No. 259
Sept./Oct. 2018

# FRuiTROP magazine

fruitrop.com
English edition

# Avocado

## A still extraordinary dynamic!

**Banana world market:**
Seeking reasons for optimism

**European apples & pears:**
Toward an abundant 2018

**Sea freight:**
H1 2018


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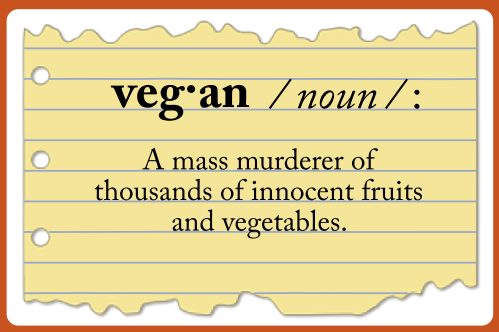


# Editorial

## Vegan perversity, or the triumph of empty individualism.

"Where there is religion, there is war": this observation by a 12th Century Laotian poet seems confusingly modern. And we need not look at the conventional religions, e.g. the Abrahamic ones, to find proof of this. As scientific positivism has had its day, along with doctrines such as rationalism, scientism and determinism, beliefs and metaphysics are now guiding our behaviour. That is science's big failure. Furthermore, like Ernest Renan, many have made the following observation: "If science were to remain as it is, we would have to endure it and curse its existence; since it has destroyed and not rebuilt." Hence, to fill the void, to re-enchant reality and doubtless give our lives meaning, we are giving in to beliefs. We are seeking standards to rally to and battles to fight. Neither a personal quest for spirituality, nor being part of society are sufficient. We need to rebel, we need to take offence, seeking indignation. But above all, we must take action. The citizen is taking action, and their infinite individual rights are overriding all other guiding and organisational principles of society. Instead of arguments, we exchange insults. Politics has been reduced to a quest for rights. As Pierre Manent wrote, that is the demand of "equality indifferent to differences", a kind of empty individualism.

With social networks making it easy to find a herd to identify with and join, sectarian groups form. Their purpose: conduct the most high-profile, i.e. most radical, crusade they can. The sit-ins of the 1960s have been relegated to movements of post-pubescent teenagers from another century ineffectually fighting against the Vietnam War or nuclear testing. They need to dismantle, smash, destroy. Radicalism is not an option but a means of demanding your rights.

It is easy to find examples in our food sector. The violent vegan fringe - righters of wrongs, who physically attack butchers shops and their employees - gives a good idea of the climate of revolt and questioning of the very foundation of the rules of society. It is even the done thing to reject common rules, to face down the established authorities, act in accordance with the law of the pack alone. The new religions (local against distant, country dweller against farmer, vegans against assassins, etc.) are therefore leading just as surely to war as the old ones. So, albeit with the necessary critical perspective, let's get back to the path of reason and abandon our Neanderthal, or even reptilian, urges. That is the price of living in a democratic society.

Denis Loeillet

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**Annual subscription rate: 325 euros HT / 8 issues per year**
**(paper and electronic editions)**
**www.fruitrop.com / info@fruitrop.com**

**Publisher:** CIRAD, TA B-26/PS4, 34398 Montpellier cedex 5, France; Tel: 33 (0) 4 67 61 71 41; Contact: info@fruitrop.com; website: www.fruitrop.com
**Publishing Director:** Eric Imbert; **Editor-in-chief:** Denis Loeillet; **Editor:** Catherine Sanchez; **Computer graphics:** Martine Duportal;
**Website:** Actimage ; **Advertising Manager:** Eric Imbert ; **Subscriptions:** www.fruitrop.com ; **Translators:** James Brownlee and Tradeasy;
**Printed by:** Impact Imprimerie, n°483 ZAC des Vautes, 34980 Saint Gély du Fesc, France

**ISSN:** French: 1256-544X; English: 1256-5458; **Separate** French and English editions; 

Cover photograph © Carolina Dawson

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*a report by Eric Imbert*

© Guy Brehinier


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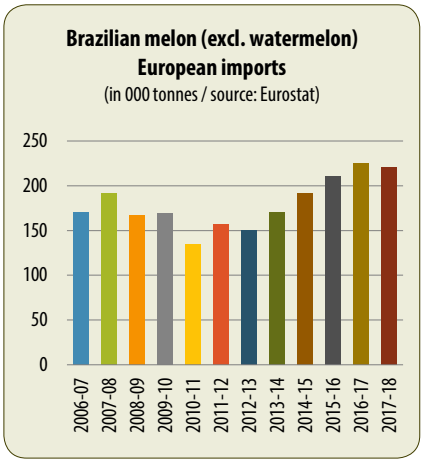
■ **Limousin apple: a fine year in prospect.** The apple campaign just underway is set to be promising, in terms of both volume and quality. Hence the "Limousin apple" is set for a normal harvest with "a tonnage of around 80 000 to 90 000 t to be harvested over the PGI's 2 300 ha". The season is starting rather early, around 10 September with, above all, prospects for "an excellent year, the sunny months of July and August having enabled the apples to achieve a perfect sugar and acidity level". The sizing should be large because of heavy flower droppage, following wet weather at the end of spring, and then a hot summer. Furthermore, while the storm of 4 July which hit the zone led in some places to significant damage (nets ripped away and trees severed), the rest of the cultivation area held up well. Limousin apples represent 5 % of France's apple harvest (18 % of Golden). They are produced by five cooperatives and SICAs, covering 200 producers. Note that 20 % of the PGI's surface areas are now organic or under conversion.

*Source: Infofruit*

■ **Brazilian melon: surface areas stable for 2018-19.** The Brazilian melon harvest began in June and stepped up in July in the States of Rio Grande do Norte and Ceará. Producers, on the strength of a fairly balanced market last year, supported by a US dollar at more than 3.50 Brazilian reals guaranteeing sufficient profitability, have embarked on another expansion in surface areas aimed at the export sector. It seems that they have mainly favoured the yellow varieties and Piel de Sapo, less sensitive to precipitation, which was abundant at the time of planting. Exports in 2017-18 were slightly greater than in 2016-17 (+ 1 %), totalling 213 000 t by the end of February according to data from Secex.




*Source: Infofruit*

■ **A mixed autumn.** The weather forecasts published in July by the experts at Météo Consult predicted an anticyclone positioned over Northern Europe and the British Isles, which should cause something of a drought for France in the autumn, but precipitation around the Mediterranean. Hence after what was ultimately a fairly dry August, little precipitation is expected over France in September, with temperatures around average for the season, whereas there should be depressions over Spain and North Africa. This rainfall anomaly could persists in October, with dry and cooler weather over France and Continental Europe, and rain from storms around the Mediterranean rim.

*Source: Infofruit*

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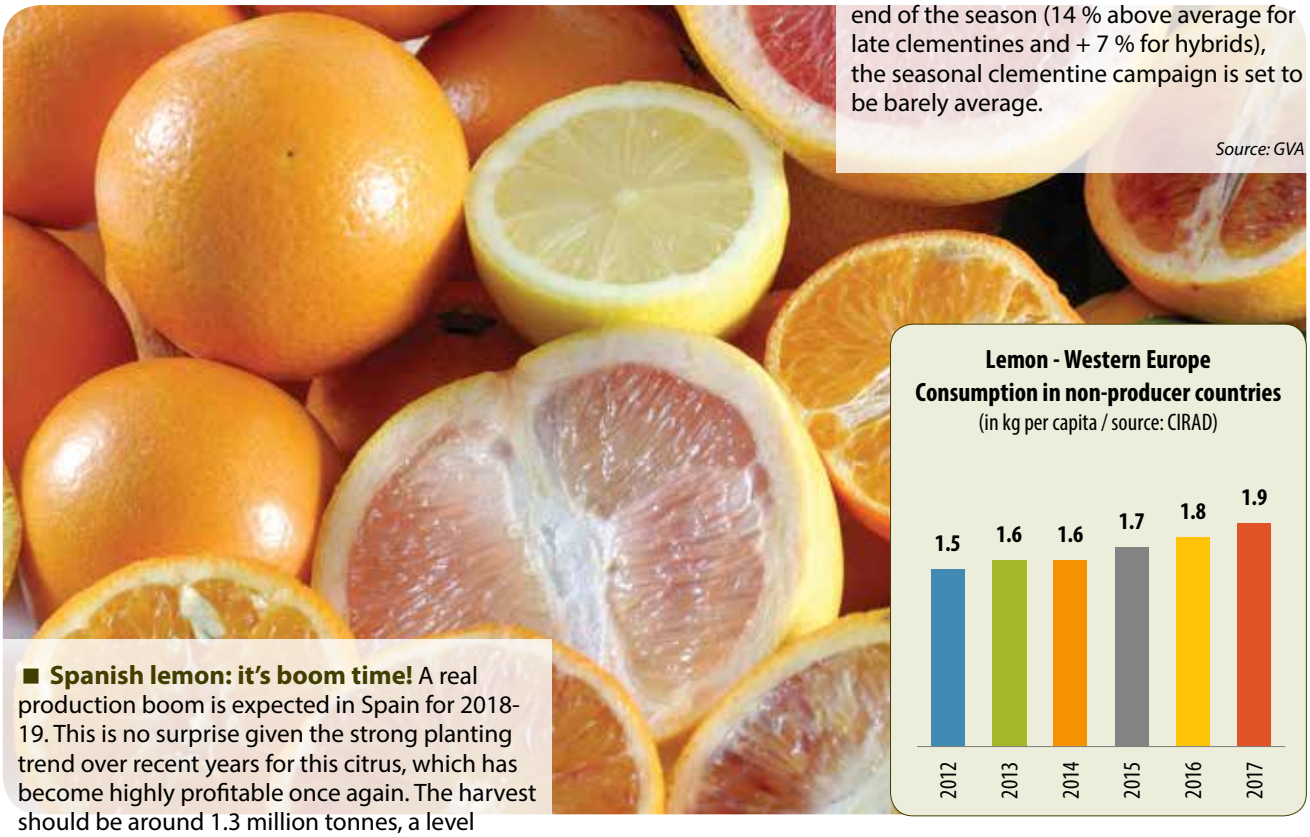
**Citruses – Valencian Community (Spain) – Production**

| in 000 tonnes | 2016-17 | 2017-18 | 2018-19 | 2018-19 compared to | |
|---|---|---|---|---|---|
| | | | | 2017-18 | Last 4 years average |
| **Easy peelers + oranges** | **3 619** | **2 895** | **3 537** | **+ 22 %** | **+ 9 %** |
| **Easy peelers** | **1 773** | **1 358** | **1 650** | **+ 22 %** | **+ 6 %** |
| **Satsuma** | 189 | 130 | 175 | + 34 % | + 32 % |
| **Clementines** | 1 193 | 832 | 1 076 | + 29 % | + 3 % |
| early | 258 | 182 | 245 | + 34 % | + 14 % |
| season | 862 | 597 | 767 | + 29 % | 0 % |
| late | 74 | 53 | 65 | + 23 % | - 7 % |
| **Hybrids** | 391 | 396 | 399 | + 1 % | + 7 % |
| **Oranges** | **1 846** | **1 537** | **1 887** | **+ 23 %** | **+ 11 %** |
| **Navels** | 1 545 | 1 251 | 1 587 | + 27 % | + 14 % |
| Navelina | 718 | 521 | 697 | + 34 % | + 9 % |
| Navel | 137 | 119 | 123 | + 3 % | - 9 % |
| Late Navel | 689 | 610 | 767 | + 26 % | + 23 % |
| **Juice oranges** | **301** | **286** | **300** | **+ 5 %** | **- 1 %** |

Source: GVA

**■ Big easy peeler and orange harvests in the Valencian Community.** Easy peelers and oranges are set for an ample winter campaign. This is the conclusion to be drawn from the harvest forecast for the Valencian Community, a region which on its own accounts for two-thirds of Iberian citrus exports. With 3.5 million tonnes expected, the combined harvest for the region's two star citrus families would mark a big leap up from the lean 2017-18 campaign, back to the near-record level of 2016-17. Orange production will achieve a record level of nearly 1.6 million tonnes (+ 11 % on the four-year average), with the late Navel cultivation area continuing its rise to prominence. As regards easy peelers, the harvest of 1.65 million tonnes will be 6 % above average, though it will remain 7 % below the record from 2016-17. While production potentials are at their height at the beginning and end of the season (14 % above average for late clementines and + 7 % for hybrids), the seasonal clementine campaign is set to be barely average.

*Source: GVA*



**Lemon - Western Europe**
**Consumption in non-producer countries**
(in kg per capita / source: CIRAD)




**■ Spanish lemon: it's boom time!** A real production boom is expected in Spain for 2018-19. This is no surprise given the strong planting trend over recent years for this citrus, which has become highly profitable once again. The harvest should be around 1.3 million tonnes, a level nearly 30 % above the four-year average. Verna production will see an even more substantial increase than Primofiore. Producers can count on a constantly growing fresh lemon market (with consumption per capita having risen on average by 100 g per year for the past five years in Western Europe), and an industrial derivatives market maintaining a positive trend.

*Source: AILIMPO*

**Lemon – Spain – Production**

| in 000 tonnes | 2016-17 | 2017-18 | 2018-19 | 2018-19 compared to | |
|---|---|---|---|---|---|
| | | | | 2017-18 | Last 4 years average |
| **Lemons** | **1 160** | **1 004** | **1 300** | **+ 14 %** | **+ 22 %** |
| **Verna** | 350 | 200 | 380 | + 90 % | + 46 % |
| **Primofiore** | 810 | 804 | 920 | + 29 % | + 28 % |

Source: GVA

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# European apples and pears

## 2018 prospects: toward an abundant year

**The European apple and pear forecasts were unveiled in early August at the 42nd Prognosfruit Conference, which was held in Warsaw, Poland. They confirmed the return to a full harvest, after the shortfall due to the frosts in April and May of last year. Hence the 2018-19 campaign should top things up, for both apples and pears, with Western Europe returning to the five-year average and a bumper potential for Eastern Europe.**

10 years

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# A very fine apple harvest, especially in Poland

Europe is set for record apple production, with no less than 12.6 million tonnes, albeit after a big shortfall in 2017 (+ 35 % on 2017) but which should actually exceed the five-year average by 10 %. While West European production is not excessive (6.6 million tonnes, i.e. + 2 % on the 5-year average), reflecting the return to production of countries in shortfall last year (Germany, Belgium, Austria and to a lesser degree Italy and the Netherlands), it should reach a historically high level in Poland and in most of Eastern Europe (5.9 million tonnes, + 22 % on the 5-year average) with in total, across all the countries, 600 000 tonnes more than the previous record from 2014.

Although this surplus could weight down on prices, the general context is more positive, with a clear market. The summer fruits campaign ended early, there are no residual apple stocks, whether from the old European harvest or the Southern Hemisphere, and in addition the industrial sector is seeing strong demand especially since the production shortfall announced in China should benefit both the fresh market by boosting exports, especially to Eastern Europe, and the processing sector. Certain political problems, such as the embargo on Russia or certain Mediterranean countries, will continue to undermine trade from big exporter countries such as France, Italy or Benelux. Furthermore, the quality level of production is set to be promising with an excellent sugar content, while fruit size should not be too hard hit by the summer drought. However, in August WAPA envisaged a probable downward revision of this initial forecast, especially for medium size in Northern Europe. The harvest is set to be rather early, as the hot weather brought forward by a fortnight flowering and fruit-setting in Northern Europe.

**Apple – EU-28 – Harvest forecast**

| in 000 tonnes | 2018 | 2018 compared to | |
|---|---|---|---|
| | | 2017 | Last 5 years average |
| **Western Europe** | **6 654** | **+ 26 %** | **+ 2 %** |
| Italy | 2 200 | + 29 % | + 2 % |
| France | 1 502 | + 5 % | - 2 % |
| Germany | 990 | + 66 % | + 9 % |
| Spain | 473 | - 1 % | - 3 % |
| Portugal | 267 | - 15 % | - 9 % |
| Netherlands | 259 | + 14 % | - 16 % |
| Greece | 286 | + 24 % | + 18 % |
| United Kingdom | 220 | + 7 % | - 2 % |
| Belgium | 217 | + 147 % | - 5 % |
| Austria | 184 | + 175 % | + 47 % |
| Denmark | 24 | + 26 % | + 3 % |
| Sweden | 32 | + 78 % | + 74 % |
| **Eastern Europe** | **5 958** | **+ 46 %** | **+ 22 %** |
| Poland | 4 480 | + 56 % | + 26 % |
| Hungary | 728 | + 37 % | + 19 % |
| Romania | 320 | + 39 % | - 4 % |
| Czech Rep. | 150 | + 47 % | + 16 % |
| Croatia | 108 | + 64 % | + 50 % |
| Lithuania | 54 | + 13 % | + 28 % |
| Slovakia | 47 | + 213 % | + 47 % |
| Slovenia | 65 | + 64 % | + 53 % |
| Latvia | 6 | - 25 % | - 41 % |
| **Total** | **12 611** | **+ 35 %** | **+ 10 %** |

Source: WAPA

# Ever more bicolored apples

The varietal calendar should be well provided for, unlike last campaign when the end-of-season varieties, especially Jonagold and Golden, were lacking. The bicolored range will be particularly well represented with a big potential for Gala (1.45 million tonnes, i.e. + 12 % on the 5-year average!) up across all Community countries, in Italy (339 000 t, i.e. + 7 % on the 3-year average), Poland (360 000 t, i.e. + 10 %), as well as Northern Europe (+ 21 % in Germany and + 8 % in the United Kingdom), although a slight downturn was registered in France (281 000 t, i.e. - 3 %).

The Jonagold/Jonagored potential too is particularly abundant (1.08 million tonnes, i.e. + 11 % on the 5-year average), with bumper production in Poland (530 000 t, i.e. + 25 % on the 3-year average), stability in Germany (177 000 t, i.e. + 1 %), or even a distinct downturn in the Netherlands (- 22 %) and in Belgium (- 6 %). Ditto for Idared which should reach a record with 1.148 million tonnes (+ 15 % on the 5-year average).

The new varieties are continuing to be rolled out (307 000 t, i.e. + 62 % on the 5-year average), as for Cripps Pink which should reach a new record (277 000 t, i.e. + 15 %). The range will be topped up by Braeburn (305 000 t, i.e. + 2 %), Elstar (335 000 t, i.e. - 8 %) or Fuji (290 000 t, i.e. - 6 %), however without going into surplus. With Golden production continuant to wane, the supply should dwindle further (2.34 million tonnes, i.e. - 3 % on the 5-year average), especially in France (420 000 t, i.e. - 4 %) and in Spain (244 000 t, i.e. - 7 %) and, to a lesser degree, in Italy (816 000 t, i.e. + 1 %). Certain countries such as Poland will nonetheless have a large potential (380 000 t, i.e. + 10 %). The Granny supply should be stable (381 000 t).

**Apple – EU-28 – Harvest forecast by variety**

| in 000 tonnes | 2018 | 2018 compared to | |
|---|---|---|---|
| | | 2017 | Last 5 years average |
| Golden Delicious | 2 347 | + 23 % | - 3 % |
| Gala | 1 457 | + 15 % | + 12 % |
| Idared | 1 148 | + 83 % | + 15 % |
| Jonagold/Jonagored | 1 084 | + 71 % | + 11 % |
| Red Delicious | 692 | + 24 % | + 11 % |
| Shampion | 571 | + 37 % | + 19 % |
| Jonagored | 545 | + 63 % | + 22 % |
| Jonagold | 539 | + 81 % | + 2 % |
| Granny Smith | 381 | + 5 % | 0 % |
| Elstar | 335 | + 26 % | - 8 % |
| New varieties (club) | 307 | + 48 % | + 62 % |
| Braeburn | 305 | + 39 % | + 2 % |
| Fuji | 290 | + 1 % | - 6 % |
| Cripps Pink | 277 | + 7 % | + 15 % |
| Gloster | 187 | + 13 % | - 1 % |
| Jonathan | 150 | + 39 % | + 1 % |
| Russet | 130 | + 57 % | + 14 % |
| Boskoop | 63 | + 85 % | - 3 % |
| Pinova | 63 | - 54 % | - 35 % |
| Morgendurf/Imperatore | 59 | + 9 % | + 5 % |

Source: WAPA

**Pear – EU-28 – Harvest forecast**

| in 000 tonnes | 2018 | 2018 compared to | |
|---|---|---|---|
| | | 2017 | Last 5 years average |
| **Western Europe** | **2 178** | **+ 2 %** | **0 %** |
| Italy | 741 | 0 % | + 2 % |
| Spain | 311 | - 6 % | - 13 % |
| Netherlands | 398 | + 21 % | + 15 % |
| Belgium | 318 | + 3 % | - 6 % |
| Portugal | 158 | - 15 % | - 1 % |
| France | 135 | + 2 % | - 5 % |
| United Kingdom | 21 | - 16 % | - 18 % |
| Germany | 31 | + 35 % | - 14 % |
| **Eastern Europe** | **141** | **+ 44 %** | **+ 14 %** |
| Poland | 70 | + 75 % | + 21 % |
| Hungary | 38 | + 9 % | + 4 % |
| Romania | 17 | + 42 % | + 4 % |
| **Total** | **2 327** | **+ 4 %** | **+ 1 %** |

Source: WAPA

## A good potential for the pear, but no more

The differential from 2017 should be less marked for the pear than for the apple, since although certain national situations will be reversed from last year, the European harvest should remain around the five-year average (2.3 million tonnes, i.e. + 1 % on the 5-year average). Hence the return to production of Northern Europe (Germany, Belgium and the Netherlands) should be offset by a downturn from Portugal, which enjoyed an abundant harvest last year. Italian production should maintain its high level from last year, whereas French production should retain a harvest below the five-year average. The Spanish harvest should return to a below-average level, after its minor leap last year. As for the apple, the East European production level should be high (141 000 t, i.e. + 14 %), though this origin does not really play a role in the pear export destinations, with production aimed at local consumption.

# Conference and Abate in abundance

As for varieties, there is no major change in trend, although the breakdown has been weighted by climate conditions. Hence Conference and Abate should continue to dominate the market. The pressure should be a bit more marked for Conference, which is continuing to grow (+ 4 % on the 5-year average) after last year's slight shortfall. The harvest could again reach the record level from 2014. Abate should further strengthen its presence, with another production increase of 2 % on 2017, after the good harvest registered last year by Italy, though without reaching the records from 2009, 2011 or 2015.

