarely weigh more than 250 g. The skin is very thin and smooth.

The pulp is often fibrous and has a high oil content (> 15%). The seed is generally large and sometimes free. This race is very sensitive to salinity. In contrast, it tolerates high temperatures and comparatively low relative humidity. Furthermore, it has greater tolerance to *Phytophthora cinnamomi* than the other races. It thus forms good rootstock and its genetic potential is well exploited in hybridisation breeding programmes. Finally, its high lipid content is an interesting feature when the fruits are used for oil production. About 20% of varieties belong to this race. The best known include 'Duke', 'Gottfried', 'Mexicolo', 'Topa Topa' and 'Zutano'.

Hybrids

A large proportion of the varieties of interest for international trade are hybrids. These are generally natural crosses and in rarer cases are the result of breeding exploiting the inter-fertility of the three races. The main selection criteria are agronomic (resistance to pests and diseases, especially *Phytophthora*, tolerance to salinity and cold, productivity, etc.) and those related to fruit quality (size, high pulp percentage, flavour, absence of fibres, oil content, etc.). 'Bacon', 'Ettinger', 'Fuerte' and 'Lula' in particular are natural Mexican x Guatemalan hybrids. Guatemalan x West Indian hybrids, mainly from Florida, include the varieties 'Ajax', 'Booth', 'Choquette', 'Collinson' and 'Simpson'. Mexican x West Indian hybrids such as 'Indian River' are very rare. Other varieties resulting from inter-race crosses are possible.

HASS



Guatemalan race

Flowering type: A
Fruit shape: pyriform
Skin: dark green and brown, at maturity, not very thick, warty
Oil content: 18 % to 20 %
Average weight: 250 g to 350 g
Seed:skin:pulp ratio: 16:12:72 (small seed)

'Hass' has replaced 'Fuerte' as the sector standard. It is currently the most commonly planted avocado in the world. It was selected by Rudolph Hass in California in the early 1920s and registered in 1935. The tree is vigorous and highly productive. The fruits vary in shape in some production regions, ranging from pyriform to ovoid. Average fruits size is fairly small in hot regions. Keeps well on the tree. The skin turns from dark green to purplish brown at maturity. It is easy to remove from the pulp. The organoleptic qualities are excellent. Rich flavour (nutty taste) and buttery non-fibrous pulp.



REED

Guatemalan race

Flowering type: A
Fruit shape: spheroid
Skin: medium thickness, slightly rough, pliable
Oil content: 19 % to 20 %
Poids moyen : 400 g to 500 g
Seed:skin:pulp ratio: 17:11:72

This variety of Californian origin was selected by James Reed. Registered in 1960, the patent expired in 1977. It has succeeded in conserving the qualities of its parents 'Nabal' and 'Anaheim' without their negative features. It is fairly productive and alternate bearing is not marked. Its resistance to cold is comparable to that of 'Hass'. The fruits are large and a singular round shape. They keep well on the tree. The organoleptic qualities are excellent and the buttery pulp has a slight nutty taste and does not blacken after slicing. Peeling is also easy.

ETTINGER

Mexican x Guatemalan hybrid

Flowering type: B
Fruit shape: narrowly obovate
Skin: bright green, fine, fairly smooth
Oil content: 18 % to 22 %
Average weight : 250 g to 350 g
Seed:skin:pulp ratio: fairly large seed



This variety was bred from 'Fuerte' in Kefar Malal in Israel, where it is mainly grown. The tree is very fertile and vigorous with an erect habit. The fruits are similar to those of 'Fuerte'. The skin is susceptible to problems of corky areas and tends to adhere to the pulp. The pulp is buttery and fibreless and has good organoleptic qualities.

PINKERTON

Mexican x Guatemalan hybrid

Flowering type: A
Fruit shape: pyriform
Skin: dark green, rough, tough and pliable, medium thick, easy to peel
Oil content: 18 % to 25 %
Average weight: 270 g to 400 g
Seed:skin:pulp ratio: 10:13:77 (small seed)



A recent variety bred in California by John Pinkerton and registered in 1975. It is probably the result of a Hass x Rincon cross. The tree is very vigorous and tolerates temperatures of -1/-2°C to 30°C. Production is good and alternate bearing is mild. The fruits may suffer from ring-neck if the tree is under conditions of stress. The organoleptic qualities of this variety are excellent (nutty taste). The pulp is smooth, buttery and fibreless.

FUERTE

Mexican x Guatemalan hybrid

Flowering type: B
Fruit shape: obovate
Skin: green, matt, smooth, medium thickness. Pliable and tough, it is easy to remove.
Oil content: 16 % to 18 %
Average weight: 250 g to 400 g
Seed:skin:pulp ratio: 15:10:75 (large seed)



This variety was long the most commonly planted in the world and originated in Mexico (Atlixco). The tree is vigorous with fairly good frost resistance (to 4°C), but is particularly temperature-sensitive during the flowering period. Productivity is generally good in temperate zones but it displays strong alternate bearing. The fruits are easy to peel and have excellent organoleptic qualities (buttery pulp).