We are also expecting bigger Comice volumes, after last campaign's production fall (+ 25 % on 2017), though the potential across Europe is down overall (74 000 t, i.e. - 8 % on the 5-year average). The campaign began in a context free from fruits, with harvests in shortfall for the first summer varieties, whether for Guyot (- 16 %) or Coscia (- 6 %). This was also the case for Rocha in Portugal, after the record production level in 2017 (- 15 % on 2017 and - 1 % on the 5-year average). Williams production is set to be fairly similar to last year, i.e. around average for the past 5 years (267 000 t) ■

**Cécilia Céleyrette**, consultant
c.celeyrette@infofruit.fr

**Pear – EU-28 – Harvest forecast by variety**

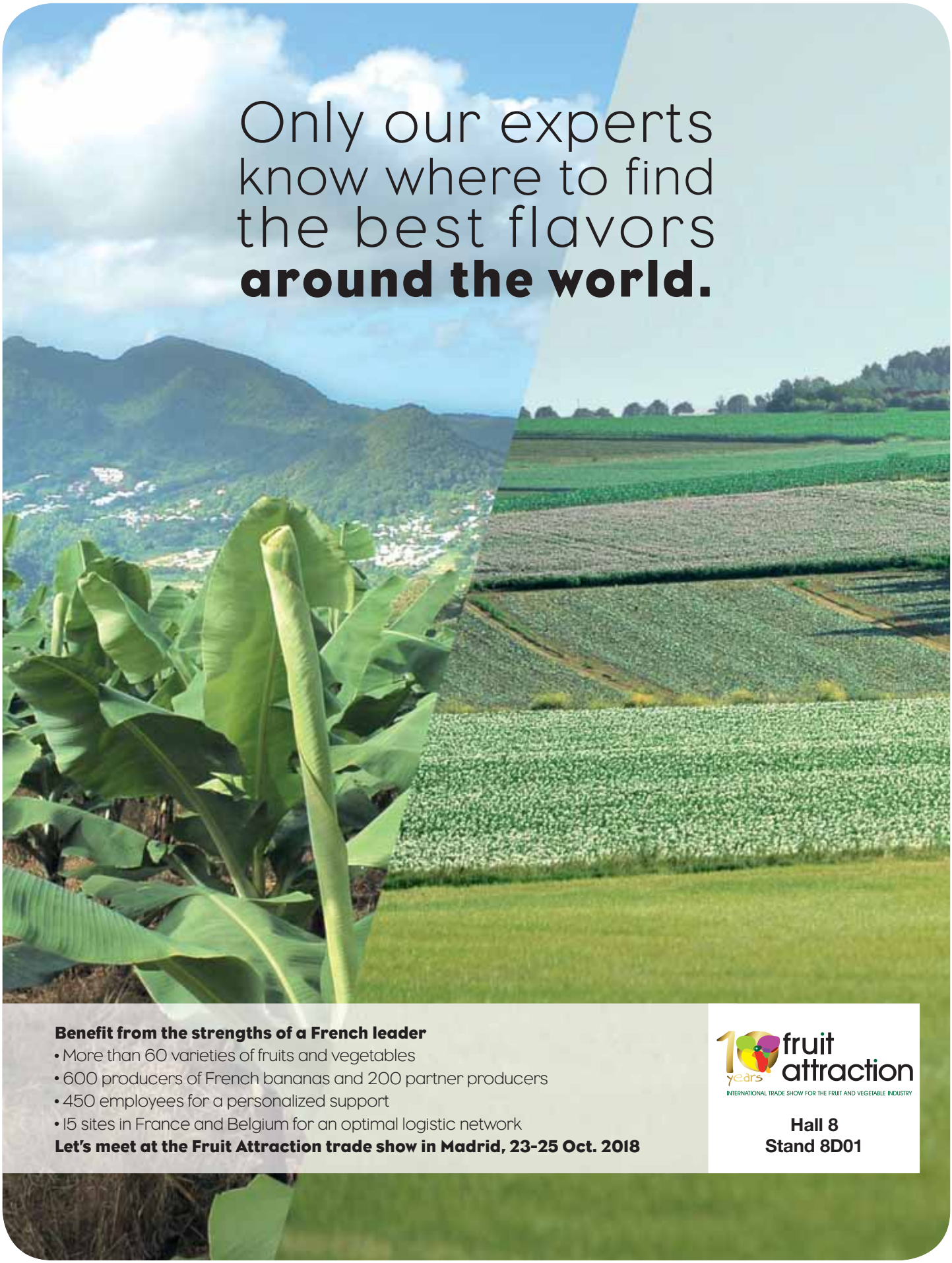
| in 000 tonnes | 2018 | 2018 compared to | |
|---|---|---|---|
| | | 2017 | Last 5 years average |
| Conference | 953 | + 9 % | + 4 % |
| Abate Fetel | 333 | + 2 % | + 3 % |
| William Bon Chrétien | 267 | + 2 % | - 2 % |
| Rocha | 158 | - 15 % | - 1 % |
| Comice | 74 | + 25 % | - 8 % |
| Coscia-Ercollini | 70 | - 11 % | - 6 % |
| Guyot/Limonera | 58 | - 11 % | - 16 % |
| Kaiser | 45 | + 5 % | + 6 % |
| Blanquilla | 41 | - 5 % | - 11 % |
| Passe-Crassane | 9 | 0 % | - 21 % |
| Durondeau | 3 | + 50 % | - 32 % |
| Others | 314 | + 9 % | + 2 % |

Source: WAPA

# World banana market

## Seeking reasons for optimism


**There is definitely not a party atmosphere on the banana market. We are not yet at the catastrophe stage, but the situation is very worrying. Especially since both the cyclical and structural signals are discouraging. Taking advantage of the respite offered by this month of September, let's review the situation in figures.**




Banane de Guadeloupe & Martinique

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LE BUREAU UNIQUE DES FRUITS ET LÉGUMES BUFL

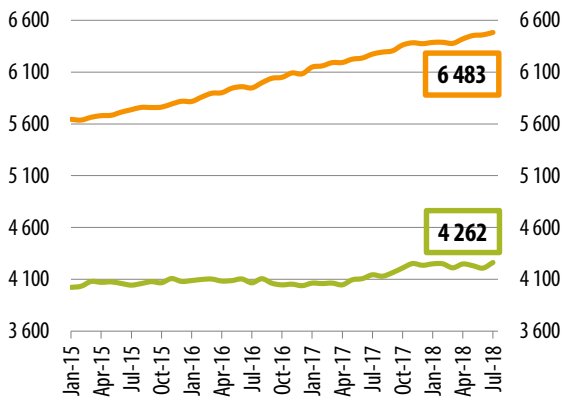

Let's start with the bright side. Banana consumption remains highly dynamic, at least from Europe. As at the end of July, imports from the EU-28 (i.e. outside of European production) were soaring, beating record after record. After an already crazy 2017 which registered growth of 280 000 tonnes over the first seven months, i.e. a growth rate of 9.2 %, an expansionist tempo has been maintained. True, the rate is largely more modest (2.3 %), yet growth is prevailing. If we add to third-country bananas those produced in the European Union, the EU-28 consumed some 3 421 000 tonnes of bananas over the first seven months of the year: an absolute record!

But now let's look at the less rosy side. On reading these results, we might be reassured, arguing that these figures show that demand remains just as dynamic, with consumers wanting more and more bananas. But imagine that the international market of a high-consumption product can grow endlessly is an overoptimistic vision, which would consist in wagering everything on the attractiveness of the product: its practicality, low price, nutritional qualities, etc. This would mean disregarding at least two factors explaining this craze.

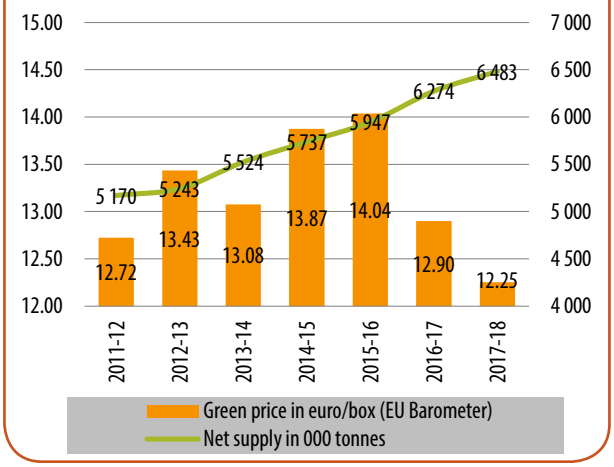
The first is the catch-up effect. The East European markets do not yet seem to be at maturity, and their consumption is therefore rising more rapidly than the European average. This is hard to demonstrate with the overall European supply figures alone, since the rules governing intra-Community trade mean that we rapidly lose track of imported fruits, especially of fruits produced within Europe. Nonetheless, we might attempt to process the data on a Member State basis. The analysis published in **FruiTrop** in May 2018 (no.256, pages 72 and 73) attempted to answer the question. The East European countries, known as the NMS (New Member States) apparently doubled their banana imports between 2012 and 2017. Since 2013, consumption in the NMS increased two-and-a-half times faster than the EU-28 as a whole. So there is still growth potential, though it is rapidly dwindling.

The second factor driving consumption, in a market operating on a neo-classical basis, is the unit price. The further it falls, the more attractive it becomes. Except that, for the banana, the basement price was long since reached, worldwide at that. No other fresh product offering such assets (ease of consumption, very positive nutritional properties, year-round presence, universal taste, consumable by all ages, etc.) is available at such a low unit price. It is the cheapest fresh food of all the sections. Hence lowering the consumer price by 10 % will probably have no effect on consumption, but a definite depressive effect throughout the industry. Worse, it could even establish the banana in an entry-level segment with little worth for purchasers and consumers alike. If it enjoyed pride of place practically year-round in 2017 and 2018, it was because there was no competition at certain times of year. The banana is part

**Banana - EU & USA - Supply**
**Last 12 months (August to July)**
excl. EU production marketed in the production zone
(in 000 tonnes / sources: CIRAD, Customs, Eurostat)




**Banana - EU-28 - Supply and green price**
**12-month period (August to July)**
excl. EU production marketed in the production zone
(sources: CIRAD, Customs, Eurostat)



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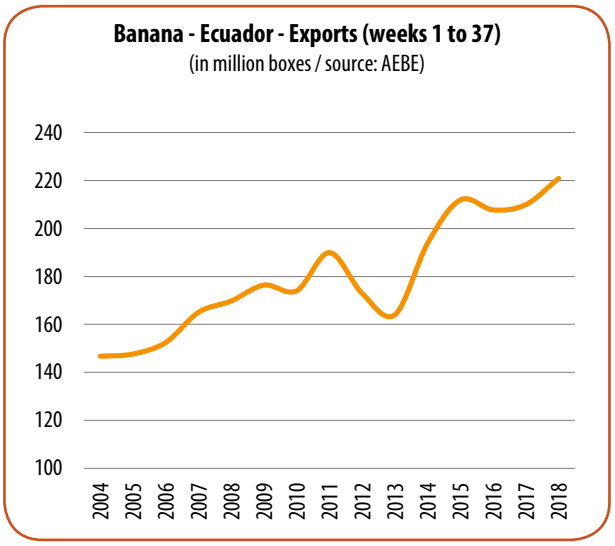
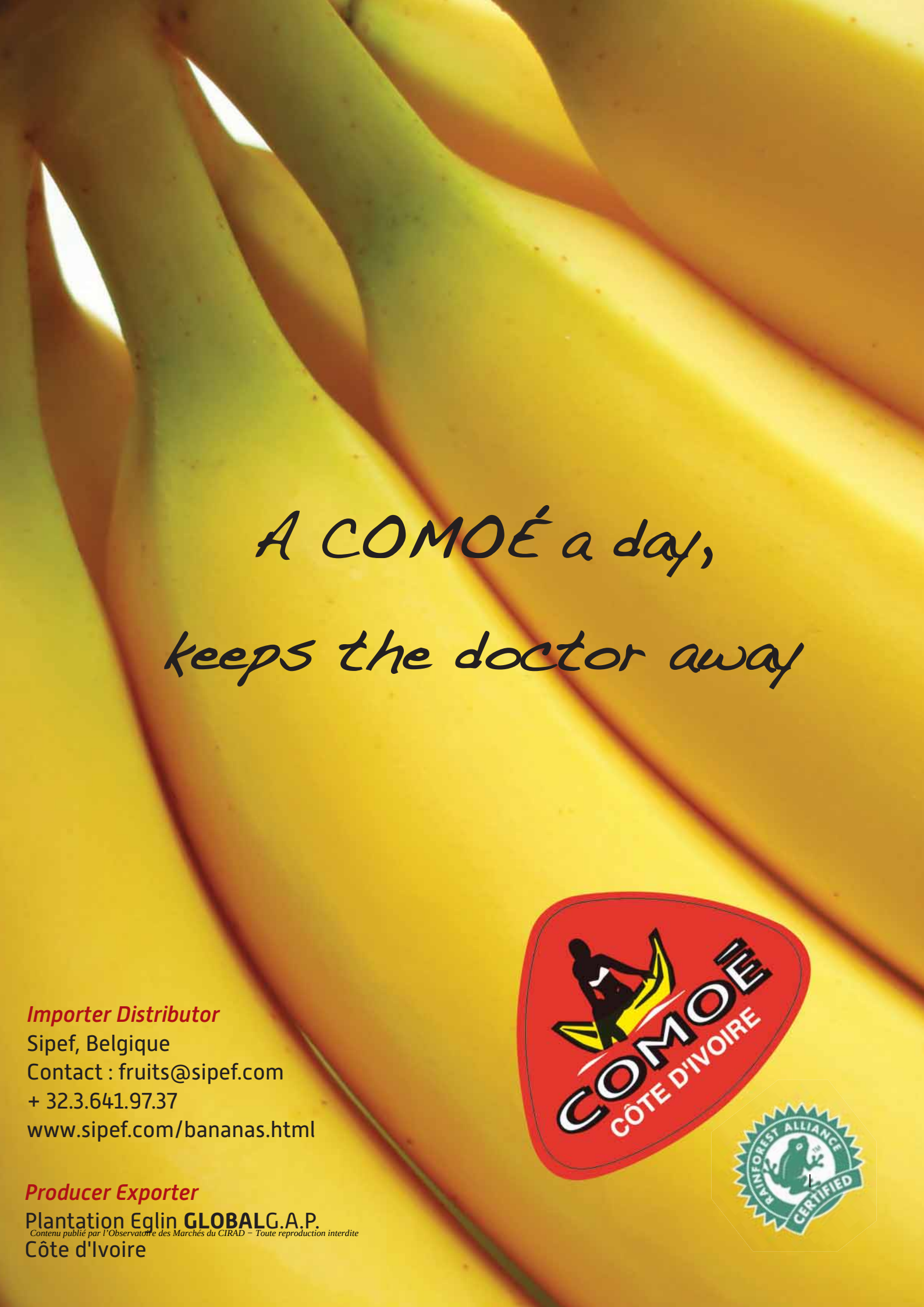



of a shopping basket of fruits and vegetables involved in continuous competition with each other. If volumes have increased, it is more through a temporary easing in competition (the apple especially) than through a price effect, which is getting ever lower. The return this autumn 2018 to a more classic situation for the other components of the fruits and vegetables section will put the banana back in its place.

## Bolting away

Given these two factors (catch-up effect and low volume-price elasticity), we are left with a less optimistic interpretation of the permanent and continuous rise in consumption. It is arrived at via an overview of the situation of the world supply. As we have often said, the world supply has been on a structural rise thanks to the combination of a well-established production potential, which is expanding, and climate vagaries with extremely limited effects on production capacities. And these are not the first results from a study conducted by the CIRAD Market News Service to contradict the unanimous feeling of rapid expansion in the world supply. It will continue to expand by hundreds of thousands of tonnes over the coming three to five years. This abrupt and practically traumatic reality is already being manifested in the world trade figures. It is also interesting to see the reactions of Acorbanec (Asociación de Comercialización y Exportación de Banano) in Ecuador, which is demanding an easing of the Banana Act which prevents operators from expanding their surface areas, while their competitors are developing their potential. Interesting and at times even comical, since Ecuador has been beating record after record for exports, with 324 million boxes of exports in 2017, and already 4 % growth over the first eight months of 2018. A good thing that the Ecuadorian State is curbing and even browbeating its production sector…

Hence in view of this influx, the consumption markets come with two different profiles. A highly organised market profile, some would even say too organised, as in the USA. It reacts only very little to increases in the world supply. On the other hand, we find markets that are much more open and responsive to the supply. As proof, in response to a supply increase in the first half of 2018 (especially January, April and May), the US/Canada block consumed less than 1 % more than in the first half of 2017, while at the same time EU-28 consumption gained 2.6 %! We see the same phenomenon if we compare the United States to Russia. In the latter country, the growth rate is even higher than in the EU: + 3.8 % in the first half. We are now getting into the domain of what the economists Say or Ricardo theorised as the "Law of markets" and what is often summed up as "Any supply creates its own demand". An additional supply generates additional demand, unless it is impeded by monopolies for example.

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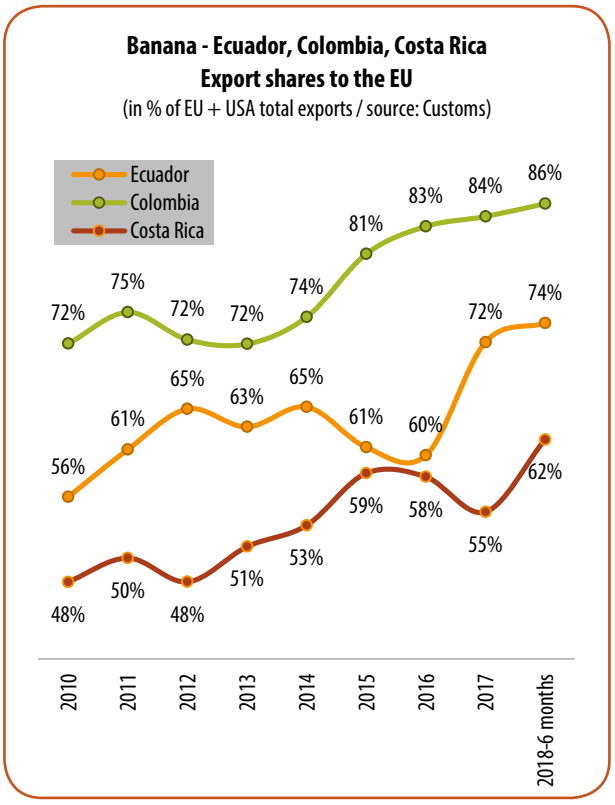


In summary, we can say that the supply/demand equation is highly complex, and that under no circumstances can we see in the increase in European consumption just a craze for this fruit. Consumption catch-up, receptiveness of the market, competition and first of all supply pressure, etc., are some of the factors to take into account. This all of course depends on the relative competitiveness level between different supply sources. Yet again, we are sailing a little too far into a theoretical model wherein everything can be explained by the theory of comparative advantages: this cannot always be verified for the banana. If this were the case, supply would instantly adjust to demand. It would take a few weeks, until the on-ship merchandise was unloaded and a price reduction observed. This would rapidly result in a fall in the world supply, with the most competitive origins the last still supplying, which is true for Ecuador which has a very high resistance to a reduction in price paid to the producer. This is not the case for new projects exporting their potential, or volumes originating from highly contract-based production systems (Costa Rica being an exemplary case in this respect) or integrated industries (e.g. Africa). The investments have been made. The clusters are ready to be harvested, there is no choice other than to export. Apart from Ecuador, which operates on a completely different system (the quality criteria demanded by exporters are stricter if demand flags), elsewhere it is very rare to see fieldside destruction. There is the example of the Canaries industry ("la pica"), but the rules governing this system are highly particular, and the measures taken are for reasons owing to the highly specific local situation.


© Denis Loeillet

## Throw-away production

Hence, when it takes place elsewhere, fieldside destruction of produce – besides its morally shocking aspect – is an excellent indicator of the profound deterioration of the market. The example of Colombia, which conducted such operations ("la boleja") in spring 2018, is symptomatic of the sluggishness of the world banana market. In this respect it is following Costa Rica, which for a short time has been engaged in this rather radical exercise of withdrawing merchandise from the market.

It shows the intensity of the crisis that the world market has gone through this year. So yes, competitiveness is the ultimate keeper of the flame. Except that while the truth about the cost of production emerges from the highly convoluted and fiscally optimised industries, and while the producer and its labourers keep on tweaking the adjustment variable, the crisis will have left its mark. This too is a simplistic vision of the workings of the supply. To win market share, the big capitalised operators are able to hold out for a short time, until their shareholders signal the end of the game. The advantage for these big operators lies in the fact that they can buffer crises with revenue drawn from markets

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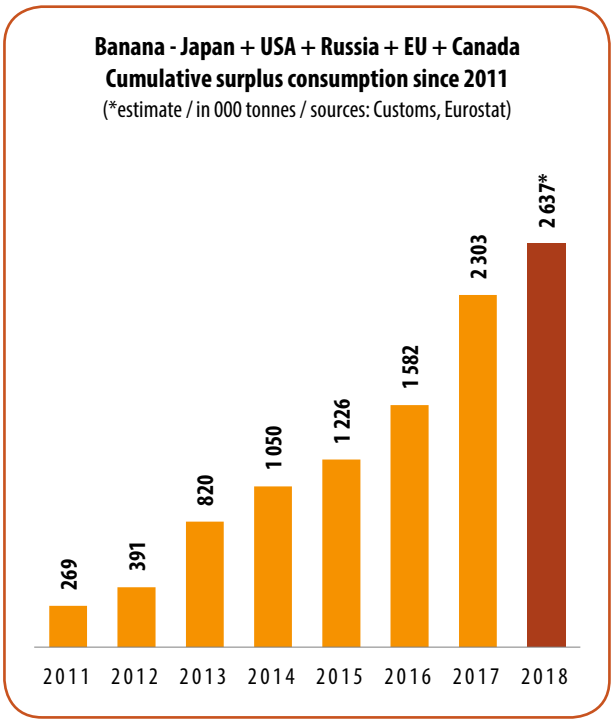




where competition is less full-on, such as the US market, or by applying industrial and fiscal optimisation on all of their functions (production, transport, imports, ripening).

It is hard for the others to do the same thing, especially since certain origins have disengaged from the USA to switch practically exclusively to the EU. If we isolate exports to the EU, the USA and Canada, Colombia shipped 84 % of its production to the EU in 2017, as opposed to 72 % in 2012. The figure was 72 % for Ecuador, as opposed to 48 % in 2012. The figures for the first half of 2018 confirmed these levels.

Whether prophecy of doom or a lucid vision, in all these cases one thing is for sure: there will be no queues forming in the shops to buy bananas. We are writing these lines at the height of the cyclone in the Atlantic and South-East Asia, and as there is more talk of a potential El Niño (70 % probability of a low-intensity El Niño occurring in Q4 2018). While turnarounds are always possible, it has to be observed that it will take very serious and powerful climate vagaries to change the deal. Remember that in 2017, when Cyclones Irma and Maria had just seriously damaged the production sector in Guadeloupe, Martinique and the Dominican Republic, banana flows were restored practically straight away thanks to the bottomless well of the dollar banana. Remember too that the latest episodes of El Niño and La Niña did not reduce the production potential, but in large part helped to boost it.

## Trump: do not disturb

Less uncertain and doubtless harder hitting will be the effects of the decisions made by the Trump administration. Commercial and political tensions lead to embargos and monetary bedlam. The US sanctions against Iran and the devaluation of its currency are making the supply to this market, which takes in some 600 000 tonnes of bananas per year, extremely difficult. The initial effects are incontrovertible. Over the first five months of the fiscal year (April to August 2018), Iranian imports shrank by 29 % in terms of volume and by 12 % in terms of value. Elsewhere, substantial currency depreciations against the US dollar of countries such as Turkey (- 84 %), Argentina (- 50 %) or Brazil (- 20 %) have disrupted the markets. This has made imports more expensive while favouring these countries' export sectors. Again, the effects must be put into perspective, since even exposed to the depreciation of the rouble against the US dollar or the euro, Russian banana imports are continuing to grow.

Meanwhile, input prices are on an upward trend, especially energy. Oil climbed 50 % in just one year, to reach 75 USD per barrel this summer. Boxes, fertilisers, plastics, etc., all more or less indexed on the price of black gold, have taken an upturn. We cannot yet say whether the trend will gather

pace, but it is a subject being very closely monitored by the operators at the production stage. They fear a scissors effect: fall in import price and increase in unit production costs.

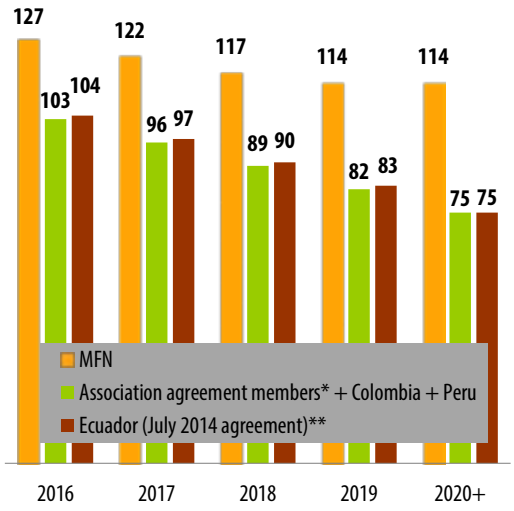
Traditionally at this time of year, we look at competition in the fresh fruits section. And, unlike in previous years, it is not the apple or citruses that are in good health. Quite the contrary, since we are set for European apple production volumes (EU-28) 35 % bigger than in 2017 and 10 % above the five-year average, i.e. 12.6 million tonnes. East European production (just under 50 % of the European supply) is still more alarming, since it will grow by 46 % over one year, and by 22 % over five years! Of course it is Poland which sets the trend here. True, stocks are historically low (154 000 tonnes in July 2018 as opposed to 407 000 tonnes one year previously), and the processing factories (concentrated apple juice), having run dry, will again be able to run at full speed. Yet there will definitely be a supply shock. As for the pear (2.3 million tonnes expected), the situation should be around the five-year average, and up by a reasonable 4 % over one year. For more details, see in this edition the analysis by Cécilia Céleyrette, consultant at Infofruit.

While it is still a bit too early to be very precise over the citrus potential in the Mediterranean, we are expecting, in both Spain and Morocco, a production level up by 20 to 25 %, with small sizes abundant and very slightly early. The advance price indicators are also pointing downward.

## 2018-2019: rapid inflation

So what about the banana? We will not go back to the structural increase in the banana supply, but we will look into its seasonal or short-term changes. If the supply level to the markets in September is reasonable, as expected, the same should not be the case for Q4 2018. It is expected to be relatively abundant, but fortunately a tad below that of Q4 2017. The reason for this is the shift in the production peaks in Costa Rica and Colombia, by approximately ten weeks from previous years. The plantation survey data also show that, while the peak will doubtless be around average in Costa Rica, or even slightly below, it will be more moderate in Colombia, given that production levels are above average. Ecuador should retain a fairly classic profile of continuously increasing exports from now until the end of the year, without stuttering but at above-average levels, as from elsewhere. The Ecuadorian production peak has shifted to early 2019. The country's professionals are predicting an annual growth in exports of 3 % for 2018, whereas hitherto they were banking on more than 5 %. Africa too will turn up as it does at the end of every year, especially thanks to Côte d'Ivoire and Ghana, which will only partly offset a fall in the supply due to the English-speaking part

**Banana - EU - Customs duty for third countries excluding ACP** (euro/tonne)




* Costa Rica, Panama, Honduras, Guatemala, Nicaragua, El Salvador
** Ecuador benefits from the agreement since 1st January 2017
Processed by Cirad-FruiTrop

of Cameroonian production. The French West Indies are still in their comeback phase after the cyclones, with the supply growing until late November, before slowly declining.

The difference between this year and previous years is due to the fact that we are back to very classic seasonal fruit campaigns, a situation not seen for as long time. Also, although the banana supply at the end of 2018 should be below the record for 2017, the situation will be tight. Except for the cyclones which might still turn up for a few weeks, the effects (not systematically depressive on the supply) of a possible El Niño will only be visible at the very end of the year, or even only in early 2019.

So there is nothing definitive three months from the end of the year. While things do not seem desperate in terms of supply level, the supply is in a structural growth phase. Consumers the world over are reacting favourably to these surges, and absorbing these additional volumes for a price with a waning added value.

Is this a sustainable dynamic? Can deteriorating value continue to be absorbed by the upstream segment? In short, is the system as a whole robust and durable? In view of the developments at the production stage and with no further analyses, the ordinary observer might be easily convinced. Yet it is in the medium and long term that the verdict will fall, and that as on the field of honour, we will count the wounded and dead ■

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

## Banana import price

# In the kingdom of the blind, the one-eyed man is kings

Between 2015 and 2018, over the first eight months of the year, there was an 18 % fall in the benchmark import price in Germany! Specifically, it registered a worrying drop from 14.8 to 12.2 euros/box. True, the comparison has a high starting point, with 2015 a benchmark year for high prices. Yet 2018 represents a low point, historically very low. An 18 % fall, per box, is a price reduction of more than 2.5 euros. Over a more recent period, there has been a more moderate tumble, yet nonetheless worrying. Between 2017 and 2018, again over the first eight months of the year, the drop was practically 0.80 euro per box, i.e. a reduction of 6 %.

This fall was not specific to Germany or to its highly contractualised market system. Our EU barometer shows exactly the same trend, with a buffering effect given the large number of countries and origins in the index. There was a 13 % fall between 2015 and 2018, and 4 % between 2017 and 2018.

However, we should think ourselves fortunate in 2018. Calamity was avoided thanks to an utterly crazy Q1, which saw green banana prices on our barometer soar to 15 euros per box. In Poland for example, between weeks 4 and 12, the price never dropped below 16 euros, even remaining above 17 euros for six weeks in a row.


## Volatility making a big comeback

The drop was as intense as the climb. Between the high point in week 8 and the first low point in week 18, the price per box plunged by 4 euros back to 11 euros (EU barometer). The minor technical recovery at the end of spring was quickly submerged by a wave of further falls, which took the European price to barely 10.5 euros. In Poland, a highly responsive market to both rises and falls, the differences were even bigger, since the low point reached was 6.30 euros (week 28). Yet this level disregards the sales at miserable prices (barely a few euros) which when the market comes undone, proliferate on the East European markets, and especially in Poland.

Russia, an extra-European fuse operating along the lines of Poland inside Europe, saw the same imbalances, but even more extreme. Prices went from 21.5 USD per box in February to 6.25 USD in June 2018. This extreme volatility, for a non-storable mass-consumption fresh product, is a world record.

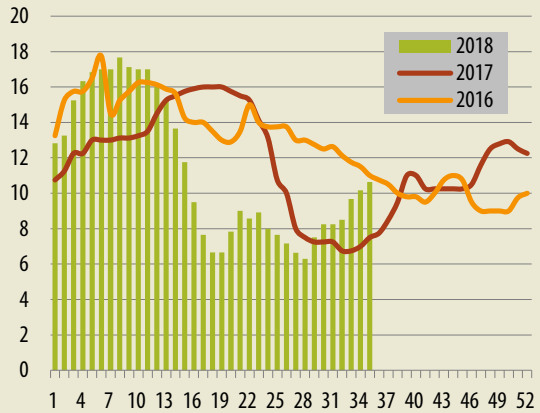
## Do not confuse label and added value

We avoided a shipwreck in 2018, yet the negotiations opening up between customers and suppliers this year will be something gruesome. So ways out will need to be found. While in very rare cases, certifications of whatever kind have a positive impact on the social or environmental quality of the industry, they serve only to give the producers and exporters alike a "licence to operate". They have no effect on the sale price and therefore on the product's valuation. Conversely, they have an effect on the cost price. The only two certifications (or labels) boosting added value are organic and Fairtrade. Sometimes combined, this positive discrimination provides a way out of the doldrums of low prices. Yet for how much longer? The segment is progressing in terms of volume (e.g. for France, the share of the organic market by volume is reportedly approximately 15 %), and

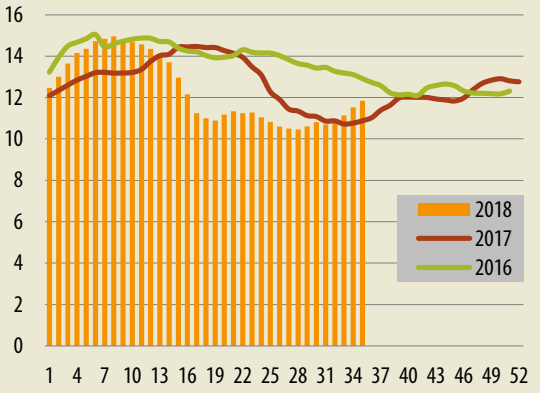

added value is waning. CIRAD has estimated, for imports into France over the first eight months of 2018, that the price slumped by approximately 15 % between 2016 and 2018, and by 4 % between 2017 and 2018. The competition exacerbated by the rapidly progressing dollar supply, especially from Ecuador, the quality level of the Dominican supply sometimes missing in action, and the slow drift of this top-end segment toward the core market, have contributed to this drop in the green price. And since the entire banana world has clearly opted to focus its production toward more organic – when it can technically do so – the phenomenon could be aggravated. Economically this is absolutely logical. However, two questions remain unresolved: will the fall in organic (or organic-FairTrade) prices trigger a general drop in banana prices? Are these industries technically equipped to deliver to consumers all the environmental and social promises of these labels, and therefore prevent a crisis of confidence?

Other ways out are being explored by the industries, whether via their brand (either private or collective), FairTrade (including for the "northern" industries such as the production sector in the FWI), quality (as with certain specialised chains), or a differentiated supply (e.g. "Francité" concept for the Guadeloupe and Martinique-produced bananas), etc. In every case, there is an urgent need to halt destruction of value. To take a slightly optimistic view, we might refer you to the quote by Calonne, the last Finance Minister for Louis XVI: "if it is possible, then it is done; impossible, then it will be done." However, we should recall that he died in exile and without a penny to his name.

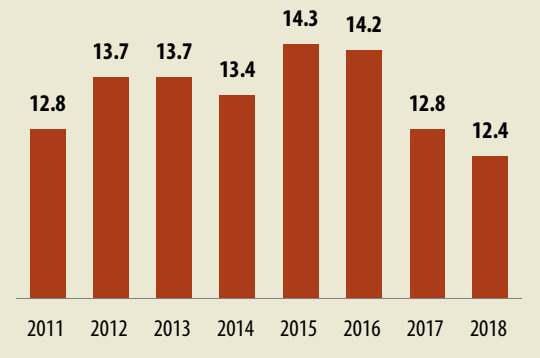
**Banana - Poland - Weekly green prices**
(in euro/box / source: CIRAD)




**Banana - EU Barometer - Weekly import price**
(in euro/box / source: CIRAD)




**Banana - EU Barometer - Import price for the first 8 months of the year**
(in euro/box / source: CIRAD)



# Avocado

A report by
Eric Imbert

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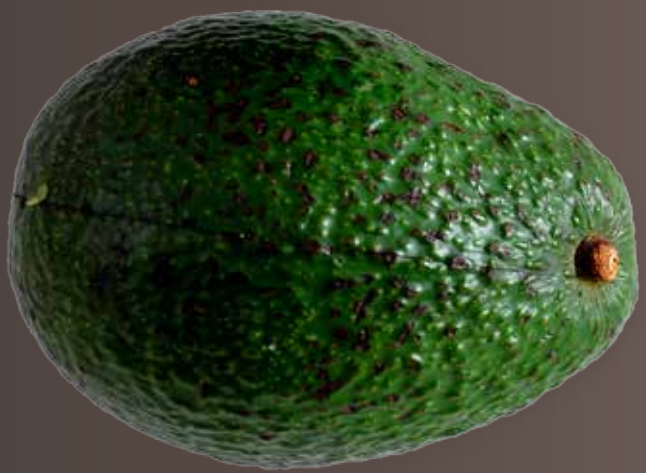

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# Avocado
# World market in 2017-18

## A still extraordinary dynamic!

**The 2017-18 campaign confirmed the rude health of the world's two main markets, the USA and the European Union. They managed to rise in terms of volume while maintaining price levels ranging from good to excellent. Conversely, while the enormous growth potential of the Asian markets is continuing to reveal itself, this is only occurring very gradually.**

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# Record world Hass production, thanks to the Americas

It is a practically immutable rule in the avocado industry: a lean season is followed by a season of higher production. And when the Mexican giant is the one which flags, as was the case in 2016-17, the recovery is all the more striking. So there was nothing astonishing in seeing world avocado production peak at historic levels in 2017-18. According to the estimate by our Market News Service (Hass variety only, exporter countries only – under certain assumptions), it was slightly in excess of the 3-million tonnes mark for Hass. This record production, approximately 25 % greater than in 2016-17, can be explained by very fine harvests in both Latin America and North America.

After a 2016-17 season marked by alternate bearing and unfavourable weather, Mexico came back in better form than ever, thanks especially to the immense surface area expansions in Michoacán as well as Jalisco (respectively + 9 000 ha and + 2 000 ha per year on average over the past four years according to official sources). Similarly, in Peru, the expansion of the cultivation area, of 2 500 ha per year on average over the past four years, helped counterbalance the adverse consequences of another very wet year (La Niña). Furthermore, the spectre of drought, which has for so long choked the country's potential, seems increasingly distant, with production maintaining a high level. Finally, the alternate bearing effect and more generous rainfall had a positive impact on the Californian harvest.

Conversely, the other world production areas were less well off. The Mediterranean harvest was only meagre, with Morocco's rude health not managing to offset a major shortfall in Spain and in Israel. South Africa suffered from alternate bearing and a spell of drought. These trends can explain the very uneven supply levels to the two main world markets, with the USA getting much bigger volumes than Europe.

# Avocado

## Main suppliers export dynamic

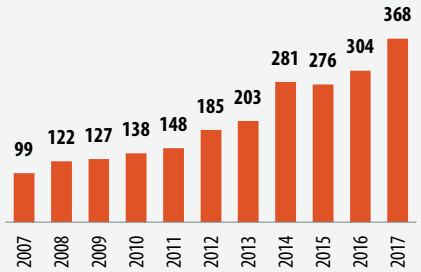
### Summer season

Export calendar mainly centred on spring and summer

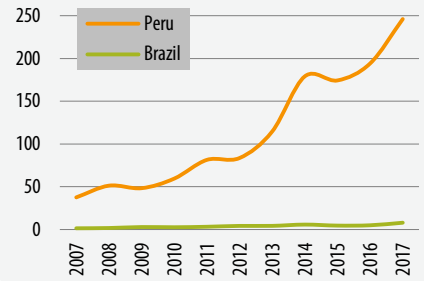
**370 000 t**

**20 %**
**of world market**

**Avocado - World exports in the summer season**
(in 000 tonnes / professional sources)



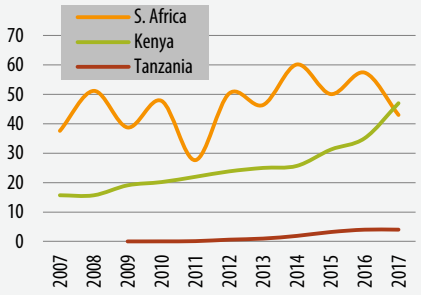

**Avocado - Latin America - Exports in summer**
(in 000 tonnes / professional sources)




**254 000 t**

**69 %**
**of summer market**

**Avocado - Africa - Exports in summer**
(in 000 tonnes / professional sources)



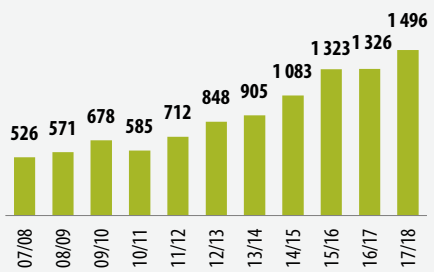

**94 000 t**

**26 %**
**of summer market**

### Winter season

Export calendar mainly centred on autumn and winter

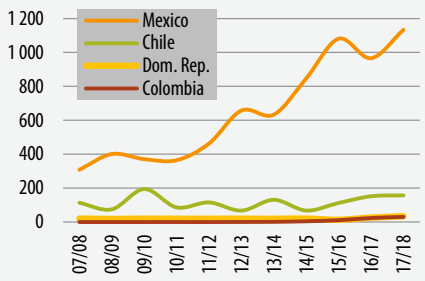
**Avocado - World exports in the winter season**
(in 000 tonnes / professional sources)




**1 500 000 t**

**80 %**
**of world market**

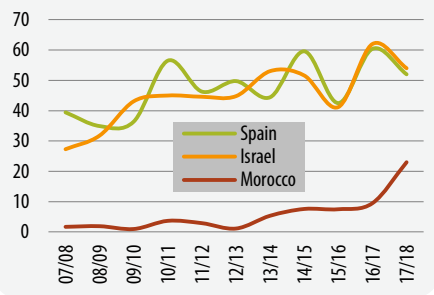
**Avocado - Latin America - Exports in winter**
(in 000 tonnes / professional sources)




**1 354 700 t**

**91 %**
**of winter market**

**Avocado - Mediterranean - Exports in winter**
(in 000 tonnes / professional sources)




**129 000 t**

**9 %**
**of winter market**

**Avocado – Main supplier countries – Exports in the summer season**

| in 000 tonnes | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|
| **Total summer season** | **185** | **203** | **281** | **276** | **304** | **368** |
| **Latin America** | **87.8** | **118.9** | **184.9** | **178.9** | **199.1** | **254.0** |
| Peru | 83.6 | 114.5 | 179.0 | 174.3 | 194.1 | 246.0 |
| Brazil | 4.3 | 4.3 | 5.8 | 4.6 | 5.0 | 8.0 |
| **Africa** | **74.7** | **72.4** | **87.8** | **84.5** | **96.5** | **94.0** |
| South Africa | 50.3 | 46.4 | 60.2 | 50.1 | 57.4 | 43.0 |
| Kenya | 23.8 | 25.0 | 25.7 | 31.2 | 35.1 | 47.0 |
| Tanzania | 0.6 | 1.0 | 1.9 | 3.2 | 4.0 | 4.0 |
| California | 22.5 | 11.5 | 8.4 | 12.8 | 8.0 | 20.0 |

Professional sources

**Avocado – Main supplier countries – Exports in the winter season**

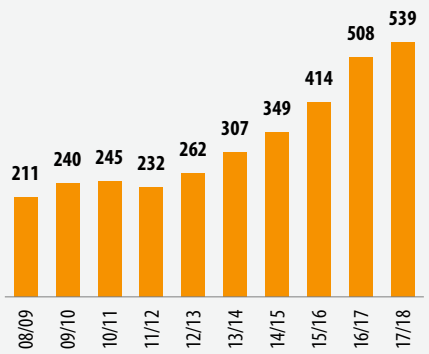
| in 000 tonnes | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|
| **Total winter season** | **848** | **905** | **1 083** | **1 323** | **1 326** | **1 496** |
| **Latin America** | **745.2** | **784.8** | **939.6** | **1 217.6** | **1 168.3** | **1 354.7** |
| Mexico | 657.4 | 633.4 | 847.1 | 1 081.0 | 966.0 | 1 134 |
| Chile | 67.5 | 131.3 | 67.6 | 112.5 | 152.0 | 157 |
| Dominican Rep. | 19.8 | 18.9 | 20.4 | 13.2 | 26.3 | 34 |
| Colombia | 0.5 | 1.2 | 4.5 | 10.9 | 24.0 | 30 |
| **Mediterranean** | **95.7** | **102.9** | **118.8** | **91.2** | **131.9** | **129.0** |
| Spain | 49.8 | 44.4 | 59.6 | 42.5 | 60.4 | 52 |
| Israel | 44.8 | 53.1 | 51.6 | 41.2 | 62.0 | 54 |
| Morocco | 1.1 | 5.4 | 7.6 | 7.5 | 9.5 | 23 |
| New Zealand | 6.7 | 17.3 | 24.7 | 14.0 | 26.0 | 12 |

Professional sources

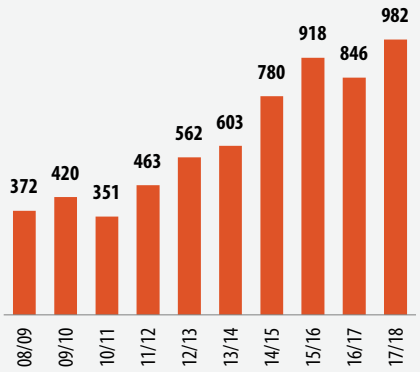
# Avocado

## Main import markets

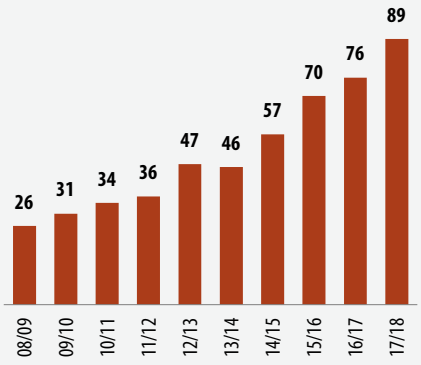
**Avocado - EU-28 - Imports**
Summer: year Y + spanish shipments
Winter: year Y/Y+1
(in 000 tonnes / source: Eurostat)



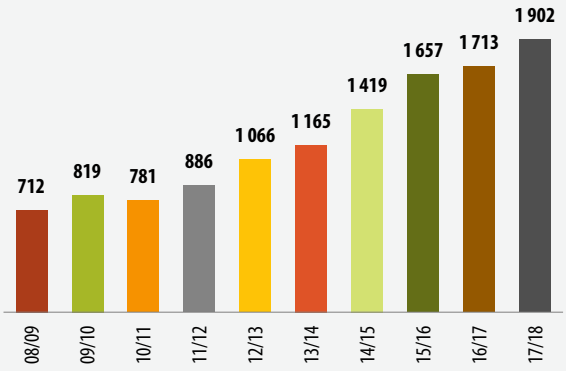

**Avocado - USA - Imports**
From July to June (excl. Peru: calendar year)
(in 000 tonnes / source: US customs)



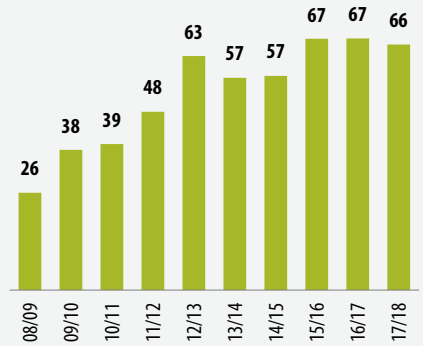

**Avocado - Canada - Imports**
From July to June (excl. Peru: calendar year)
(in 000 tonnes / sources: Trademap, other Customs)




**Avocado - World imports**
Summer: year Y
Winter: year Y/Y+1
(in 000 tonnes / various Customs sources)

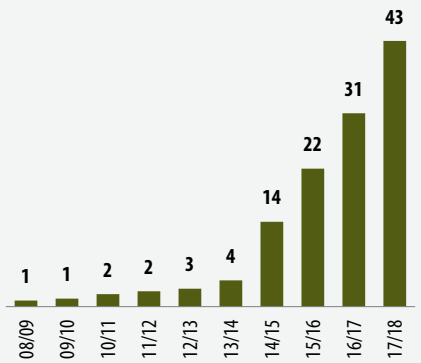



**Avocado - Japan - Imports**
From July to June (excl. Peru: calendar year)
(in 000 tonnes / source: Japanese Customs)




Photos © Guy Bréhinier

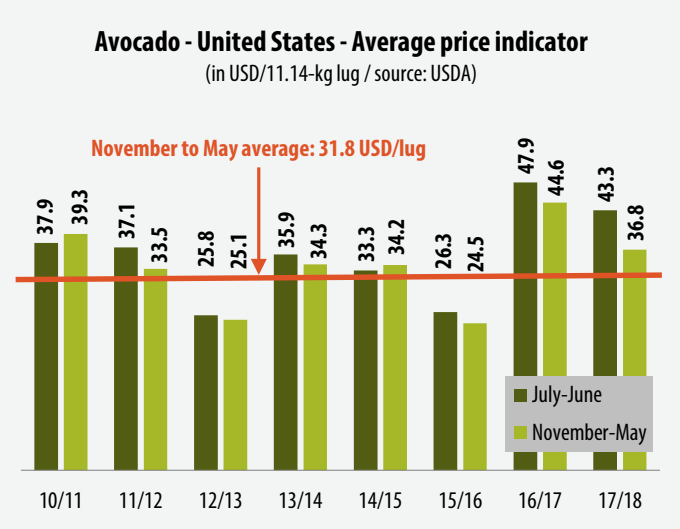
**Avocado - China and Hong Kong - Imports**
From July to June (excl. Peru: calendar year)
(in 000 tonnes / source: Trademap)




© Carolina Dawson

## The indefatigable US market!

So US professionals had volumes available to feed the growth of their market, and they did not refrain from using them! Despite the good local Californian production level, imports for the first time approached the one million-tonne mark. Mexico, with a stronger presence than ever, supplied more than 860 000 t on its own. Note that among certain minor players, the ongoing decent Chilean presence (approximately 30 000 t, almost entirely shipped during the Mexican supply trough in August/September) and the good reception reserved for Peruvian fruits (return to the 2014-15 record volumes with approximately 65 000 t, after two difficult years). The 2018 campaign seems to confirm that the Peruvian graft has –finally – taken, with shipments of more than 80 000 t. Overall, the supply during the period from July 2017 to June 2018, was more than 11 % bigger than last season. Hence consumption per capita beat a new record, nearing 3.5 kg.




## A strong consumption dynamic in all parts of the country

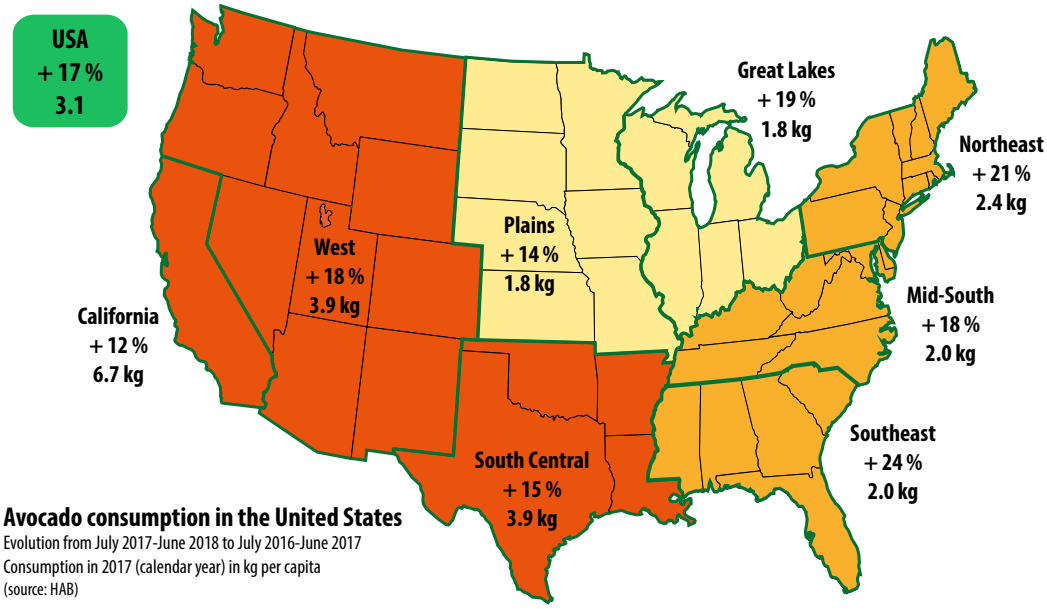
Demand was there to meet this influx of volumes, as is shown by the good response by rates throughout the season. This is confirmed by our average price indicator, though this is exaggerated since it encompasses the under-supply of summer 2017 and the high supply levels from the rest of the season. Yet even if we focus only on the abundant period from November to May, it is still a very respectable performance (34.4 USD/lug, i.e. + 7 % on the four-year average). A detailed geographic analysis, relating solely to the supermarket sector, shows two-figure growth across all regions. True, it could hardly be otherwise given the downturn seen in 2016-17 because of the supply shortfall, but these developments remain sig-

**Avocado – United States – Supply**

| in tonnes | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|---|---|
| Mexico | 281 672 | 360 924 | 515 143 | 512 276 | 686 404 | 853 617 | 764 680 | 862 596 |
| Peru | 137 | 9 157 | 15 860 | 21 617 | 64 448 | 46 284 | 31 573 | 64 420 |
| Chile | 54 355 | 74 701 | 14 721 | 53 305 | 10 600 | 10 362 | 29 354 | 29 454 |
| Dominican Rep. | 14 956 | 17 204 | 16 150 | 15 958 | 15 548 | 7 393 | 20 805 | 25 757 |
| Others | - | 791 | 18 | 4 | 3 412 | 11 | 2 | - |
| **Total** | **351 120** | **462 777** | **561 892** | **603 160** | **780 412** | **917 667** | **846 414** | **982 227** |

Source: US Customs

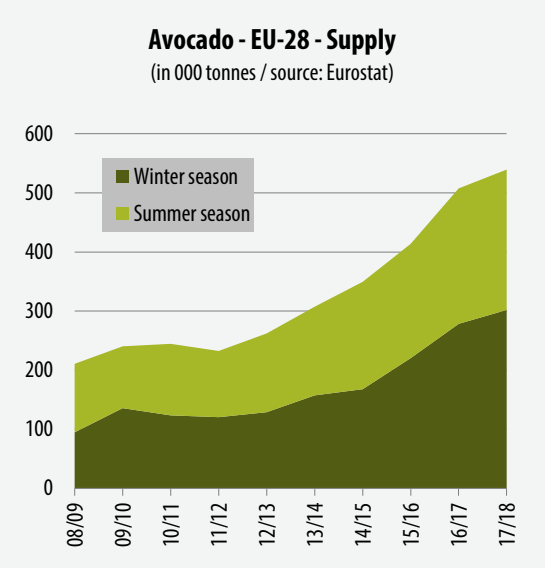
nificant nonetheless by virtue of their scale. Even California, which was already consuming nearly 7 kg per capita in 2017, apparently continued to rise in 2017-18, though at a rate below the national average. All regions on the Eastern Seaboard and Great Lakes region, currently the lowest consuming (between 1.8 kg and 2.4 kg/capita in 2017), continued to make giant strides forward with 18 to 24 % growth, above the national average. Conversely, the two regions in the centre of the country (Centre South and Plains) saw less clear progress, despite the distinctly below-average consumption level for the Plains. This dynamic, disparate but overall very strong, augurs well for the coming years. Growth in consumption is far from over in the US!