H1 2021 review

by **Richard Bright**, consultant
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It is no exaggeration to state that the first six months of 2021 in reefer logistics were more remarkable and memorable than any corresponding period over the previous 50 years.

© Denis Laëillet



After an encouraging 2020, which saw the specialised reefer maintain its core 12-month trades and retain market share in the seasonal table grapes, citrus and kiwifruit, the first half of 2021 was always likely to be buoyed by demand from squid charterers. This is because squid appears in volume on a regular cycle in the South Atlantic every sixth and seventh year. The squid trade to the Far East is dependent on the specialised reefer as it is, by far, the quickest and most efficient mode in getting cargo to customer.

Not only does the South Atlantic squid trade demand reefers, but it also keeps vessels off-market for a minimum 90 days. The combination tightens the availability of total reefer capacity everywhere else. While there was a decent catch in 2020, the sixth of the 7-year cycle, this year's fishing was back at levels last seen in 2015, which was coincidentally the last time there was a peak season in reefer chartering.

Until the extraordinary events of this year, it is the size of the squid catch that has been the most significant variable behind the market trend in the first half of the year. In the years when the specialised reefer mode held a near monopoly market share of Ecuadorian banana exports, the charter market would shorten and rates would rise steeply between February and April to form a peak, buoyed by the Chilean table grapes and, longer ago, Argentinean and South African grapes, apples and pears. However, now that the carriers have absorbed the majority of the Ecuadorian banana trade, and the southern hemisphere deciduous business has almost exclusively containerised, any peak, should it happen, is dependent upon other variables.

With the exception of the squid, the majority of these other variables are contingent on other, indirect factors: in the first half of 2020 it was the impact of the African Swine Fever outbreak on the Chinese national pig herd coupled with the outbreak and spread of the coronavirus pandemic from Wuhan. The combination left reefer containers stranded in Chinese ports, which created an equipment shortage in major trade lanes and led to cargo looking for an alternative route to market.

This year there was also a shortage of equipment, although for entirely different reasons: it was the dramatic recovery of Chinese manufacturing coupled with demand for Chinese products in the US and EU on the one hand and a shortage of dry vans and slot capacity on the other that led to a spike in spot rates, which at the start of July were five times greater than they had been for the equivalent voyage at the start of the year. To this day this combination continues to absorb as much slot capacity and as many containers as there are available.

Not only did the surge in exports occupy the available dry vans and reefer equipment, but it also compromised liner schedules, as vessels were forced to queue, often for weeks at a time, to discharge at ports, which had become heavily congested. Liner schedule reliability fell to its lowest level since records began. The reefer containers that



© Catherine Sanchez

would ordinarily be used to transport fruit and protein in New Zealand, South Africa and South America were 'hidden' in this transpacific vacuum.

Meanwhile, reefer imports into China continued to be delayed by Covid outbreaks in the ports and concerns that the virus can survive on chilled and frozen product packaging. Worst hit initially was Chile, which was the victim of what it claims were unsubstantiated rumours that the virus had been found on cherry packaging after a 4-week voyage. The measures taken by Chinese authorities to prevent the introduction or transmission of the virus have been extreme. The delays caused have had a knock-on impact throughout Asia and led to mass cancellations of port calls by container lines, and which led to carriers imposing surcharges and equipment being discharged at different ports.

The resulting shortage of capacity left all the perishable cargo that was dependent exclusively on containerisation, vulnerable. Washington State apple shippers, for example, were unable to secure enough containers to ship product to Asia and the Middle East, while deciduous and citrus fruit shippers in South Africa and New Zealand had similar issues to all destinations. Californian citrus marketer Sunkist chartered four vessels for Far Eastern voyages to mitigate risk, and operator GreenSea likewise sailed to the rescue of apple and pear shippers in New Zealand and the Western Cape.

It remains to be seen whether reefer operators will continue to benefit from what has been a structural shift in demand caused by the Covid crisis. The February to April market peak has always been conditional on an abnormal, or exceptional, series of circumstances: in the last decade and until the Med trading market shrank to two ports and carriers dominated the banana trade from Ecuador, it was the increase in seasonal Ecuadorian banana exports that underpinned the rise in charter market activity which was responsible for driving rates northwards. Ecuador was ably assisted by a spot orientation in

chartering from Chile, but here too, circumstances have changed. The reefer industry has rationalised to a point where only Cool Carriers and Seatrade have the requisite hardware and software to service a trade that has anyhow shrunk in volume, partly as Chile seeks to diversify away from the US into Far Eastern markets.

What effect will this year's prolonged peak have on the reefer charter market going forward? One school of thought says not very much. Reefer operators are well aware that this is an unprecedentedly anomalous market which will vanish once equipment is re-positioned, and liner schedules return to normal. However, this may take as long as 6-12 months in a best-case scenario, all other things being equal. The principal charter market driver is no longer cargo: it is price - the rate that the carriers charge. As long as there are enough reefer containers and as long as the carriers choose price over service to gain market share, the marginalisation of the reefer will continue. Indeed, given the average age of the reefer fleet, it will probably accelerate!