**Avocado consumption in the United States**
Evolution from July 2017-June 2018 to July 2016-June 2017
Consumption in 2017 (calendar year) in kg per capita
(source: HAB)


## EU-28: a new supply record despite slack growth

As in the USA, the supply to the EU-28 beat records by exceeding 540 000 t in 2017-18, despite much slacker growth than in previous campaigns, due to lack of volumes. There was only a single-digit rise in the supply in both the winter season (+ 8 %) and summer season (+ 4 %). Despite this very relative failure, it has to be observed that the market has made immense progress in five years, doubling its size. A complete analysis of the dynamic of all the big EU-28 countries can be found in the following article.




## Morocco and Mexico the big winners of this 2017-18 campaign in the EU-28

The analysis of procurement by supplier reveals some interesting trends, excluding the seasonal shifts already mentioned in the introduction to this article. Mexico registered a remarkable rise (a record at more than 60 000 t). Maybe we should talk about the Mexicos, since this leap should definitely be credited to Jalisco, whose production is seeing rapid progress though still an "origin non grata" in the USA. Similarly, the surge in Moroccan shipments should be highlighted, with exports to the EU-28 leaping up to more than 22 000 t. This figure reveals the extent of the expansion of this country's cultivation area, which had previously gone unnoticed because of climate incidents.

**Avocado – European Union – Supply**

| in tonnes | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|---|
| **Total** | **120 414** | **240 845** | **290 557** | **317 833** | **402 004** | **471 750** | **531 084** |
| **Total N. Hemisphere** | **120 414** | **128 824** | **157 266** | **167 741** | **220 318** | **278 351** | **301 853** |
| Chile | 32 637 | 41 074 | 62 968 | 42 797 | 78 244 | 90 138 | 92 467 |
| Mexico | 2 909 | 9 085 | 6 293 | 12 918 | 45 593 | 36 884 | 60 993 |
| Spain | 38 900 | 38 500 | 36 700 | 50 600 | 37 700 | 55 200 | 48 600 |
| Israel | 40 448 | 35 175 | 42 844 | 46 086 | 34 995 | 56 600 | 41 567 |
| Colombia | 121 | 486 | 1 142 | 3 740 | 11 189 | 24 024 | 28 000 |
| Morocco | 2 803 | 840 | 4 766 | 7 798 | 7 115 | 9 552 | 21 746 |
| Dominican Rep. | 1 467 | 2 503 | 1 810 | 3 034 | 4 445 | 5 527 | 7 345 |
| Others | 1 129 | 1 161 | 743 | 768 | 1 037 | 426 | 1 135 |
| **Total S. Hemisphere** | **-** | **112 021** | **133 291** | **150 092** | **181 686** | **193 399** | **229 231** |
| Peru | 66 155 | 62 618 | 86 260 | 101 971 | 114 321 | 144 367 | 157 744 |
| Southern Africa* | 27 375 | 49 083 | 45 165 | 56 713 | 50 962 | 54 095 | 43 984 |
| Kenya | 15 028 | 17 078 | 13 313 | 15 604 | 20 728 | 23 444 | 25 425 |
| Brazil | 3 006 | 3 959 | 3 928 | 5 265 | 3 535 | 3 908 | 7 189 |
| Tanzania | 6 | 133 | 968 | 1 643 | 3 278 | 2 948 | 2 987 |
| Others | 451 | 420 | 458 | 490 | 575 | 470 | 283 |

* South Africa, Zimbabwe, Swaziland / Source: Eurostat

*A premium*

*selection*

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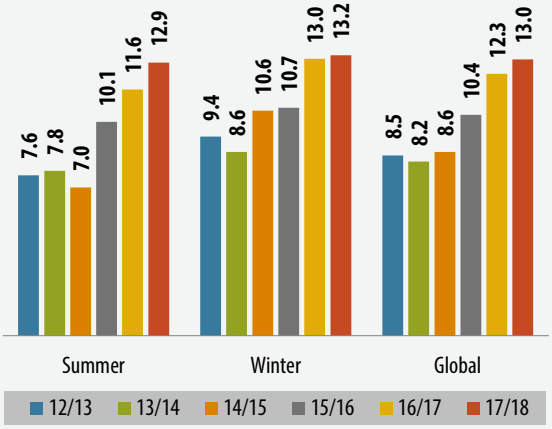
**Avocado - EU-28 - Average price indicator**
Last summer season: 2017
(in euro/4-kg box / source: CIRAD)




## Prices peaking and varying less and less

As could be expected in such a limited procurement context, the performance was unambiguous in economic terms. Our quayside price indicator is registering a record level of 13 euros/box, up by 5 % from 2016-17. This is a remarkable increase for the summer season (+ 16 %), with rates for the first time equalling those charged during the winter season, which were practically stable. Analysis of price variations throughout the campaign shows an increasingly linear trend. The standard deviation, which describes the width of the price range, for the first time fell below the symbolic one-euro mark (as opposed to more than 1.30 euros four years previously). This is symptomatic of the increasingly distinct trend of purchasing contractualisation (supply programme at a price often fixed for a six-month period).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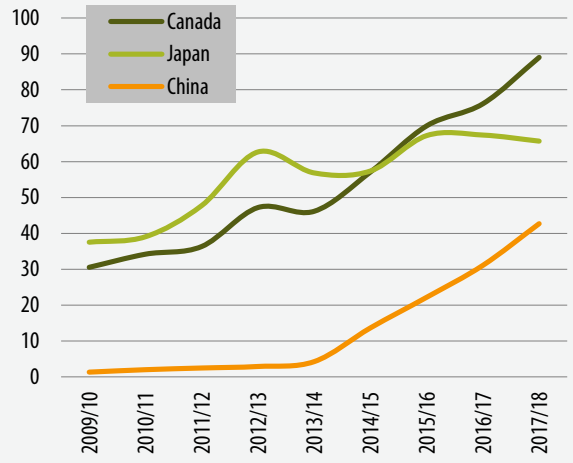
## Canada following in the footsteps of its massive neighbour

For the fourth consecutive year, Canada registered the highest growth rates in the world (between 17 and 24 %, with the exception of 2016-17, when Mexican volumes were lacking). The market, which has doubled in size in four years, has well and truly consolidated itself as the world number three with a consumption of close to 90 000 t (i.e. 2.5 kg/year, a higher level than the biggest consumer countries in Europe). This progress is down to the main market supplier, i.e. Mexico, being highly active in terms of promotion via APEAM. Yet another example showing that promotion pays off!

**Avocado - Canada, Japan and China - Imports**
(in 000 tonnes / sources: Trademap, national Customs)



## Japan: a pallid world number four

While Japan remains the world number four, it is far from exhibiting the same dynamic as the top three. It is even probably one of the only markets in the world to be stagnating among the high-revenue countries (at approximately 65 000-70 000 t since 2015-16). Why such a trend, when promotions are continuing to be conducted, especially by Mexico, the country's main supplier? On the one hand, it seems that the avocado is no longer seen as an exotic fruit and is no longer riding the wave of novelty, on this market with a great appetite for innovations. On the other hand, it seems above all that prices have struggled to increase. It is true that price tags have soared in recent seasons, since the fall in the yen has magnified the effects due to the tension of the world market. The graph opposite shows that the price per tonne of avocado to more than 300 000 yen in 2013-14 caused a distinct slowdown in the growth tempo, and that the leap up to 350 000 yen in 2016-17 resulted in a complete halt on the market.


## China: still an up-and-coming market for the moment...

The market of the Middle Empire, aptly named since it is at the centre of operators' concerns, has continued to grow, though at a stately pace. According to our estimate based on exports from the supplier countries, volumes sold rose by approximately 10 000 t in 2017-18, to reach just over 40 000 t. This growth rate has been stable for four years, and for the moment is certainly not soaring. By way of comparison, the Canadian market – with much less media coverage – has risen in exactly comparable proportions for the same period. True, the prospects of the Chinese market with a population of 1.4 billion are in no way comparable to those of "little" Canada. Nonetheless, this further year of moderate growth clearly shows that we should not overestimate the growth capacity of this market in the short or medium term. Plenty of big players in the sector are investing heavily to develop it (Camposol and APEAM, with a strong presence in terms of promotion, Mission which has just opened a second ripening plant in the south of the country). Yet this new product is yet to become familiar - dietary habits do not extend to eating it cold. Perhaps most of all, the logistics remain a big constraint for the Latin American countries (25 to 30 days as a rule). As the Chinese proverb says, it takes time for the mulberry leaf to become a silk robe. The professionals should bear this saying in mind in their cultivation area expansion programme, especially the South Americans ■

**Eric Imbert**, CIRAD
eric.imbert@cirad.fr

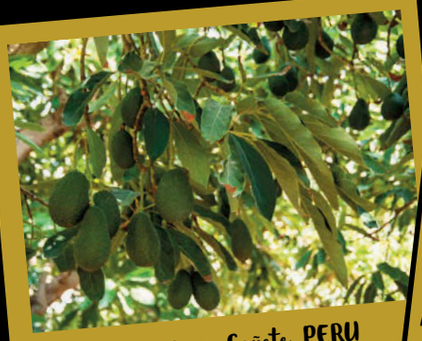

**Avocado – China + Hong Kong – Imports**

| in tonnes | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|
| Chile* | 1 092 | 5 783 | 13 405 | 15 029 |
| Mexico* | 10 794 | 14 223 | 10 919 | 17 690 |
| United States | 243 | 1 052 | 644 | 927 |
| Peru | 1 154 | 520 | 2 802 | 6 437 |
| Others | 346 | 587 | 3 298 | 2 600 |
| **Total** | **13 629** | **22 165** | **31 068** | **42 683** |

* Estimated from exporter country Customs
Sources: Trademap, national Customs

# Avocado
# Consumption in the EU-28
## Highly atypical growth


**While the 2017-18 avocado campaign is not extraordinary in terms of consumption in the European Union, certain trend turnarounds are raising questions, and are worthy of analysis.**



Orchards in Cañete, PERU

Antonia, a grower from Hijuelas, CHILE

Our orchards in Jalisco, MEXICO

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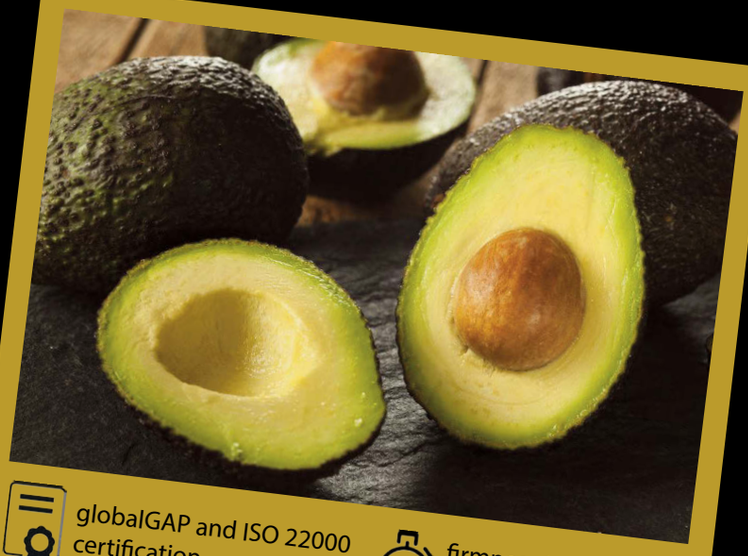

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# Modest growth in 2017-18, due to lack of volumes

During the 2017-18 season (period from June 2017 to May 2018, encompassing the 2017 summer campaign and the 2018 winter campaign), consumption growth was well below that registered in previous years. True, the 8 % figure achieved would be the envy of practically any other fruit industry. Yet the avocado market has become accustomed to so much better since 2013-14, with levels still between 14 and 24 % per year. While demand was in place, it is once again the supply which was lacking. Growth in the supply was rather limited during the 2017-18 winter season, because of the shortfall from the two main Mediterranean players, i.e. Spain and Israel. The same occurred during the 2017 summer season, with a particularly lean South African harvest and only a moderate rise by Peru (climate disruption due to La Niña).

**Avocado — Consumption in Europe** (June 2017 to May 2018)

| | Estimated marketed volume in 2017-18 (t)* | Population in millions | Consumption per capita (g) | 2017-18 compared to | | GNP-PPS** (index) |
|---|---|---|---|---|---|---|
| | | | | 2016-17 | 2012-13 | |
| **EU-28 + Norway** | **521 037** | **495.0** | **1 053** | **8%** | **110%** | **100** |
| **EU-15 + Norway** | **483 486** | **413.9** | **1 168** | **8%** | **104%** | **167** |
| France | 123 790 | 67.2 | 1 842 | 3% | 54% | 104 |
| United Kingdom | 97 209 | 66.2 | 1 468 | 0% | 162% | 105 |
| Germany | 63 998 | 82.9 | 772 | 20% | 150% | 123 |
| Scandinavia | 53 021 | 26.7 | 1 986 | -3% | 25% | 131 |
| Sweden | 19 733 | 10.1 | 1 954 | -1% | 1% | 122 |
| Denmark | 13 274 | 5.8 | 2 289 | -5% | 7% | 125 |
| Norway (non-EU) | 12 350 | 5.3 | 2 330 | 0% | 67% | 179 |
| Finland | 7 663 | 5.5 | 1 393 | -9% | 139% | 109 |
| Spain | 50 252 | 46.7 | 1 076 | 18% | 233% | 92 |
| Netherlands | 39 233 | 17.2 | 2 281 | 43% | 225% | 128 |
| Italy | 17 374 | 60.4 | 288 | 22% | 248% | 96 |
| Belgium | 12 391 | 11.4 | 1 087 | -18% | 103% | 117 |
| Austria | 7 497 | 8.8 | 852 | 8% | 221% | 128 |
| Greece | 6 900 | 10.8 | 642 | -3% | 230% | 67 |
| Ireland | 6 530 | 4.8 | 1 361 | 16% | 217% | 184 |
| Portugal | 4 618 | 10.3 | 448 | 39% | 56% | 77 |
| Luxembourg | 674 | 0.6 | 1 123 | -3% | 230% | 235 |
| **NMs Eastern Europe** | **37 551** | **102.7** | **366** | **16%** | **240%** | **69** |
| Poland | 13 704 | 38.0 | 361 | 14% | 359% | 70 |
| Romania | 6 450 | 19.5 | 331 | 17% | 521% | 63 |
| Baltic States | 6 329 | 6.1 | 1 038 | 8% | 78% | 70 |
| Czech Rep. | 3 310 | 10.6 | 312 | 11% | 244% | 89 |
| Hungary | 2 505 | 9.8 | 256 | 48% | 284% | 68 |
| Slovakia | 2 037 | 5.4 | 377 | 45% | 254% | 77 |
| Bulgaria | 1 768 | 7.1 | 251 | 17% | 425% | 49 |
| Croatia | 839 | 4.1 | 205 | 8% | 78% | 61 |
| Slovenia | 608 | 2.1 | 289 | -24% | -35% | 85 |
| Switzerland (non-EU) | 14 888 | 8.5 | 1 752 | 11% | 96% | 161 |

* Import-export+production / ** GNP: Gross National Product, PPS: Purchasing Power Standards / Professional sources, Eurostat, FAO

## Still a fine growth margin in the EU-28

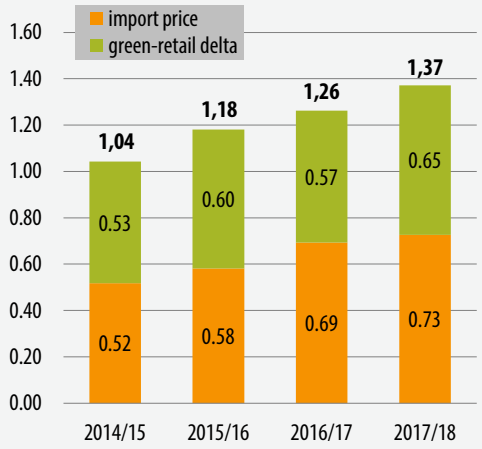
This modest growth will nonetheless have helped EU-28 average consumption to slightly exceed the one kilo per capita mark. Compared to the other big global markets, this remains a moderate level, even if we only look at the considerably higher consumption in Western Europe (1.2 kg/capita). Consumption per capita in the biggest non-producer consumer countries is twice as high (2.5 kg in Canada and 2.3 kg in Norway and Denmark). In the particular case of the producer countries, consumption has climbed to even higher levels: between 5.5 and 6 kg/capita in Chile and Israel, and 6.5 to 7 kg in Mexico. As for the USA, a market which can be used as a benchmark due to its low production (just 10 to 15 % of the total supply covered by the Californian harvest), consumption is now approaching the 3.5 kg/capita mark thanks to the massive promotion efforts of the entire industry via the HAB.

| | Russia | Japan | EU-28 | EU-15 | Canada | USA | Israel | Mexico |
|---|---|---|---|---|---|---|---|---|
| kg per capita | 0.1 | 0.5 | 1.05 | 1.2 | 2.5 | 3.5 | 5.5 / 6.0 | 6.5 / 7.0 |
| | AVOCADO CONSUMPTION | | | | | | | |
| Annual growth | 6 % | 4 % | 17 % | 15 % | 12 % | 7 % | | |

## France curbed by a new surge in retail prices

Analysis of growth in Community consumption by market throws up a big surprise. For the first time, it was not the top two which hoisted up the EU-28 market. France remained by far the number one in terms of volumes (124 000 t, i.e. approximately 30 % of quantities taken in across the EC). However, it saw a rise of just 3 %, a low level well below that observed in previous campaigns. It was indisputably weighed down by the promotion and retail price policy of the supermarket sector. Prices tags continued to soar, reaching 1.35 to 1.40 euro/piece according to the season for the loose segment, i.e. a 35 to 40 % increase in four years! True, import prices soared too, though the distribution sector clearly opted to take advantage by increasing its margins (0.65 euro/piece in 2017-18, i.e. + 14 % on the previous season). While the marketing work by the WAO has helped boost sales at certain times of year, retail trade indicators show conversely that promotions remained more limited.

**Avocado - France - Green price, retail price and retail margin**
(in euros per size 18 fruit / sources: CIRAD, RNM)





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## A surprisingly stagnant UK

The UK registered an even more mediocre performance with, for the first time since the start of the decade, consumption stagnant at approximately 100 000 t (i.e. 20 % of the EC supply). This stark zero is a shock since in recent campaigns this country was Europe's star pupil, with an average growth of between 20 and more than 30 %. Here too, soaring price tags seem to have played a major role, though it is probably not the sole reason. Certain professionals are lamenting a loss of attractiveness of the market due to Brexit, more particularly to the weakness of the pound: 1.10 against the euro for the majority of the season, as opposed to approximately 1.20 in 2016-17. Furthermore, the United Kingdom might also have suffered from German growth, as these two markets are in competition for the limited quantities of very high certification level merchandise.

## Mehr Avokado bitte!

With record growth of 20 %, Germany was the indisputable winner of this 2017-18 season. It is now the number three European consumer country, with volumes approaching 65 000 t. Unlike the top two, retail prices seem to have maintained a fairly attractive level, thanks in particular to very strong promotions – the hallmark of this market (avocado often included in weekly promotions in chains such as Lidl or Aldi, a well-established commercial practice and expected by the public). Furthermore, it has had no difficulty rising since consumption per capita remains very modest. Despite several years of strong growth, it is still less than 800 g, as opposed to a West European average of approximately 1.2 kg.


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# Georges Helfer
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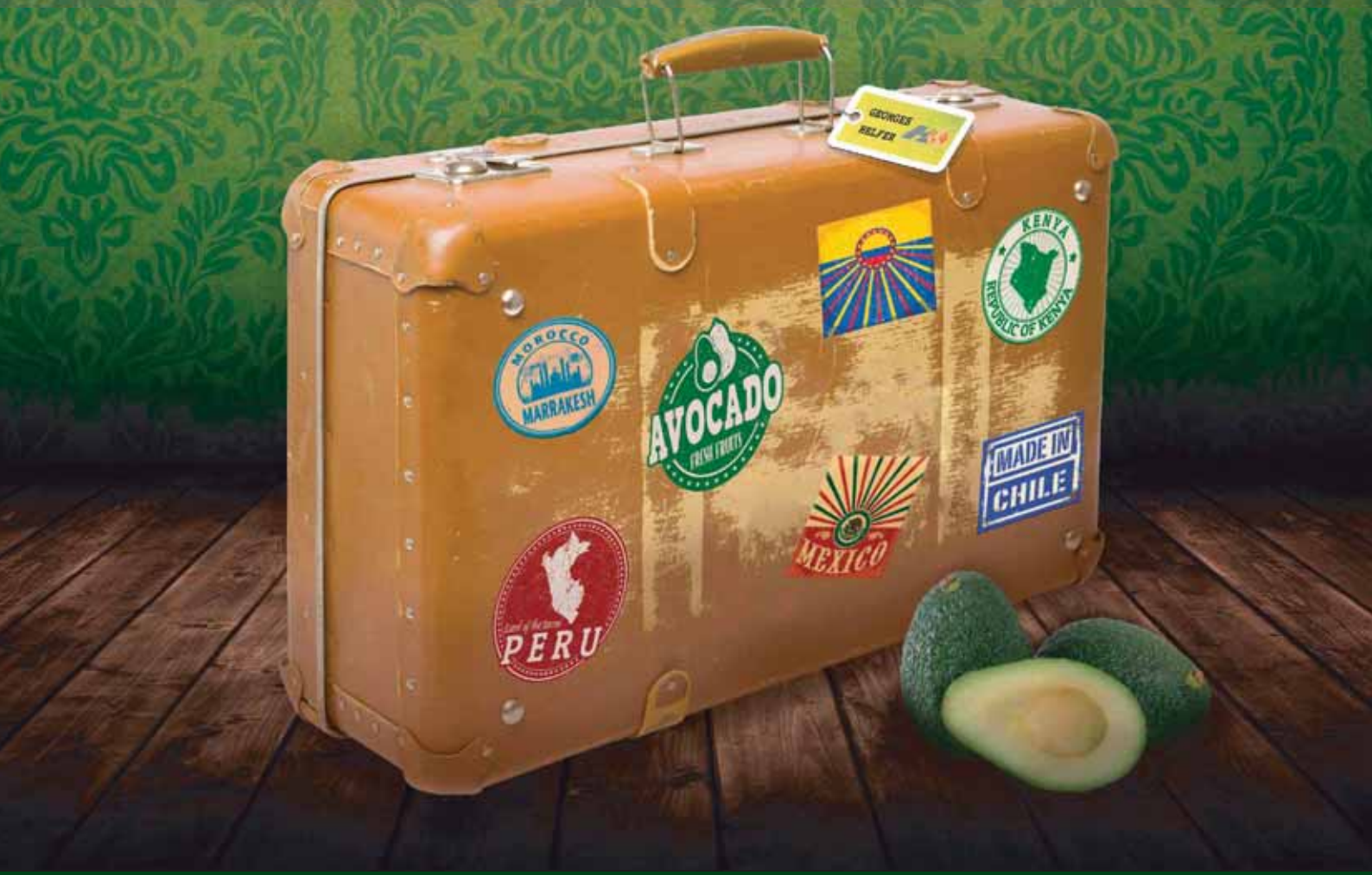


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## Scandinavian maturity confirmed

Analysis of the 2017-18 campaign does not reveal solely turnarounds in trend. Some of them have also been confirmed, such as the Scandinavian markets reaching maturity. Growth has gone from slack in recent years to zero in 2017-18. It is true that these countries are by far the European leaders in terms of consumption per capita, with levels ranging from 2.0 kg for Sweden to approximately 2.3 kg for Norway and Denmark (with Finland remaining apart, levelling out at 1.4 kg for the past several seasons). Hence, despite this recurrent flatness, Scandinavia remains one of the leading consumption centres on the Old Continent, with volumes of approximately 55 000 t (i.e. 10 % of total consumption).

## A fine Spanish dynamic, at least presumably

Analysis of the 2017-18 figures also seems to show a fine dynamic for the Spanish market. This trend should be taken with great caution, since this country's consumption is hard to calculate – doubly so. The uncertainty is no longer solely based on the difficulty in estimating the local production level, but also the re-exports level. Spain is becoming an increasingly important hub, as is attested by the record level of extra-Community imports into this country during the 2017-18 winter season (just over 40 000 t, i.e. just over 15 % of extra-Community imports during this period). This trend, as uncertain as it may be, has nonetheless seemingly been confirmed by professionals.

**Avocado – Spain – Imports**

| in tonnes | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|---|---|
| **Winter season** | **5 241** | **4 449** | **7 018** | **9 282** | **9 902** | **29 916** | **27 311** | **40 778** |
| Mexico | 505 | 386 | 2 268 | 677 | 2 705 | 16 644 | 9 789 | 14 089 |
| Chile | 3 303 | 2 821 | 4 368 | 5 202 | 2 815 | 6 085 | 6 633 | 7 874 |
| Morocco | 1 433 | 1 140 | 381 | 3 403 | 4 046 | 4 582 | 6 540 | 12 247 |
| Colombia | - | - | - | - | 121 | 2 460 | 4 114 | 6 441 |
| Israel | - | 102 | - | - | 216 | 146 | 235 | 127 |
| **Summer season** | **22 793** | **22 389** | **23 706** | **30 005** | **36 880** | **35 479** | **46 802** | **49 888** |
| Peru | 19 233 | 20 533 | 20 581 | 27 897 | 33 700 | 31 726 | 41 979 | 42 302 |
| South Africa | 1 602 | 296 | 838 | 740 | 1 009 | 1 559 | 2 133 | 1 666 |
| Kenya | 1 817 | 1 518 | 2 092 | 1 035 | 1 058 | 1 100 | 865 | 1 582 |
| Brazil | 140 | 42 | 195 | 333 | 1 113 | 1 094 | 1 825 | 4 338 |
| **Total** | **28 034** | **26 838** | **30 724** | **39 287** | **46 782** | **65 395** | **74 113** | **90 666** |

Source: Eurostat


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## Take-off confirmed in Italy and "small markets" holding up nicely

The small markets too fared quite well. Italy seems to have confirmed its take-off, with growth of more than 20 % in 2017-18. There is an enormous margin for growth, with consumption per capita not even reaching 300 g per year. Nonetheless, expectations in terms of sizing from the distribution sector, which does not accept big fruits, could be a brake on growth in the medium term, in particular during the winter season when sizes 12 or 14 are fairly scarce. We should also hail the performances of Austria (+ 8 %), and above all of Ireland (+ 16 %).

## Retail price inflation to be monitored on certain markets

In conclusion to the analysis of this atypical campaign, an important point should be emphasised. Despite the efforts made by industry professionals to boost the market via the WAO, the level reached by retail prices seems to be starting to affect the growth capacity of certain markets. The phenomenon appears fairly clear on the two main markets of the EU-28, i.e. France and the United Kingdom, which take in more than 50 % of the supply between them. Furthermore, it seems that we can detect, with all the customary reserves associated with this type of exercise, a relationship between growth rate and purchasing power: the markets which have risen least are those where GDP per capita is lowest, while the dynamic has remained strong in the richer countries (with the exception of Scandinavia due to its practically mature market). It would be good for the distribution sectors in countries where retail price sensitivity among consumers has become strong to undertake not to undermine the dynamic of a still extraordinary market. In short, we would plead with the supermarkets not to kill the golden goose ■

**Eric Imbert**, CIRAD
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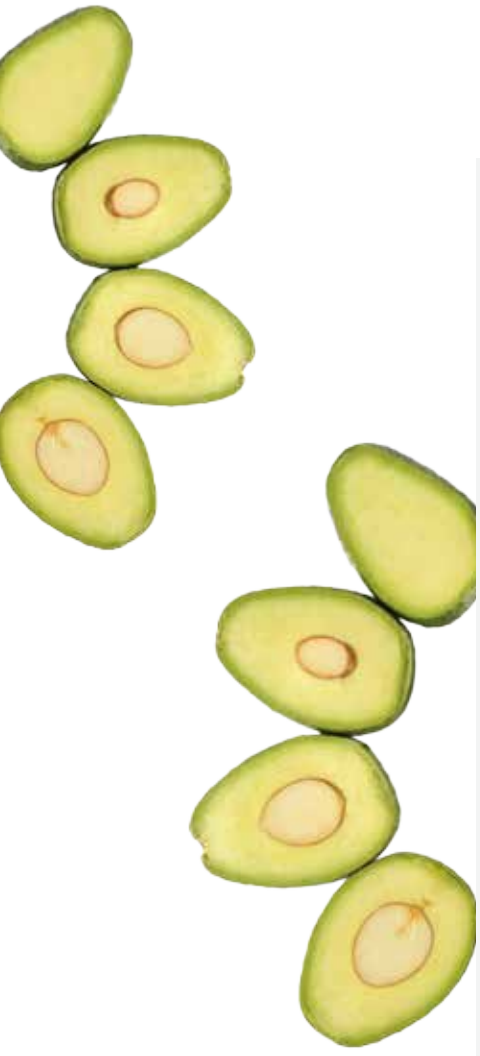
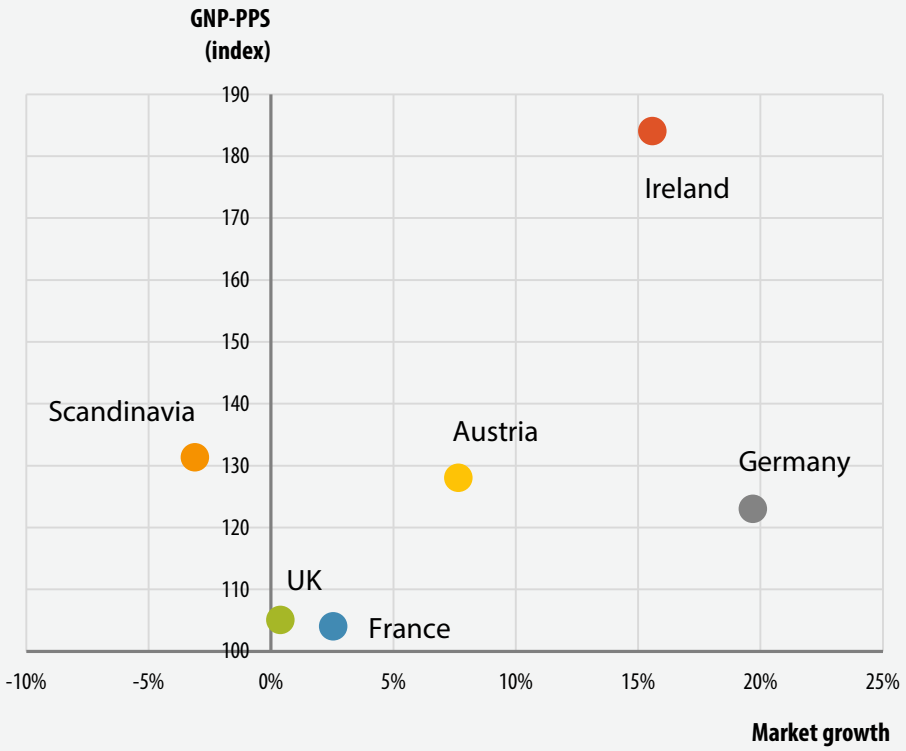


**Avocado - Relation between market growth and GNP**
(sources: CIRAD, Eurostat)




# Weekly banana market report

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- Supply levels

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# Avocado

# Summer 2018 campaign in the EU

## Scuttled


**The 2018 summer campaign promised to be abundant, and in this respect it did not disappoint. The combined supply from the two main suppliers to the EC market, estimated since the Customs data are not yet available, should be close to 280 000 tonnes, which represents an outrageous and record rise of approximately 40 % on last season. Peru and South Africa both shipped considerably greater volumes than forecasted.**

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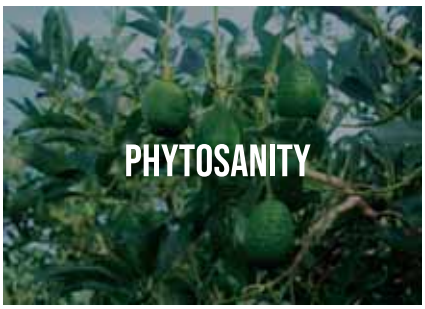




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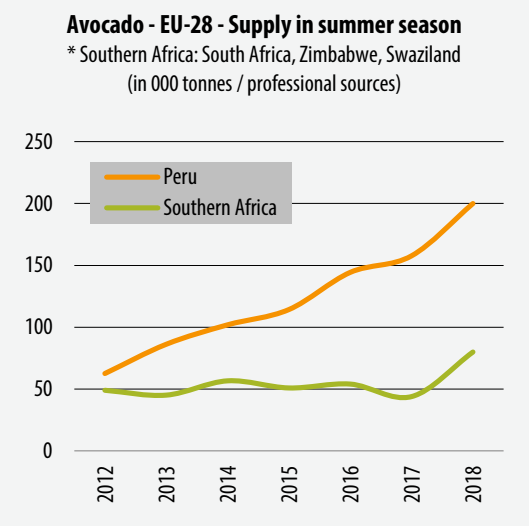



# Peru asserting itself as the world no. 2 exporter

For Peru, this 2018 season should be described as simply colossal in terms of volumes. Exports across all destinations and varieties should be within the range 310 000 to 320 000 t, marking a rise of approximately 70 000 t from 2017. Shipments to the EU-28 were massive, probably nearing 200 000 t (as opposed to 159 000 t in 2017). However, volumes bound for the USA were higher than ever, confirming Peru's more solid rooting on this market (probably more than 80 000 t, as opposed to just over 65 000 t in 2017). Similarly, Peruvian exports made fine breakthroughs on the Asian and Latin American diversification markets (probably more than 20 000 t to each of these destinations).

Besides the scale of the outgoing volumes, the other characteristic of this Peruvian campaign was the very high level of shipments to Europe in the latter part of the season (between 6.5 and 7 million boxes in September, i.e. more than double that of the previous season). Partly due to a cyclical factor (late maturity), this also reflects the development of production in the late-season zones.

**Avocado – European Union – Supply in the summer season**

| in tonnes | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2018 compared to | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 2017 | 2014-2017 average |
| **Total** | **133 291** | **150 092** | **181 686** | **193 399** | **229 232** | **237 611** | | | |
| **Total Southern Africa + Peru** | **111 701** | **131 425** | **158 684** | **165 283** | **198 462** | **201 728** | **280 000** | **39 %** | **55 %** |
| Peru | 62 618 | 86 260 | 101 971 | 114 321 | 144 367 | 157 744 | 200 000 | 27 % | 54 % |
| Southern Africa* | 49 083 | 45 165 | 56 713 | 50 962 | 54 095 | 43 984 | 80 000 | 82 % | 56 % |
| **Total other suppliers** | **21 590** | **18 667** | **23 002** | **28 116** | **30 770** | **35 883** | | | |
| Kenya | 17 078 | 13 313 | 15 604 | 20 728 | 23 444 | 25 425 | | | |
| Brazil | 3 959 | 3 928 | 5 265 | 3 535 | 3 908 | 7 189 | | | |
| Tanzania | 133 | 968 | 1 643 | 3 278 | 2 948 | 2 987 | | | |
| Others | 306 | 300 | 447 | 497 | 337 | 280 | | | |
| Argentina | 114 | 158 | 43 | 78 | 133 | 3 | | | |

* South Africa, Zimbabwe, Swaziland / Professional sources

## Growth in the South African cultivation area showing through

South Africa too registered the biggest campaign in its history. Exports, practically all bound for the EU-28, should exceed 80 000 t (as opposed to just over 43 000 t in the well below-average 2017 campaign, and an average of 55 000 t in normal production years). This big and rapid rise illustrates the rapid expansion of the South African cultivation area in recent years (approximately + 750 ha/year), which hitherto went slightly under the radar for reasons of climate problems during the last season of positive alternate bearing (drought and hail during the 2016 season).

We do not have the figures to estimate the volumes from other suppliers to the EC market, which in 2017 represented a total of approximately 35 000 t. However, it seems that Kenya, which accounted for approximately two-thirds of volumes from small supplier countries in 2017, has also seen a rise of significant proportions (probably + 15 to + 20 %).

## A 9-week summer crisis

Of course, demand proved insufficient to absorb such a colossal rise in volumes, despite the major promotion efforts undertaken by the WAO. Hence the summer crisis, practically a matter of course until 2015 but which faded into the distance in 2016 and 2017, re-emerged on the EC market. It was once again in mid-May that the market weakened, hit by incoming shipments of more than 3.8 million boxes per week. Prices, in freefall from this date, sank below the 7.5-euros/box mark from mid-June to mid-August, i.e. for nine weeks. We would need to wait more than one month between the time when volumes started their decline (mid-July) and when rates took an upturn (mid-August). Despite that, the average Hass campaign price, calculated over the period running from mid-April to late September, would reach a level of approximately 9 euros/box, the few good weeks in April and May helping buffer the fall. A more in-depth analysis of these figures would be able to reveal the resistance thresholds of the EC market. Nonetheless, it clearly appears that given the volumes, the catastrophe was bound to happen ■

**Eric Imbert**, CIRAD
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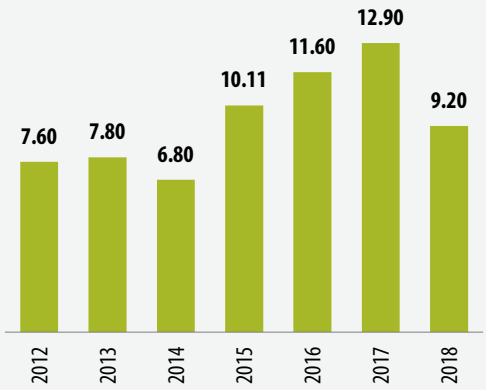
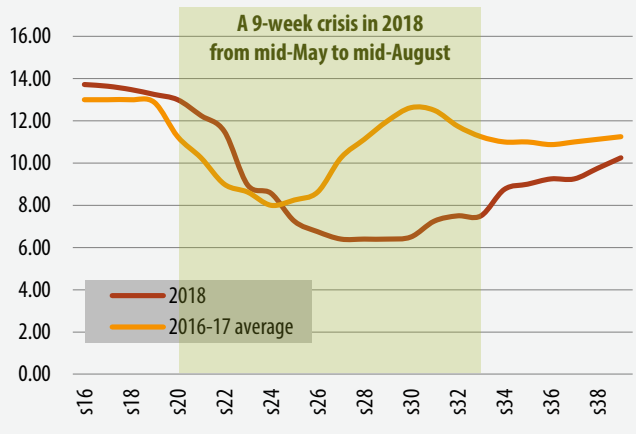
**Hass avocado - EU-28**
**Price indicator in the summer season**
(in euro/4-kg box / source: CIRAD)



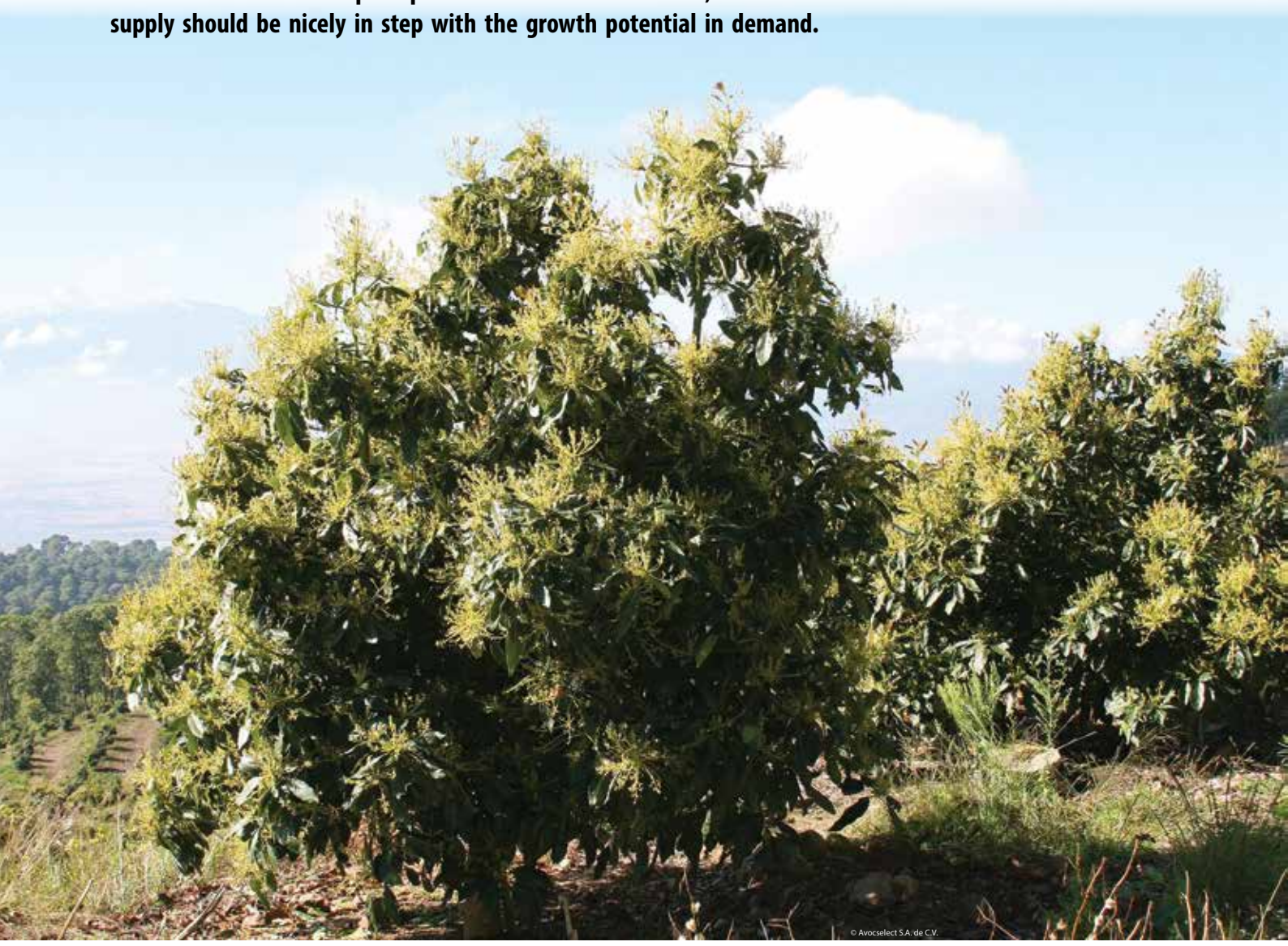

**Hass avocado - EU-28 - Weekly prices in the summer season**
(in euro/box / source: CIRAD)



# Avocado
# Winter 2018-19 forecasts for the EU

## Just what was needed!

**The 2018 summer campaign, now coming to a close, showed the limits of EC market demand. Should we fear the volumes expected during the winter 2018-19 campaign, when all the major market suppliers announced excellent export potential? The answer is no, since the supply should be nicely in step with the growth potential in demand.**



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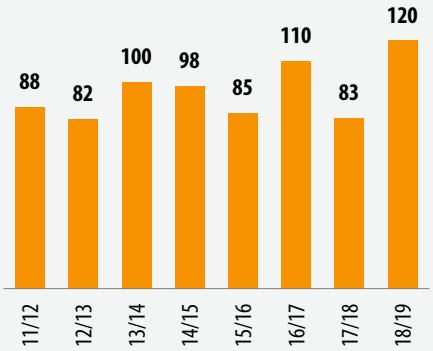
# A record season in Israel, in particular for green varieties

A fine campaign is taking shape in the Mediterranean, with the leaders (Israel and Spain) both registering record production levels. The expected surge in Israeli production is on a par with the slump seen in 2017-18. At 120 000 t, the harvest will be the biggest ever recorded (+ 30 % on the average). The alternate bearing effect, this season on an upswing, and the excellent climate conditions, are not the only two factors explaining the very good production level. Growth in the cultivation area, with an average of 500 ha per year recently, is another relevant factor. In this high production context the local market, highly price-sensitive, should absorb approximately 50 000 t, which corresponds to consumption per capita of approximately 5.5 to 6.0 kg, a good level even for a producer country. Hence approximately 70 000 t should be left for export. Green varieties should continue to represent just over 50 % of volumes placed on the international market, despite the increase in Hass surface areas. The export potential will be very high for Ettinger, which remains by far the country's main green variety (nearly 40 % of green variety surface areas). Volumes shipped to the EU should be around 85 %, with Russia taking in the bulk of the leftovers.

**ISRAEL**

**Planted area of nearly 9 200 ha (48 % green varieties and 52 % Hass)**
**World No. 4 exporter**

**Avocado - Israel - Production**
(in 000 tonnes / professional sources)




**Avocado — Israel — Exports**

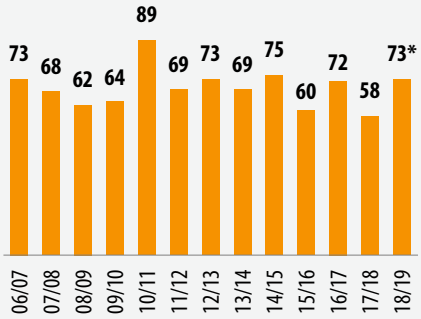
| in tonnes | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|---|
| EU-28 | 40 355 | 35 117 | 42 844 | 46 086 | 34 995 | 56 600 | 41 567 |
| Others | 3 645 | 7 383 | 10 156 | 6 914 | 6 224 | 7 450 | 10 933 |
| **Total** | **44 000** | **42 500** | **53 000** | **53 000** | **41 219** | **64 050** | **52 500** |

Professional sources and Eurostat

**SPAIN**

**Hass planted area of nearly 13 500 ha in the Peninsula**
**World No. 5 exporter**

**Avocado - Andalusia (Malaga, Granada, Cadiz, Huelva) - Production**
(*estimate / in 000 tonnes / source: MARM)




# Harvest on a par with the excellent 2016-17 figures in Spain

The Spanish harvest too will register a major rise. However, it will only regain the 60 000 t level from 2016-17 in the country's main production centre, Axarquía, with a much more moderate surface area expansion than in Israel. Unlike other regions in Spain or even Europe, summer temperatures were around normal (in particular, no heatwave). Furthermore, there was a decent rainfall level during the winter and spring. Hence the water reserves available from the Viñuela reservoir, the main irrigation source for Axarquía, are distinctly greater than at the opening of the previous campaign (reservoir at 39 % capacity, as opposed to 29 % in 2017). So the sizing is set to be rather above average. So Spanish exports, across all production zones, should return to a level of around 55 000 t (85 % Hass and 15 % green varieties).

**Avocado — Spain — Exports**

| in tonnes | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|---|
| Intra-EU-28 | 38 900 | 38 500 | 36700 | 50 600 | 37 600 | 54 600 | 48 600 |
| Extra-EU-28 | 5 200 | 7 700 | 3100 | 4 000 | 2 900 | 5 800 | 3 718 |
| **Total** | **44 100** | **46 200** | **39 800** | **54 600** | **40 500** | **60 400** | **52 318** |

Professional sources and Eurostat

# EXPORT AND IMPORT
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# Heat wave and alternate bearing in Morocco

Unlike the top two, Morocco is set for a below-average season, albeit after a record 2017-18 harvest (more than 22 000 t exported, practically all to the EU-28). The downward alternate bearing effect was reinforced by a summer heatwave. Hence the volumes available for export should be less than 10 000 t, despite the ongoing rapid expansion in cultivation area (approximately 600 ha per year).