On the other hand, given that the complex variables which combined to first cause and then exacerbate the capacity crisis are impossible to forecast, it is just as impossible to predict when services will return to normal. And even when they do, the cargo that defected from the carriers to the reefer may consider that the premium service offered by the reefer is actually worth a premium rate and choose to stay.

The solution for the container lines meanwhile appears not to be simply a matter of manufacturing more reefer containers: indeed, why should the carriers even consider commissioning more capacity when the yield on fewer is so high? The shortage has suited both modes - the carriers because they can make vast profits despite delivering a below par service, and the reefer mode because it can charge higher rates and temporarily grab back business that the carriers can afford to lose. Clearly it does not suit cargo, which has no choice but to sit and suffer.

It certainly appears that the crisis has sharpened the minds of charterers and cargo interests looking to safeguard access to market in the short to medium term. None more so than the Southern Africa Citrus Growers Association (CGA), which in June circulated a suggestion that the fruit industry should think about commissioning 4 newbuild reefers, which would be employed on a service between South Africa, the EU and UK. CGA Logistics Development Manager Mitchell Brooke said that for such a concept to work, it would need all farmers and commodities groups to align and agree on this approach.

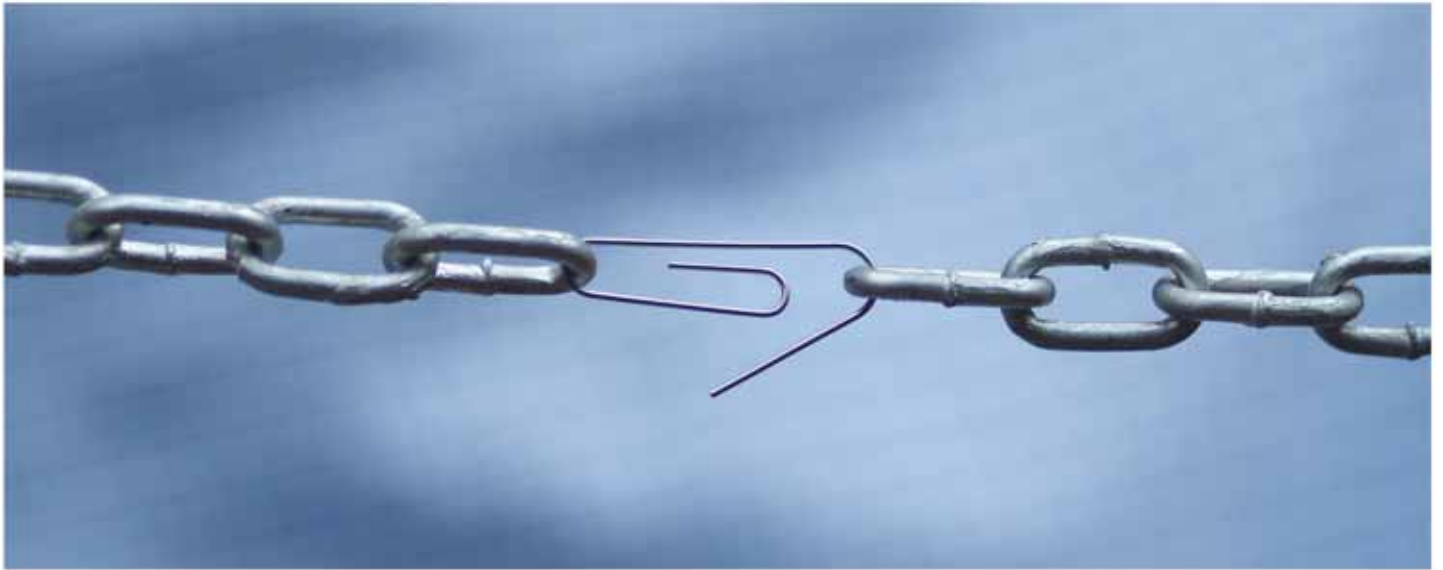
Mr. Brooke makes the suggestion firstly because he is not confident that there will be enough equipment to accommodate the projected increase in the South African citrus crop: secondly, he believes that reefer freight rates will surge as a result of demand exceeding supply, and thirdly that because of the decline in availability of reefer ships, the carriers will be able to charge rates at will, due to the lack of direct competition. The complicating issue in South Africa is parastatal terminal operator Transnet:

Mr. Brooke says that: "For what it's worth, we don't see any indication that the state of affairs at Transnet is going to change; in fact, the likelihood is for a worsening situation to develop due to massive underinvestment of equipment and maintenance."

There is also the issue of availability: Mr. Brooke adds that assuming a stagnant (or even declining) volume of shipments in conventional reefer ships going forward, then the reefer container demand could increase from 85 000 reefer units shipped in 2020 to 110 000 reefer units required by 2025. Given the average age of the reefer fleet, that the specialised reefer is so much more efficient at utilising capacity and the projected increase in the citrus crop, the real number is likely to be significantly higher. With the exception of Zespri in New Zealand, other fruit industries in other countries do not have the luxury of a representative body able to think, if not act, strategically for the benefit of the shippers ■



Information... your weak link?



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