**Avocado — Morocco — Exports**

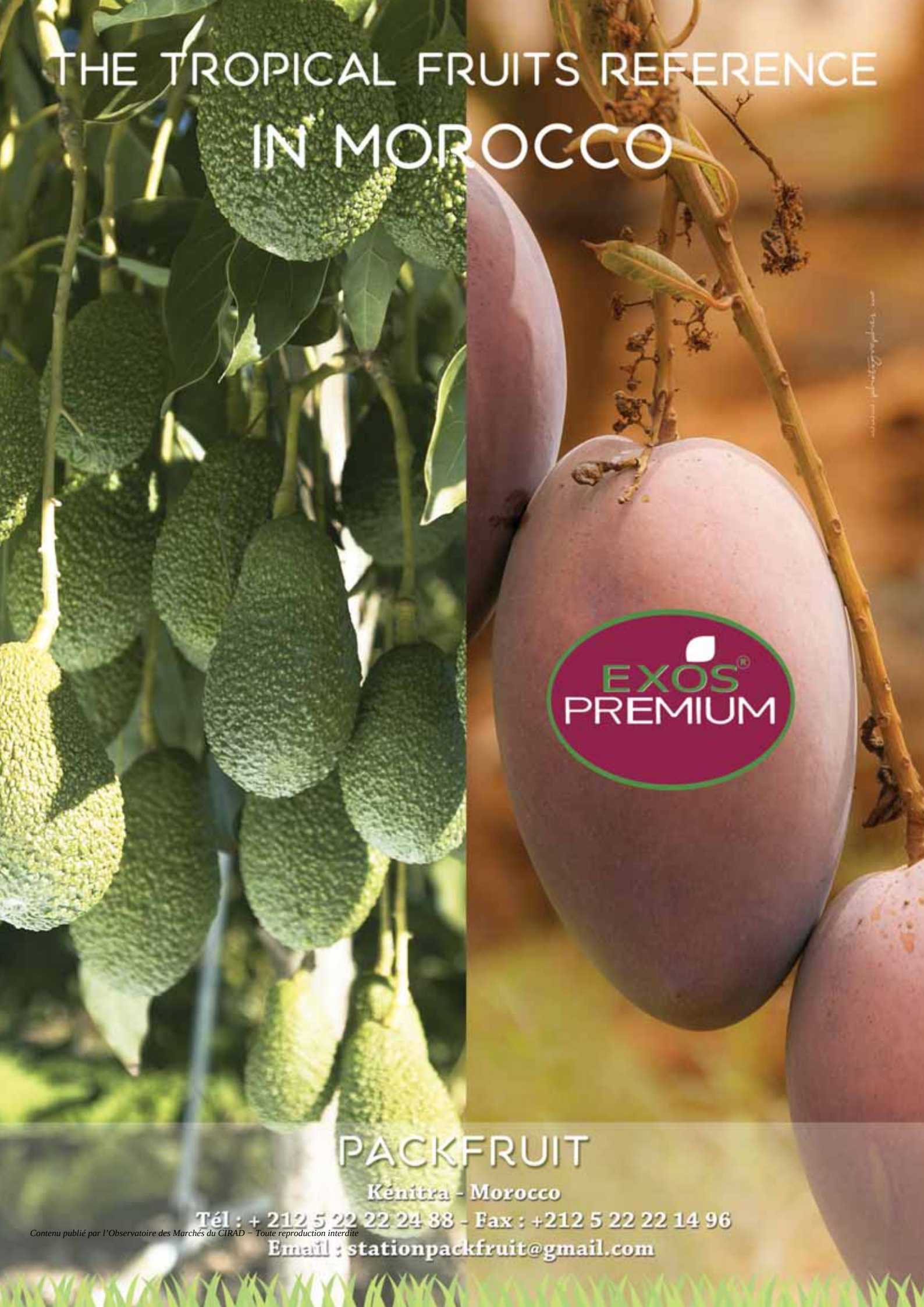
| in tonnes | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|---|
| EU-28 | 2 803 | 840 | 4 766 | 7 293 | 7 141 | 9 237 | 22 000 |
| Others | 107 | 317 | 562 | 301 | 131 | 122 | 1 000 |
| **Total** | **2 910** | **1 157** | **5 328** | **7 594** | **7 272** | **9 359** | **23 000** |

Sources: Comtrade, Eurostat

**MOROCCO**
**Hass planted area of nearly 6 000 ha**
**World No. 10 exporter**


# A new Mediterranean player: Portugal

The 2018-19 campaign will be marked by the arrival of a new member in the Mediterranean exporter family: Portugal. Planting has been going strong in the south-west of the country (Algarve and the Bajo Alentejo coast), and some volumes should be making their debut on the international market this season. The Hass cultivation area covers approximately 1 000 ha in total, according to professional sources. It is based mainly on medium to large-sized orchards, developed in part by the growers/local investors. By way of example, Citago established one of Europe's biggest plantations (80 ha) near Lagos in Algarve. International avocado specialists have also invested in Portugal. The Spanish cooperative Trops has established a packing station in Tavira (Algarve) to market the produce of twenty or so local producers. The world number one in the sector, Westafalia, has started to set up a large-scale plantation near Setúbal further north, in partnership with a local player (80 ha of Hass and Gem planted in late 2017, out of approximately 500 ha available).

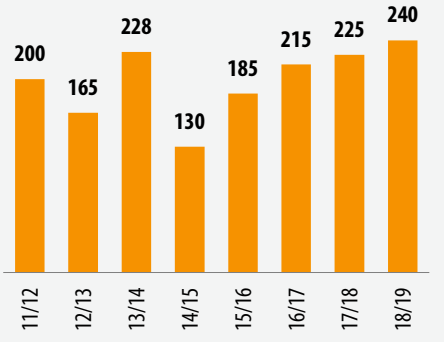


# Near full potential for Chile

Just as in the Mediterranean, the big South American players will also be in top form. In Chile, the spectre of the dark years seems increasingly distant. For the third consecutive season, there should be a very good production level, even probably approaching its full potential with approximately 240 000 t expected. The frost in late May/early June had very little impact on the avocado industry, with the affected zones mainly planted with citruses. Excluding the large volumes earmarked for the local market, the export potential should be at a slightly higher level than in 2017-18. The main emphasis was on the diversification markets, so the EU-28 programme should be very slightly greater than its 2017-18 level of 93 000 t (slightly over 95 000 to 100 000 t expected). So while volumes are set to be similar to last season, maturity seems slightly later. This factor, combined with a deliberately deferred start to shipments to Europe, in view of the magnitude of Peruvian volumes still available in September, should lead to a bigger supply in the latter part of the season.

**CHILE**
**Hass planted area of nearly 29 000 ha**
**World No. 3 exporter**

**Avocado - Chile - Production**
(in 000 tonnes / professional sources)




**Avocado — Chile — Exports**

| in tonnes | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|---|
| EU-28 | 32 929 | 42 571 | 64 247 | 43 481 | 79 421 | 91 385 | 93 496 |
| USA | 73 795 | 14 710 | 53 297 | 12 341 | 11 428 | 29 204 | 29 389 |
| Central America | 7 342 | 8 888 | 11 735 | 9 943 | 15 762 | 17 397 | 15 801 |
| Japan+Asia | 1 638 | 1 283 | 1 978 | 1 877 | 5 878 | 13 594 | 15 147 |
| **Total** | **115 703** | **67 452** | **131 257** | **67 643** | **112 489** | **151 580** | **157 111** |

Source: Chilean Customs

**COLOMBIA**
**Hass planted area of nearly 17 500 ha**
**World No. 9 exporter**


© Jean-Pierre Coulet

# Colombian surge ongoing

As the 2017-18 campaign confirmed, the Colombian export industry is off to a flying start. Still marginal even in 2014-15, the Andean country's exports neared the 30 000-t mark in 2017-18. Unsurprisingly, they should again see very considerable growth in 2018-19, to reach 40 000 t. This rapid growth is due to huge expansion in surface areas, which have now reportedly reached 17 500 ha. Practically all of these volumes should continue to be aimed at the European Union. There are few operator currently prepared to export to the United States, as is attested by the modest volumes exported since this market opened up in late 2017 (fifty or so tonnes from November 2017 to May 2018). The sanitary protocol aimed at limiting risks of introducing quarantine pests remains very difficult to comply with.

**Avocado — Colombia — Exports**

| in tonnes | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18* |
|---|---|---|---|---|---|---|---|
| EU-28 | - | 508 | 1 173 | 3 050 | 11 691 | 22 045 | 28 000 |
| Others | 7 | 30 | 38 | 1 450 | 100 | 292 | 500 |
| **Total** | **7** | **538** | **1 211** | **4 500** | **11 791** | **22 337** | **28 500** |

* Estimate / Source: DIAN

# What about Jalisco?

Mexico is the origin that has seen the biggest rise on the EC market, with incoming shipments increasing ten-fold in four years to exceed the 60 000-t mark in 2017-18 (average rise of 15 000 t per year). It is of course the surge in production from Jalisco which is behind this boom (probably 45/50 000 t, i.e. 3/4 of volumes exported to the EU-28 according to professional sources). All the factors are there on the upstream side for this origin to continue developing its shipments to Europe in 2018-19. Production, in excess of 2 million tonnes nationally in 2017/18, should reach a record level, in both Jalisco (approximately 160 000 t expected, i.e. +15/20%) and Michoacán (+ 8 to 10 % according to the professionals). In addition, the political tension existing between Mexico and the USA, currently at a peak, gives little hope for US borders opening up to avocados from Jalisco this season, when moreover a change in government is expected in Mexico. Hence Jalisco should continue to focus on the Japanese, Canadian and European markets. Volumes could be between 70 000 and 80 000 t, depending on the scenarios (same rise as the overall rise in the EC supply, or ongoing average growth from this origin of 15 000 t per season).

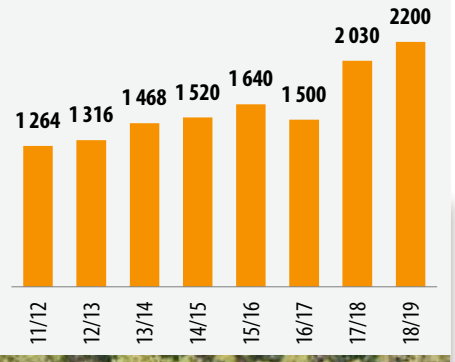
**MEXICO**

**Hass planted area of nearly 218 000 ha**

**World No. 1 exporter**

**Avocado - Mexico - Production**

(in 000 tonnes / source: USDA)

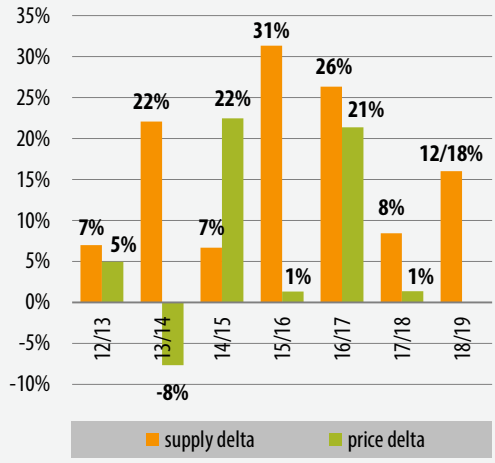



**Avocado — Mexico — Exports**

| in tonnes | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|---|---|---|
| USA | 359 262 | 522 488 | 516 085 | 693 344 | 862 457 | 759 318 | 861 393 |
| Japan | 42 354 | 55 883 | 51 626 | 53 175 | 64 864 | 62 459 | 60 455 |
| Canada | 27 431 | 35 044 | 33 632 | 44 958 | 62 148 | 71 607 | 83 346 |
| EU | 4 153 | 9 137 | 5 690 | 12 996 | 47 689 | 38 768 | 62 146 |
| Others | 29 537 | 34 893 | 26 386 | 42 597 | 44 092 | 33 820 | 66 306 |
| **Total** | **462 737** | **657 445** | **633 418** | **847 070** | **1 081 250** | **965 972** | **1 133 646** |

Source: Mexican Customs

**Avocado - EU-28 - Evolution of supply and average price in the winter season**
(sources: CIRAD, Eurostat)





# Prices set to maintain a good level, though slightly lower than in 2017-18

If the hypotheses presented above are confirmed, the rise in the overall supply to the EC market should be within the range 12 to 18 %, depending on Mexican volumes. Analysis of past campaigns indicates a rough trend as to price evolution in 2018-19. Since 2014-15, rates have risen constantly despite the parallel increase in trade volumes, with supply peaks sometimes even accompanying record prices (volumes and prices increasing by 26 % and 21 % respectively in 2016-17). However, the 2017-18 campaign showed a distinct levelling out, with volumes up by "only" 8 % and practically stable prices (+ 1 %). This factor should be considered alongside the slowdown in growth in consumption in France and the United Kingdom because of the very high retail price level reached (see consumption article). A slight downturn in import rates should help revitalise the dynamic on these markets, which are from mature.

The distribution of volumes over time, another important point to incorporate into the equation to determine the price evolution, also points to this slight downturn. We might assume that the supply pressure will be higher during Q1 2019, due to the late start to the Chilean campaign and a rising Hass export potential, for both Israel and Spain. Prices should remain excellent during this period, but will probably not scale the heights seen in 2018. The influence of the green varieties market, which promises to be very abundantly supplied especially by Israel from October to December, on the Hass market should conversely be fairly minimal. On the one hand, the East European markets, with a keen appetite for avocados at attractive prices, will very definitely play a buffering role, especially since consumption growth has picked up in the last two seasons. On the other hand, the partitioning between the Hass market and the green varieties market should remain firm, with Ettinger, Pinkerton and co. not returning to the shelves of the supermarket chains which abandoned them ■

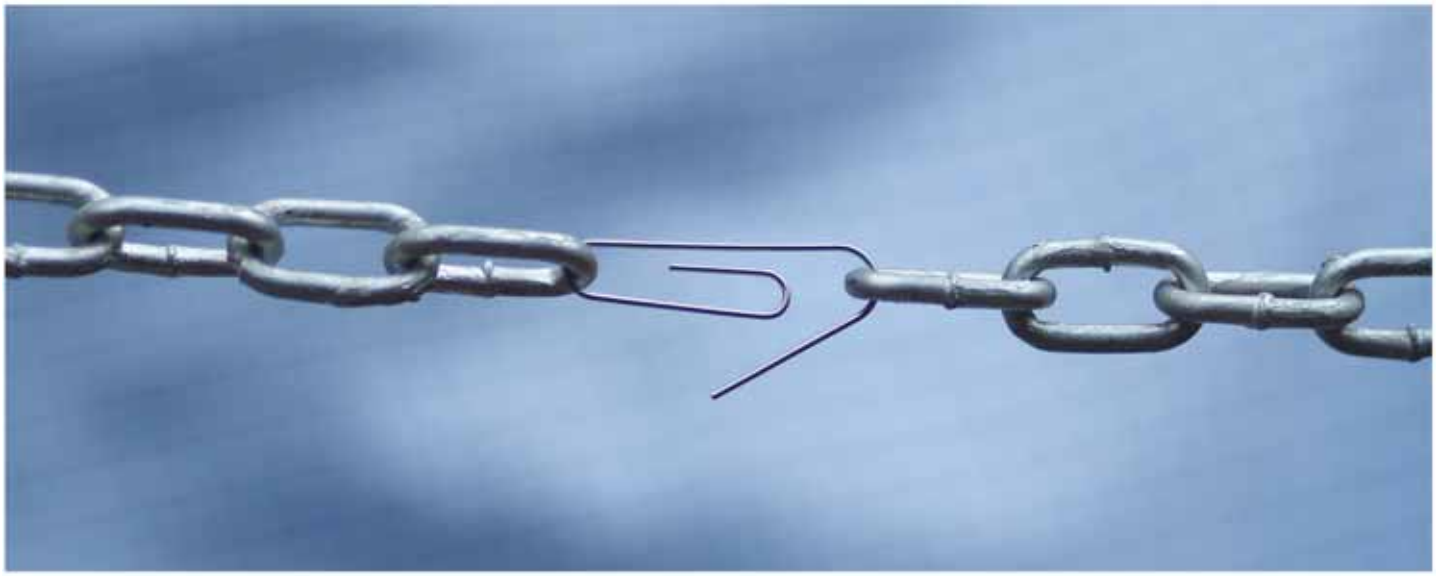
**Eric Imbert**, CIRAD
eric.imbert@cirad.fr

**Avocado — Supply trend in 2018-19**

| in tonnes | Production 2018-19 | Exports 2017-18 | of which to EU-28 | Trend 2018-19 / 2017-18 |
|---|---|---|---|---|
| Chile | 240 000 | 157 111 | 93 496 | + 5 % |
| Israel | 120 000 | 52 500 | 41 567 | + 45 % |
| Spain | - | 52 318 | 48 600 | + 15 % |
| Morocco | 24 000 | 23 000 | 22 000 | - 60 % |
| Colombia | - | 28 500 | 28 000 | + 40 % |
| **Total 5 suppliers** | **-** | **313 429** | **233 663** | **+ 10 to 12 %** |
| **Mexico** | **2 200 000** | **1 133 646** | **62 146** | **+ 10 to 25 %** |
| | | | **Total EU-28** | **+ 12 to 18 % ???** |

Professional sources

# Information... your weak link?



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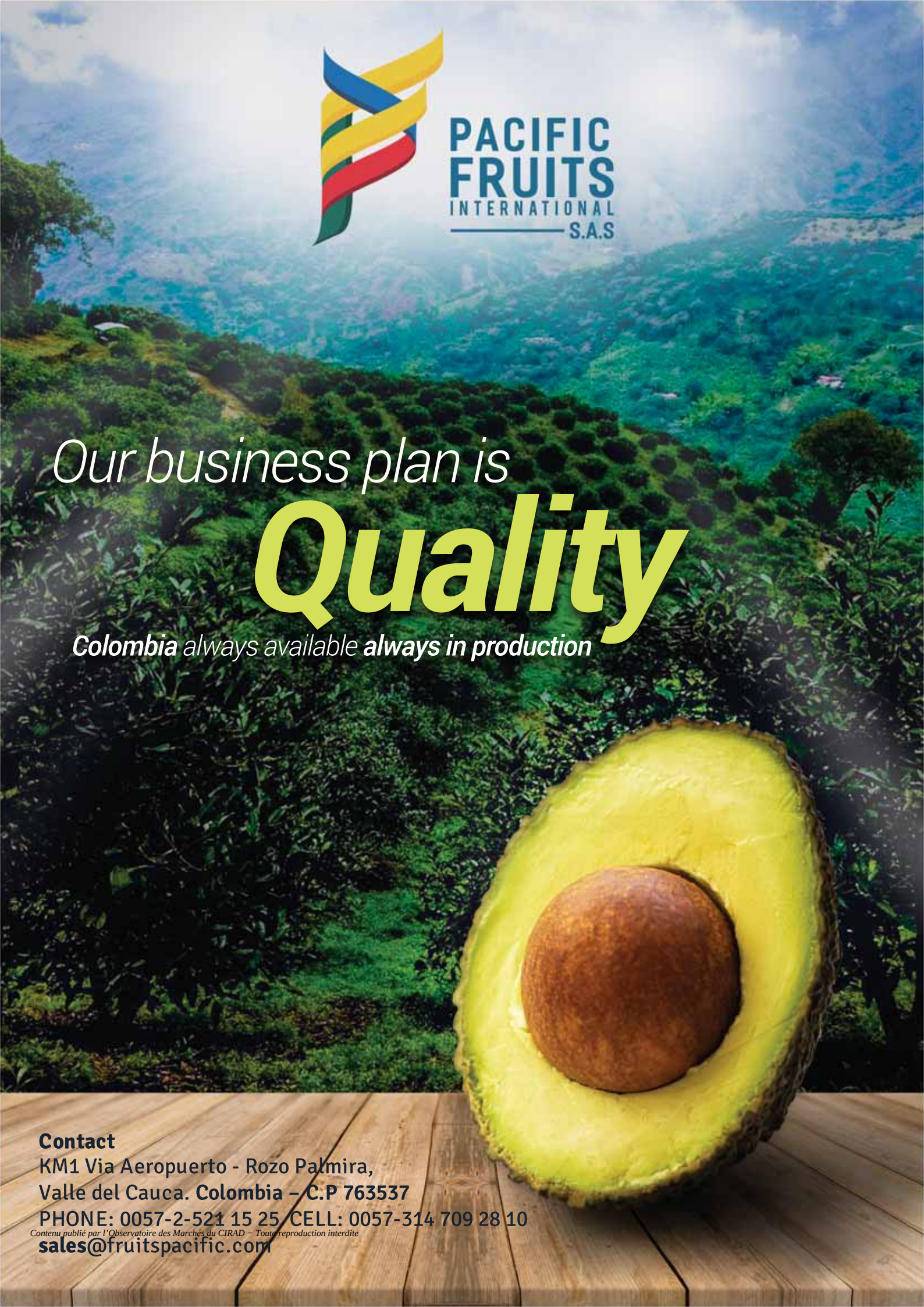
# Hass avocado
# Production prospects

## Managing world production growth

**The virtue of the summer crisis from which the EC market has just emerged was to highlight the rapid production rise of certain Southern Hemisphere producer countries. Yet what about the countries supplying the winter market?**


© Jean-Pierre Coulet




# The avocado - a lucrative, and therefore fast-moving industry

The avocado is seeing rapid development, at the risk of perhaps in the medium term falling victim to its own success. The return of a summer crisis in 2018 on the EC market is an alarm signal highlighting two vital points. The first so fundamental that it might seem banal, yet it has been forgotten after years of smooth growth: demand has limits. The second, while more clearly seen, really made itself clear in 2018: world production is progressing rapidly among suppliers to the counter-season market. This latter point, which concerns the summer season, should make us question the supply prospects during the winter season, hitherto low-profile, before a first accident possibly forces us to do so.

**Avocado – Estimated average annual growth of the world production**

| | Surface areas (ha) | Annual growth (ha/year) | Average yield (t/ha) | Production growth (t/year) |
|---|---|---|---|---|
| **Total** | **337 050** | **20 725** | **11.1** | **229 065** |
| **Winter season suppliers** | **266 500** | **16 300** | **10.6** | **171 975** |
| **Latin America** | **224 800** | **14 000** | **10.7** | **149 800** |
| Michoacán | 158 800 | | | |
| Jalisco | 21 000 | | | |
| Chile | 30 000 | | | |
| Colombia | 15 000 | | | |
| **Mediterranean** | **29 800** | **1 750** | **10** | **17 500** |
| Spain | 13 500 | | | |
| Israel | 9 200 | | | |
| Morocco | 6 000 | | | |
| Portugal | 1 100 | | | |
| **Others** | **11 900** | **550** | **8.5** | **4 675** |
| New Zealand | 3 800 | | | |
| Australia | 8 100 | | | |
| **Summer season suppliers** | **70 550** | **4 425** | **12.9** | **57 090** |
| **Latin America** | **27 500** | **2 675** | **15** | **40 125** |
| Peru | 26 000 | | | |
| Brazil | 1 500 | | | |
| **Africa** | **22 450** | **1 900** | **9.6** | **18 240** |
| Southern Africa | 17 500 | | | |
| Kenya* | 4 000 | | | |
| Tanzania | 950 | | | |
| **Others** California | **20 600** | **-150** | **8.5** | **-1 275** |

* Estimated surface areas based on exported volumes / Professional sources, official services

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# One million tonnes of additional exports from Mexico by 2030

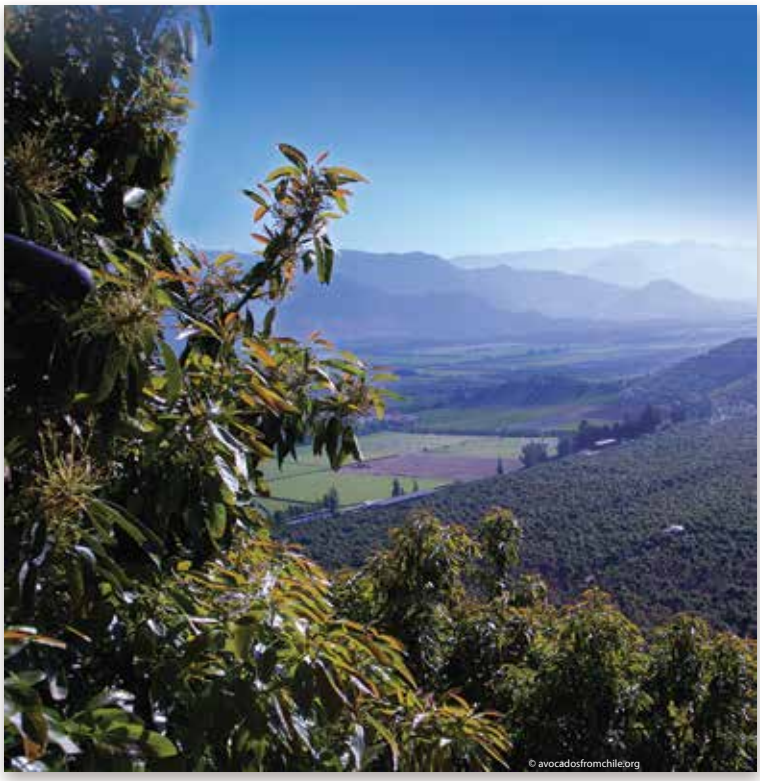
The volume increases expected during the 2018-19 winter season are set to usher in more. This is what is revealed by analysis of the Hass worldwide cultivation area. Of course, South America has the clearest growth. Surface areas are continuing to expand at an impressive rate in Michoacán. The cultivation area, covering just over 166 000 ha in 2018, has grown at an average tempo of approximately 10 000 ha per year for the past three years. It is above all the eastern fringes (Ario, Turicato, Tacámbaro) and western fringes (Los Reyes, Tingüindín) of the avocado region that are seeing the clearest progress, with the core areas seeing much more limited growth for lack of space (Tancítaro, Uruapan, Peribán). Jalisco is not to be outdone, with surface areas already reaching 22 500 ha in 2018 (world number four cultivation area behind Michoacán, Peru and Chile), and growing by nearly 2 000 ha per year on average for the past three years. It is above all the zones close to Ciudad Guzmán which are seeing the biggest progress (San Gabriel, Zapotlán, Gómez Farías). Hence according to a projection by the Ministry for Agriculture (fairly conservative since it assumes a slowdown in the planting rate in Michoacán over the coming years), production should grow by more than one million tonnes by 2030, to nearly 3.2 million tonnes. A hypothesis that seems wholly realistic given the average yields in these two zones (9 to 10 t/ha in Michoacán and 15 t/ha in Jalisco), and the average rate of surface area expansion in recent years. According to this same study, the bulk of these additional volumes should be aimed at the international market (export potential 2.1 million tonnes as opposed to 1.1 in 2017-18).

## Colombia, following exactly in Mexico's footsteps

Colombia is following Mexico's footsteps. According to the latest available professional estimate, the cultivation area has already reached approximately 17 500 ha, and is expanding at a rate of approximately 2 000 ha per year. The dynamic is tending to gather pace with the opening up of the US borders and the increasingly significant arrival of foreign investors (such as the Peruvian giant Camposol, which has just purchased 350 ha of land, and declared its intent to set up 2 000 ha of plantations in Colombia). Growth in surface areas is particularly significant in the centre of the coffee zone (Departments of Caldas, Quindío and Risaralda). The country's assets, such as its ideal geographic location for serving both the US and European markets, and its wide production calendar, are attractive; although the lack of road infrastructures (link roads to the secondary network) and port infrastructures remains a weighty issue. Management of heterogeneity of maturity is another technical challenge to address, in this country where some zones can boast multiple flowering, another common point with Mexico.

## Chile's awakening?

Chile seems to be emerging from a gloomy spell, when persistent drought brought about a collapse in the cultivation area of more than 5 000 ha (not to be mention plantations mothballed by severe pruning). The return to more generous rainfall and better profitability, thanks to the repositioning on the EC market and on the local market, seems to have caused renewed interest in the avocado. The trend is still limit. It is aimed mainly at the climatically most suitable zones with more abundant water (Santo Domingo centre on the coast of Region V).




## Growth in surface areas gathering pace in the Mediterranean

The excellent level of Moroccan exports in 2017-18, and the no less high Israeli level expected this season show that the Mediterranean cultivation area is also on the move. Surface areas are reportedly expanding at around 500 ha per year in Israel, with an acceleration in this tempo very likely according to some professionals (700 to 800 ha). Although interest in green varieties remains marked among some producers (especially Reed, with its high yield and value earned on the local market), the bulk of new planting involves Hass or Hass like. At least half of the expansion is taking place in the south of the country, in the western tip of the northernmost part of the Negev Desert (especially within a radius of 20 to 30 km around Ashkelon).

Similarly, there is a clear dynamic in Morocco, with surface areas expanding at around 600 ha per year, and with Hass now practically the only variety being planted under the development programmes. While plantations are continuing to be set up especially in the traditional Kénitra/Larache zone, some have also been developed in the Azemmour region north of Casablanca. The dynamic remains for the most part driven by small to medium-sized producers, with technical support from big players in the sector.

## Spanish cultivation area not all that static

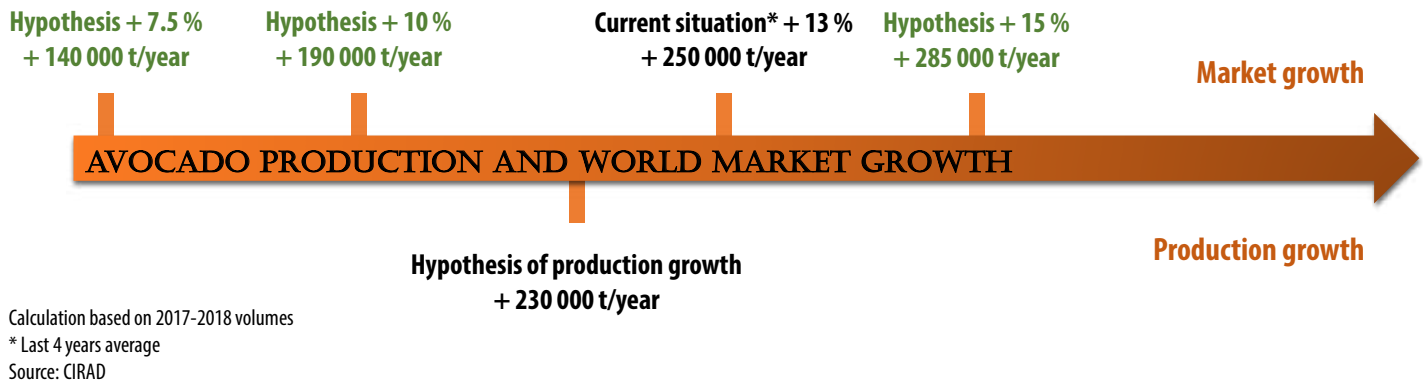
Is the progress in avocado exports from Spain due solely to the country's developing role as a hub? Is the big picture being concealed? In part, since a fine analysis of the avocado sector shows that the cultivation area is getting going (approximately + 650 ha/year). The majority of the expansion in surface areas should not be sought in the traditional production centre of Axarquía. For lack of sufficient land and above all water resources, expansion is reportedly only approximately 150 ha per year in this zone. This situation could change in the medium term, since the sector professionals have developed and are ready to finance a large-scale project that would double the cultivation area, using some of the water lost from the Rio Guadiaro. However, this project remains in political limbo, despite its economic and social advantages. Hence other cultivation zones are currently expanding, in some cases at a fast tempo. Growth is reported to be around 300 to 400 ha per year in the River Guadiaro valley (boundary between Cadiz and Málaga provinces). Similarly, there are large projects under development in the zone between Huelva and the Portuguese border (+ 200 to 300 ha per year). Finally, a large number of small-sized facilities are being set up in the Valencian Community, in particular in the provinces of Alicante and Valencia (+ 150 ha per year). These zones have generally more abundant water and land resources, especially thanks to conversion from less profitable crops such as citruses. In some cases, they are also under sometimes borderline conditions in terms of climate, which is windier and more frost-prone. Time will tell as to the real potential of these new cultivation zones.

## Growth in world production from all sides

The analysis presented in this article has shown that during the winter season too, the supply to the world market should become very significantly stronger. On the one hand, new giants are emerging. Professionals from Colombia and Jalisco within a few years have been able to build industries on the strength of a cultivation area comprising nearly 20 000 ha or more, and set to feature very prominently among the world's top exporters. Furthermore, traditional market suppliers too have all seen renewed growth. Barring the exceptional case of Michoacán, which everyone could seem coming given the extraordinary proportions of its industry and its growth, all the market suppliers appear to have fairly clear dynamics (more than 500 ha per year, even among the Mediterranean suppliers). Finally, emerging industries are progressing not only in Portugal, but also in Ecuador or Guatemala. According to our projections, which cover producer countries supplying the counter-season market, the dynamic for which was presented in **FruiTrop** edition 256 (May 2018), the Hass world production growth rate should be around 220 000 to 230 000 t per year over the next five years.

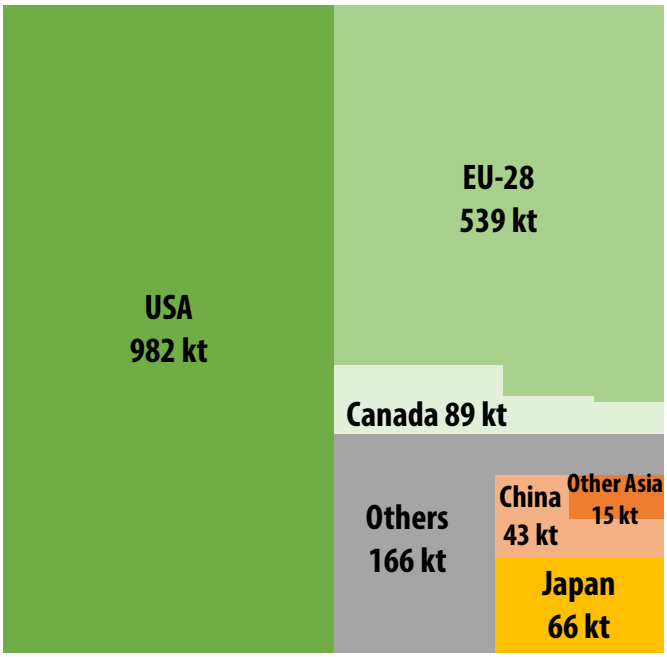

## A tight balance, which could quickly become precarious

As high as it may be, this rate remains exactly compatible with the hypothesis of worldwide growth in demand maintaining its current footing, i.e. 13 % per year (the four-year average). Nonetheless, it must be highlighted that the world market is currently relying on just two mainstays, namely North America (USA and Canada) and the European Union. They have taken in 95 % of the growth in world production over recent campaigns. Yet given the already high consumption levels reached in certain countries, threshold effects are bound to appear in the medium term. In Europe, the case of Scandinavia, which has been stagnant for several years, is symptomatic, whereas in the USA, growth is slowing down in California.




Calculation based on 2017-2018 volumes
* Last 4 years average
Source: CIRAD

**The avocado, a world market of 1 900 000 t (2017-18)**
(Customs sources)




## Asia – big markets, but for the future

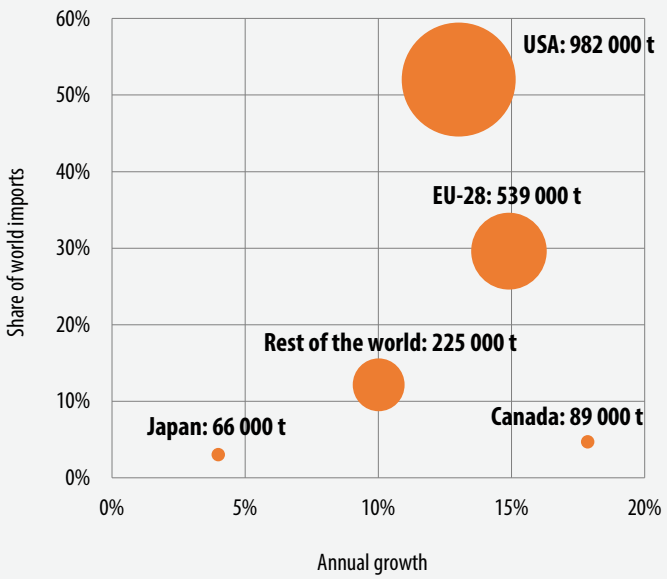
Well yes, the world is no longer limited to Europe and the United States. While growth reserves for the local markets in producer countries have already been largely tapped with success, Asia represents enormous potential which is barely starting to be unearthed. However, export figures show that this rich vein is only very gradually revealing itself, and that it is hard to exploit, both because of its distance from the world's main production centres and the difficulty in introducing what is often an alien product. Besides Japan which is no longer on the rise, the countries in this region absorbed approximately 60 000 t in 2017-18, i.e. barely more than 3 % of world trade. Furthermore, supplier countries with a small presence in Europe or the USA, such as New Zealand and Australia, also have ambitions on these markets, for which they have an obvious logistical asset. Nonetheless, this potential competition is rather for the future than tomorrow, given the still relatively limited size of these countries' cultivation areas (approximately 3 800 ha in New Zealand and 8 100 ha in Australia).

## Promotion and prudence must remain the watchwords

Until the growth relays in Asia really get going, it would seem important to further step up the promotion actions, in order to make the most of the growth margins still available in the USA or EU. There are big margins, whether on under-consuming markets such as Germany, or others which are already big consumers but still far from maturity, such as France or the United Kingdom. The WAO's resources for stimulating the European market are still far too limited, as is attested by a budget approximately 20 times smaller than the HAB's (USA), for a population 1.5 times bigger. A parafiscal tax of a few eurocents per box earmarked for promotions seems more than ever like a good investment against any turnarounds in the market. It also appears clear that the "demand" dimension must now be much better incorporated into investment projects in new plantations. The current expansion rate of the cultivation area, of approximately 20 000 ha per year according to our estimates, seems to be a sound upper limit for the time being ■

**Eric Imbert**, CIRAD
eric.imbert@cirad.fr

**Avocado - Size and growth of major world markets**
(2017-18 imports and growth last 4 years average / source: CIRAD)




## 2019 WAO promotion campaign

The WAO will be both stronger and more visible in 2018-19. Stronger in that Spain and Colombia have joined the list of member countries, which now numbers nine (Mexico, Peru, the USA, South Africa, Tanzania, Zimbabwe and Mozambique, in addition to the above-mentioned newcomers). The organisation represents 70 % of volumes marketed in the European Union. More visible in that with a reinforced budget, especially through these new members (2.8 million euros), the number of markets covered by WAO actions will also increase. Two southern EU countries with low consumption have been targeted: Italy and Spain itself, where actions started this summer at Eroski. Furthermore, the WAO will become truly global in 2019, initiating the first generic promotion campaigns in China.

The promotion tools will also see changes, with all promotion media now translated into Spanish as well as English, French and German. New communication modes will also be launched. For the first time, a fresh fruit will partner the famous Michelin guide. The WAO will be involved at the party unveiling the chefs chosen by the Guide for its 2019 UK & Ireland edition in early October, offering avocado-based appetisers and beer.

# Producer country file

# The avocado in Israel

*by Eric Imbert*

**A pioneering and predominant Mediterranean origin, Israel is among the top twelve producer countries, with an average harvest of 100 000 t and still growing, still largely composed of green varieties. Focused on exports, this country provides a significant part of the supply to the Community market during the winter campaign, and has played a big part in raising the product's profile. The cultivation area is still seeing considerable growth, in particular for Hass.**

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# The best of the avocado

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# Avocado – Israel

## Location

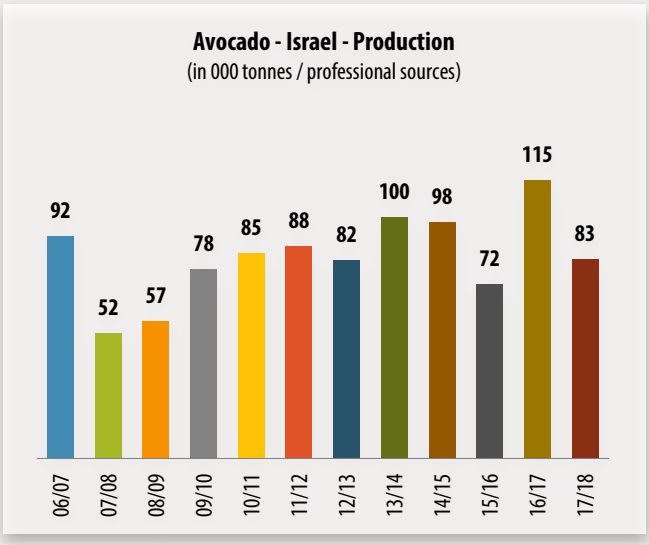
The majority of the Israeli's cultivation area's 9 200 hectares is situated on a coastal strip approximately 25 km wide extending from Tel Aviv to the Lebanese border. This region where Hass is very well-established has a hot Mediterranean climate. There are two distinct major centres separated by Mount Carmel. To the south, the Sharon Plain, extending from north of Tel Aviv to Mount Carmel, packs in approximately just over one quarter of production. In the north, western Galilee also produces just over a quarter of the national harvest, in a zone reputed for the quality of its fruits which extends from the city of Acre to the Lebanese border. The country's second major production centre is situated in the north-eastern valleys (Upper Galilee, Jordan Valley). These zones, rather specialised in green varieties, account for approximately 20 % of national production on their own. The rest of the cultivation area is packed into the north-west of the Negev, a more recent development zone with a hotter climate (semi-arid). This production centre, rather specialised in Hass, is exhibiting a development trend since it has larger land reserves than the rest of the country.



# Avocado – Israel

## Production

The crop developed rapidly from the late 1950s, with planting culminating at 11 000 ha during the 1980s. Thereafter, surface areas gradually halved, after a succession of difficult campaigns and the implementation of an economic policy less favourable for the primary sector. The cultivation area, which covered no more than 4 000 ha in the early 2000s, rallied to reach approximately 9 200 ha. It is growing at a rate of approximately 450 to 650 ha per year, limited by the production capacity of the nurseries and by the availability of agricultural land in the traditional production centres. The growing harvest has fluctuated between 85 000 and 115 000 t in recent seasons (approximately 30 to 35 % Hass and 65 to 70 % green varieties). There can also be high production variations from year to year, often due to the Hamsin, a hot wind that blows sometimes between April and June. The dry climate helps limit sanitary problems (no Phytophthora in particular). Hence, rational agricultural is very widespread. Average yield levels are good (approximately 15 t/ha for Hass and 20 to 25 t/ha for green varieties) thanks to a high farm technology level (cutting-edge irrigation systems based 90 % on micro-irrigation, recent high-density planting, etc.). The availability, quality and cost of irrigation water, still highly problematic in the early 2000s, has distinctly improved in most zones thanks to massive use of recycling, and to a lesser degree desalination (approximately 90 % of requirements covered by recycled water). Water requirements are greater in the eastern valleys than on the coastal strip. Nearly three-quarters of production originates from kibbutzes or Moshavs, kinds of agricultural cooperative. The country has a dozen nurseries with a significant production of avocado plants (five of which are large-scale). Their total production is estimated at approximately 500 000 to 600 000 plants/year. The Volcani Center and the Fruit Board provide the industry with scientific and technical support.



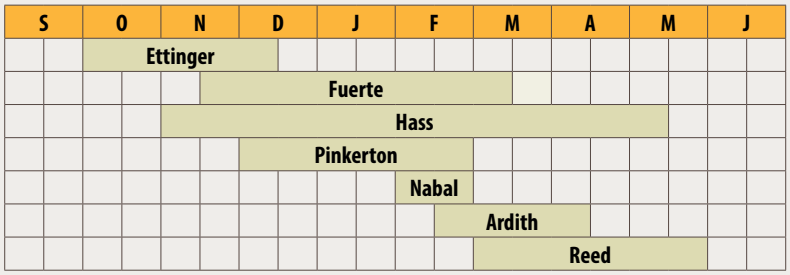

Photos © Eitan Zvi

# Avocado – Israel

## Production calendar and varieties

The season is relatively long thanks to the wide varietal range, which has seen major changes. The emphasis is currently being placed on Hass and "Hass like", which represent just over 50 % of total surface areas and a large part of new plantations. Nonetheless, producers are not abandoning the green varieties, easier to handle, with a much higher yield and highly lucrative on the local market (especially Reed). Pinkerton and Ettinger remain the two predominant varieties (respectively 12 and 18 % of total surface areas). Fuerte has lost momentum, now representing just 3 % of surface areas, while Reed has grown (8 %). The rest of the range is composed of Ardith, Arad, Nabal and Fino. The Volcani Center is developing a research programme into new varieties: "Hass like" such as Naor and Lavi, recently patented, early green varieties (Galill) or late varieties (Moti).

**Avocado – Israel – Production calendar**

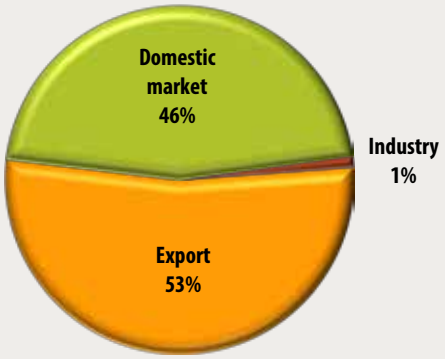




## Outlets

The industry is focused on exports. However, the local market, which consumes practically exclusively green varieties, plays a key role since it is proving highly lucrative, even for merchandise without sufficient quality standards for export. Israel's 8.5 million or so population is currently consuming growing volumes, representing 45 to 50 % of the harvest. Hence, consumption per capita figures among the world's highest, fluctuating between 5.5 and 6 kg/year, depending on the production level and price. The big fruits (calibres 10 to 14) are the most prized, especially for the Pinkerton and Reed varieties. Hence volumes available for processing are highly limited.

**Avocado - Israel - Outlets**
(professional sources)

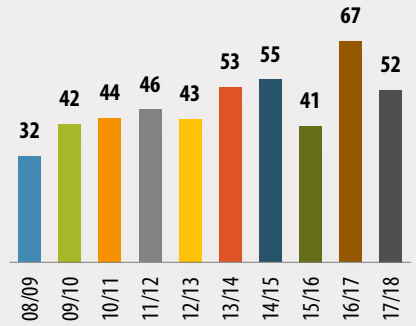


# Avocado – Israel

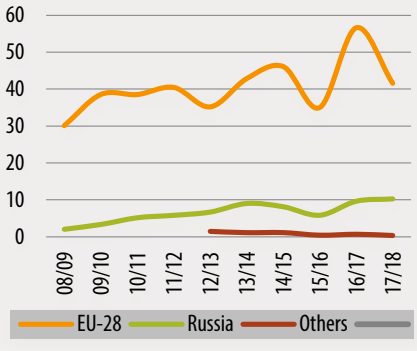
## Exports

Exports, which follow the sometimes pronounced cyclical pattern of production, are up slightly from the beginning of the decade. Volumes are currently fluctuating between 55 000 and 65 000 t across all destinations during a campaign with normal climate conditions (35 to 40 % Hass). Approximately 80 to 85 % of volumes are still aimed at the European Union, where Israel has played in a big part in raising the avocado's profile and increasing its consumption. The freshness of Israeli fruits, due to a limited transport time to Europe, is a major asset. The country's two main markets are France and the United Kingdom, where the Israeli Hass has seen big growth in recent seasons. The Benelux, Scandinavian and German markets come next in the ranking. East European countries, whether the intra or extra-Community, have become major destinations for green varieties, which have an increasingly narrow outlet in Western Europe. Hence Russia currently takes in 15 to 20 % of total exports. The country has a good dozen packing stations. The two main ones, Granot (situated near Hedera to the north of Tel Aviv) and Milopri (situated in western Galilee near Acre), pack approximately half of production on their own. Liberalised since the end of the State monopoly held by Agrexco until 1993, exports are now in the hands of a dozen private companies. Nonetheless, the two main ones, Mehadrin and Galilee, represent 90 % of volumes on their own.

**Avocado - Israel - Exports**
(in 000 tonnes / sources: Eurostat, Trademap)




**Avocado - Israel - Exports by destination**
(in 000 tonnes / sources: Eurostat, Trademap)




**Pinkerton**

**Avocado – Israel – Main operators**

| Operators | Market shares |
|---|---|
| Mehadrin | 45 % |
| Galilée | 45 % |
| Others | 10 % |

Professional sources

## Logistics

The merchandise, loaded in reefer containers, are taken by refrigerated lorries to the port of Ashdod or Haifa. They are then shipped via generalist shipping lines serving the Mediterranean. France (Fos-sur-Mer) is served in 5 days, the United Kingdom (Felixstowe) in 12 days and the Netherlands (Rotterdam) in 13 days. Three European ports are used as transit points: Marseille/Fos to serve a large part of West European markets (especially at the beginning and end of the season when export volumes are limited), Rotterdam to serve Eastern Europe and to a lesser degree, Koper (Slovenia) to serve both Eastern and Western Europe.

**Avocado – Israel – Sea freight**

| Market | Main lines | | Transit time | Observations |
|---|---|---|---|---|
| | Port of departure | Port of arrival | | |
| EU | Ashdod<br>Haifa | Fos sur Mer | 5 days | Non-specialized lines |
| | | Felixstowe | 10 days | |

# Producer country file

# The avocado in Chile

*by Eric Imbert*

**Chile is one of the historic players and one of the mainstays of the world avocado trade, with Hass exports of around 150 000 to 160 000 t per season. After facing a serious climate crisis and major outlet problems during the first part of the decade, professionals were able to bounce back, focusing on the EU-28 market and on the local market, in a less tight context in terms of water resources. On the strength of its newly regained balance, the cultivation area has taken a slight upturn, by targeting zones with the best water availability.**

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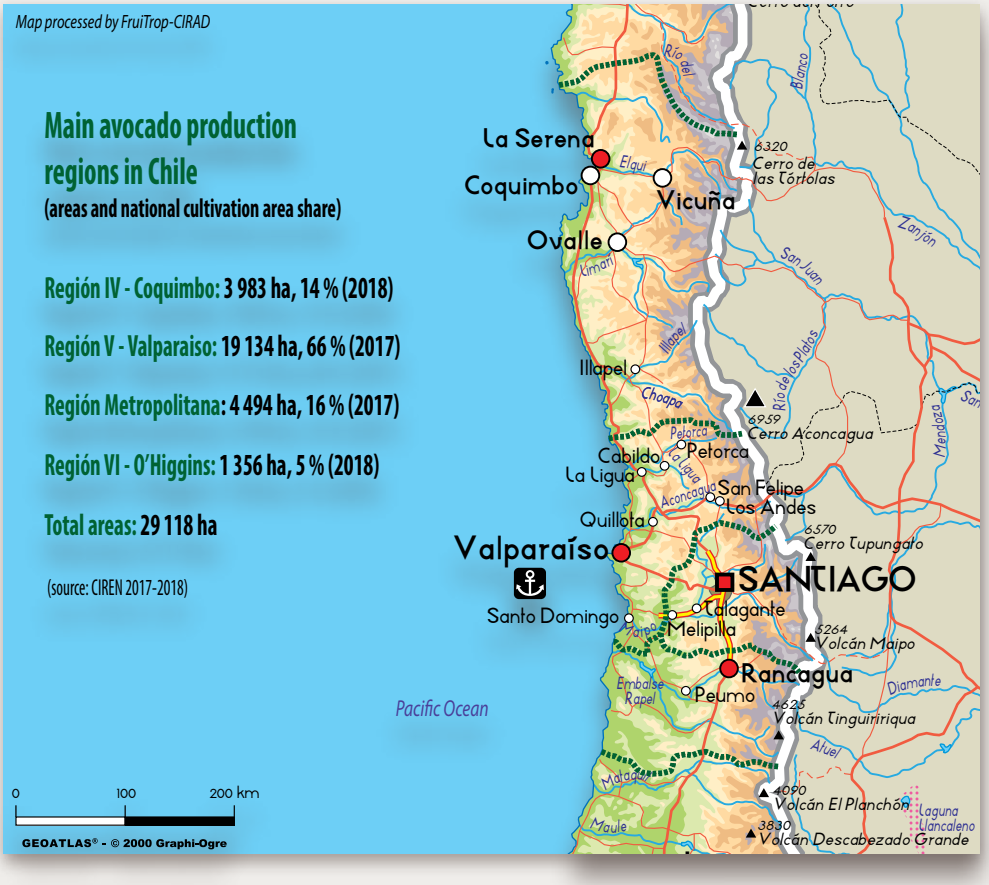
# Avocado – Chile

## Location

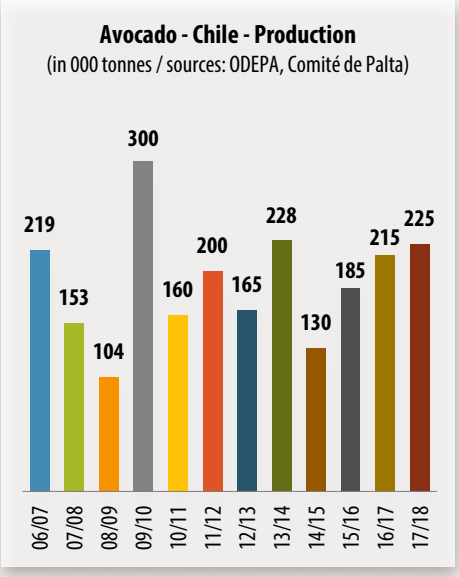
Chile has assets for export fruit production thanks to the natural sanitary protection provided by the sea, the Andes Range and the Atacama Desert. The avocado planted area, which extends over approximately 29 000 ha, is primarily concentrated in the centre of the country with its dry Mediterranean climate, in the valleys of big rivers running down from the Andes and discharging into the Pacific Ocean (La Ligua, Petorca, Maipo, Limari, Elqui and above all Aconcagua). According to the 2017 and 2018 surveys, two-thirds of total surface areas are in Region V (Valparaiso region), divided between three centres. The Aconcagua valley centre is by far the biggest, on its own packing in 25 % of surface areas in the lower valley (the traditional production centre of Quillota province) and 14 % of surface areas in the upper valley (more recent orchards in San Felipe province, developed by farming the foothills of the Range). The valleys of the rivers Petorca and La Ligua, situated further north, are also big production zones with respectively 17 % and 14 % of total surface areas. Nonetheless, this centre, where water resources are limited, has greatly declined. Conversely, the region's third production centre, the lower valley of the River Maipo, is on a growth trend thanks to better water resources (8 % of surface areas). The rest of the cultivation area can be found primarily in the neighbouring regions. Surface areas are on a slightly downward trend in the Metropolitan region (15 % of total surface areas), where the cultivation zones are concentrated in the middle valley of the River Maipo (Melipilla/Talagante zone). There is a steeper fall in Region IV (Coquimbo region), which encompasses 14 % of total surface areas, and where the cultivation area is concentrated in the valleys of the Rivers Limari, Choapa and Elqui.

# Avocado – Chile

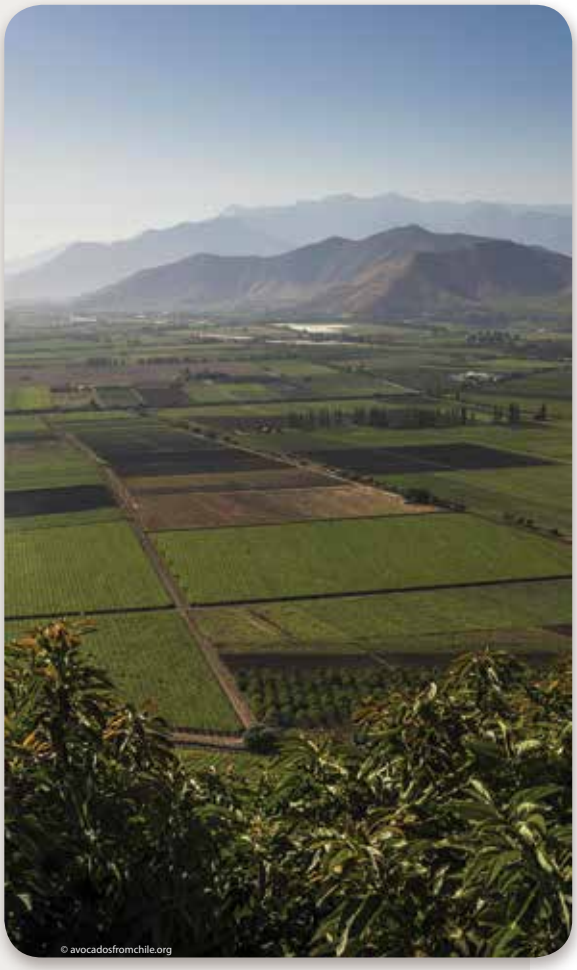
## Production

The promotion work conducted jointly in the USA by "Comité de Palta" and the HAB helped the Chilean industry take off in the mid-1990s, by developing an export activity for feeding the growing appetite of North American consumers. The cultivation area of the traditional production centres, mainly situated in the temperate zones close to the coast of the lower valleys of rivers such as La Ligua, Petorca and above all Aconcagua, expanded. Then, from the 2000s, new production zones were established in the colder parts of the upper valleys of these same rivers. This newer planting was often carried out by colonising the slope zones of the lower foothills of the Range, less costly to purchase and less exposed to the risk of frost, though also more difficult to turn a profit and farm (higher production cost, in particular given the higher energy requirements due to the need to pump water up to the terraces). Hence the Chilean industry has progressively upscaled, with production exceeding 250 000 t and surface areas 35 000 ha by the late 2000s.




After this, the outlook was less bright. Firstly, economic returns greatly deteriorated due to the Mexican competition's surge in the USA, in an unfavourable exchange rate context. Secondly, climate conditions became highly unfavourable. Frosts proliferated in the most exposed zones. And above all, the country was hard hit by a long and intense period of drought between 2007 and 2014. The cultivation area collapsed due to the abandonment or mothballing of many plantations through radical pruning, with production falling to between 160 000 and 200 000 t in the early 2010s.

The situation has distinctly improved since 2015-16, with the production potential returning to a level of approximately 250 000 t in a normal year. Profitability regained a good level thanks to refocusing on the European market and on the local market, as well as better technical management (alternate bearing better controlled, yields to reach 10 t/ha on average). Labour availability is also higher, with the arrival of immigrants. Finally, the water constraint has been less severe, with the return of more generous rainfall. Nonetheless, water availability remains a constraint, for lack of a sufficient number of retention infrastructures. Water use for agriculture in certain regions has become a societal problem, widely covered in the national and international media. Hence planting has resumed at only a moderate rate, targeting the zones with good water availability (north of Region VI, southern Maule, coastal zone of the Metropolitan Region, though salinity problems remain limiting there). The industry comprises a large number of producers (2 700, with 70 % farming less than 5 ha), though the cultivation area is primarily in the hands of medium to large-sized facilities (more than 300 farms of more than 20 ha, with 50 of more than 100 ha). Sanitary problems are limited (*Phytophthora*, red spider mite *Oligonychus yothersi*, avocado thrips *Heliothrips haemorrhoidalis*).

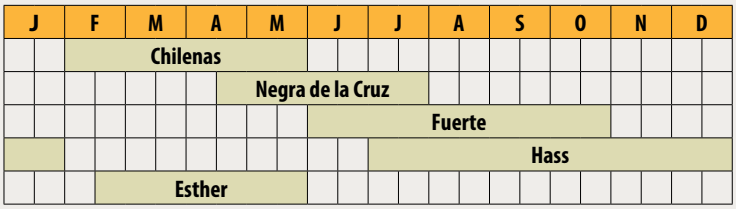


# Avocado – Chile

## Production calendar and varieties

Introduced in 1949, Hass now represents more than 90 % of total surface areas, after explosive development in the 1990s. The production calendar covers a wide period running from early August to early April, thanks to the heterogeneous distribution of plantations in terms of latitude and distance from the sea. The most inland zones are the earliest, while the coastal zones are the latest. Fruit theft, an increasingly big issue, is encouraging certain producers to harvest early. The rest of the stock comprises a wide varietal range. Edranol is the most commonly encountered (4 % of surface areas), primarily used as a Hass pollinator. The proportion of Fuerte has fallen greatly (2 % of surface areas). The numerous Chilean varieties, predominant in the 1970s, are now very marginal and aimed at the local market. The main one, Negra de La Cruz, reportedly represents no more than 1 % of surface areas.

**Avocado – Chile – Production calendar**



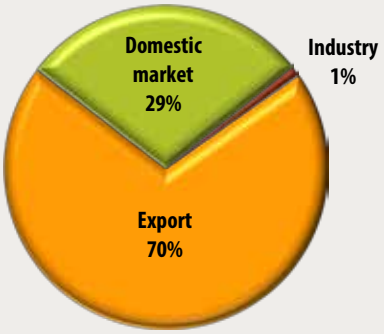


**Avocado – Chile – Calendar by zone**

| Zones | Regions | Beginning of the harvest |
|---|---|---|
| **Very early zones** | Region IV: Vicuna<br>Region V: Pétorca, San Felipe, Los Andes | June/July |
| **Early zones** | Region IV: Ovalle<br>Region V: Cabildo | mid-July/August |
| **Season/late zones** | Region IV: Illapel<br>Region V: La Ligua, Quillota<br>Metropolitan Region: Melipilla<br>Region VI: Peumo | end of August |
| **Very late zones** | Region IV: La Séréna<br>Region V: Santo Domingo | end of October |

Source: after Gardiazabal 2005

**Avocado - Chile - Outlets**
(professional sources, Comité de Palta)



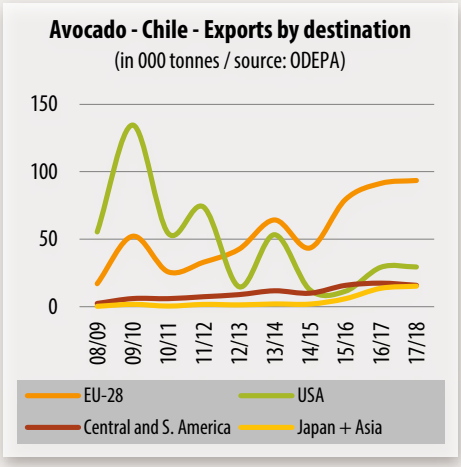

## Outlets

Exports, the original outlet for Chilean production, remains predominant with a market share of approximately 70 % in a normal production year. However, the local market has expanded significantly since the beginning of the decade thanks to the big promotion effort undertaken by "Comité de Palta". It now takes in approximately 65 000 to 70 000 t per year of Chilean fruits in a normal production year, and 5 000 to 10 000 t of counter-season avocados imported mainly from Peru and Mexico, taking the annual consumption per capita to more than 4 kg. Furthermore, the local market presents the advantage of being easy to work and secure in terms of payment for producers. Volumes aimed at the processing sector are marginal.

# Avocado – Chile

## Exports

The export sector was built with a view to feeding the US market, which at a very early stage was worked jointly by "Comité de Palta" and the California Avocado Growers' Association in terms of marketing. Volumes took off in exemplary fashion in the late 1990s, going from less than 20 000 t in 1997-98 to nearly 200 000 t in 2009-10. However, the dizzying rise of the Mexican competition in the USA and very harsh weather changed the hand. Volumes were in freefall throughout the first part of the 2010s (from 70 000 to 130 000 t per season), before climbing to between 150 000 and 160 000 t in recent seasons. The EU, initially a diversification market since it was more difficult to operate on (controlled atmosphere mandatory to extend the life to 45 days), has become the number one destination for the Chilean avocado since the 2012-13 campaign (approximately 60 % of shipments). Chile is now the number one supplier to the EC market during the winter season, with volumes of around 90 000 t in recent seasons. Exports to neighbouring markets have also progressed considerably (16 000 to 17 000 t per season, primarily aimed at Argentina). Market diversification efforts are ongoing, in particular targeting Asia (volumes up by 15 000 t in 2017-18, above all aimed at the Chinese market which opened in 2014). The quality of Chilean fruits is renowned on the international markets. The export sector is concentrated, with the top four operators alone accounting for three-quarters of volumes. Propal is by far the country's leading operator, followed by Agricom, with El Parque and Santa Cruz further back.


**Avocado – Chile**
**Main operators**

| Operators | Market shares |
|---|---|
| PROPAL | 34 % |
| Agricom | 15 % |
| Exp. Santa Cruz | 8 % |
| El Parque ltd | 8 % |
| Cabilfrut | 5 % |
| Baika | 5 % |
| Jorge Schmidt | 5 % |
| Exp. Subsole | 5 % |
| Others | 15 % |

Source: ASOEX 2017-18


## Logistics

Most merchandise is transported by road to the port of Valparaiso, which offers the advantage of being situated close to the production zones and which has a USDA inspection station. Controlled atmosphere transport is systematically used for shipments to Japan, and for approximately two-thirds of shipments to the EU.

**Avocado – Chile – Sea freight**

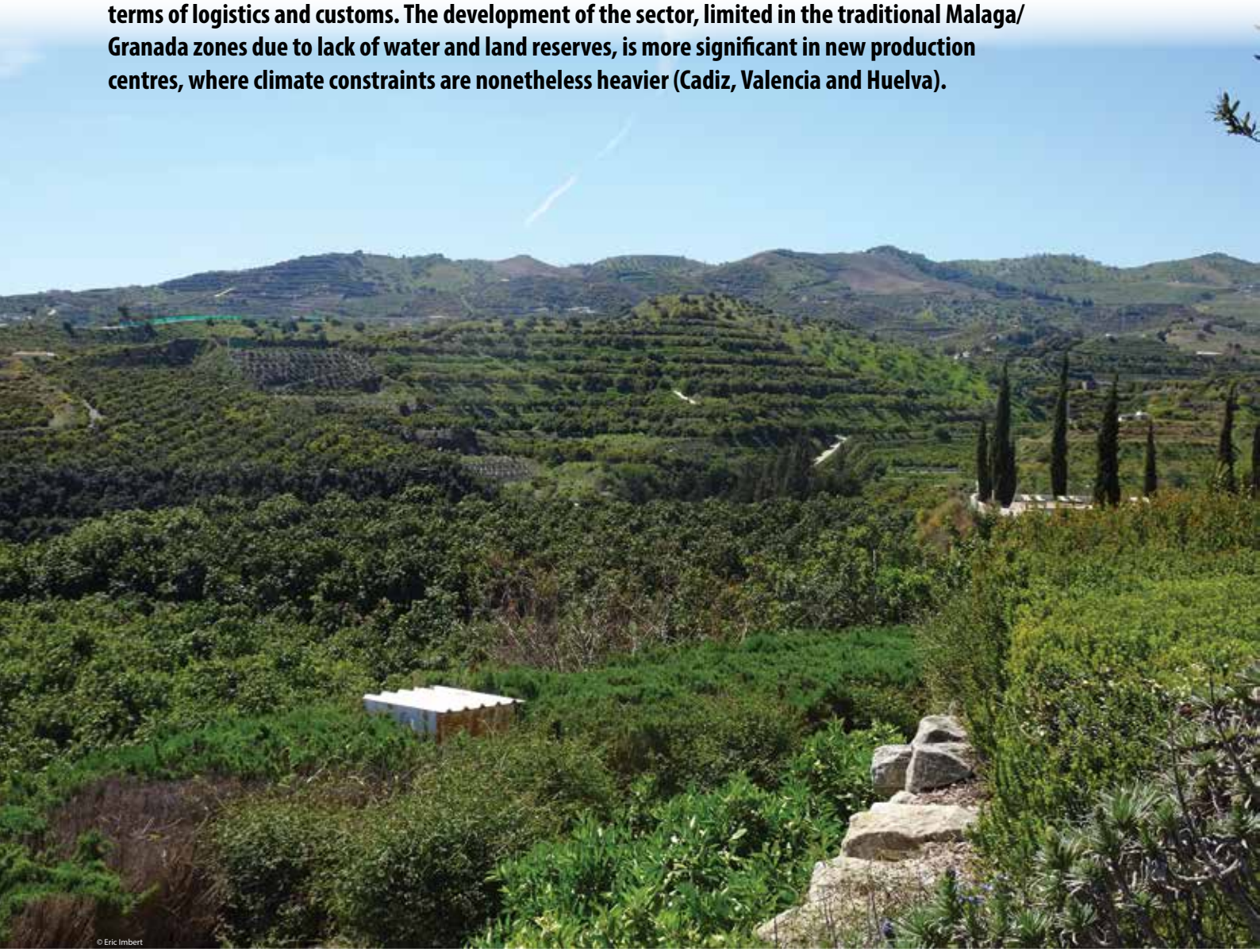
| Markets | Main lines | | Transit time | Lines |
|---|---|---|---|---|
| | Port of departure | Port of arrival | | |
| USA | Valparaiso | West Coast: Los Angeles, Long Beach, San Diego | 20 days | APL |
| | | East Coast: New York, Philadelphia | 19 days | CMA-CGM, Hapag Lloyd |
| China | Valparaiso | Shanghai | 32-35 days | Maersk, Hapag Lloyd |
| EU | Valparaiso | Northern: Rotterdam<br>Southern: Algeciras | 24-25 days<br>23 days | CMA-CGM, Maersk<br>Hapag Lloyd |

# Producer country file

# The avocado in Spain

*by Eric Imbert*

**The Spanish avocado industry, dating back to the early 1970s, is among the world's leading exporters, with shipments of approximately 50 000 to 60 000 t per year. Spain is the only European Union country to produce significant volumes on the continent, thanks to the particular climate conditions of the Andalusian coast. This origin is one of the major players on the EC market, where it has concentrated its shipments in view of the comparative advantages it has in terms of logistics and customs. The development of the sector, limited in the traditional Malaga/ Granada zones due to lack of water and land reserves, is more significant in new production centres, where climate constraints are nonetheless heavier (Cadiz, Valencia and Huelva).**



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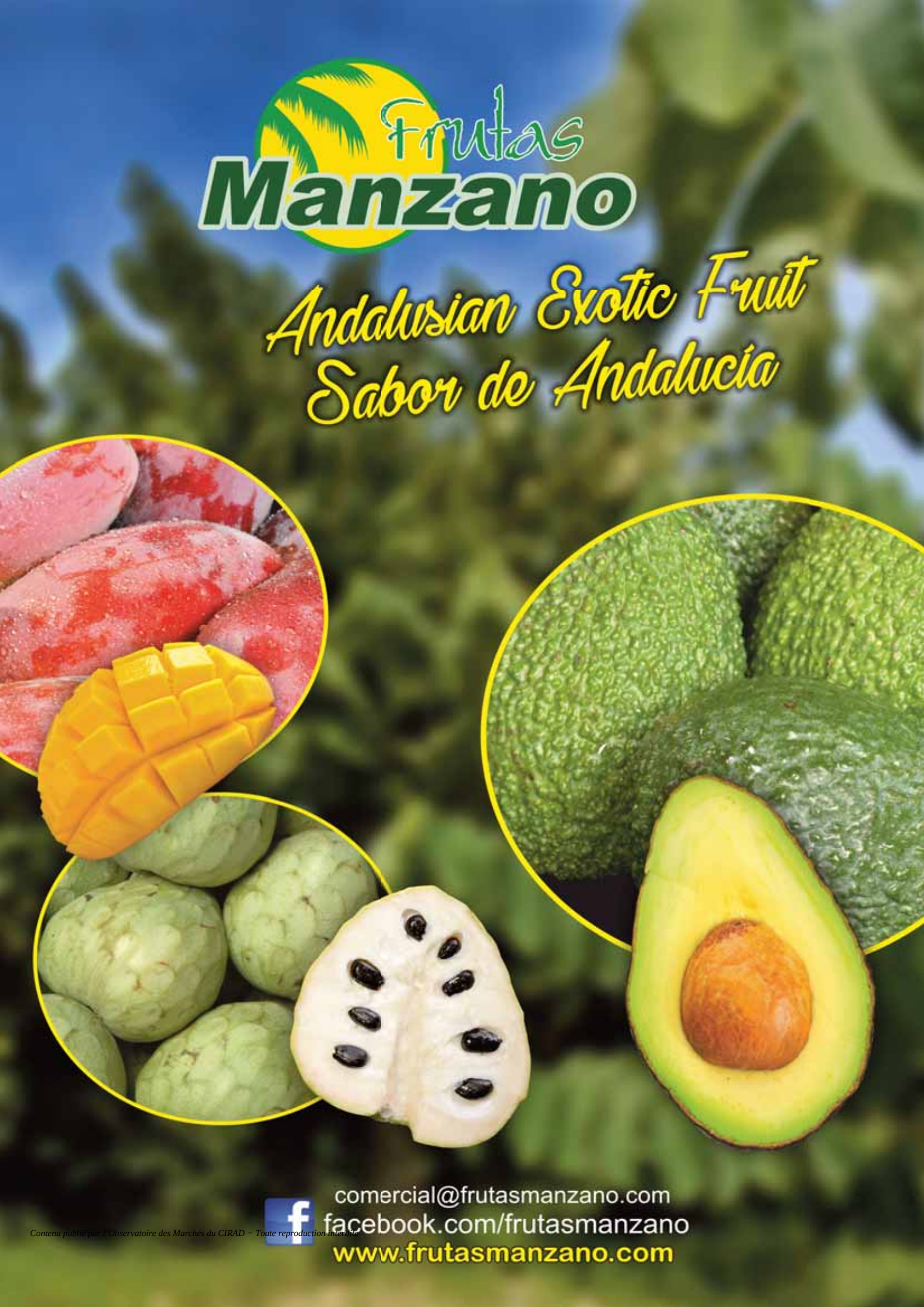
# Avocado – Spain

## Location

More than 80 % of the Spanish cultivation area, which covers approximately 13 500 ha, is packed along the Andalusian coast. It extends mainly along a coastal strip approximately 80 km long and ten or so kilometres wide, ranging from west Málaga to Motril (Málaga and Granada provinces). This zone enjoys a microclimate with very mild winters, atypical on this latitude, due to the proximity of the sea to the south and to the presence of the lower foothills of the Sierra Nevada to the north, a natural barrier protecting it against the cold northern currents while holding back the warm air from Africa. Conversely, the rainfall is generally only 350 to 400 mm/year. The core of the cultivation area is situated in the middle of this zone, in Axarquía, a small sub-region situated around the city of Vélez-Málaga. The rest of export production comes from four fairly recently developed zones, still limited in scale. In the north, the Valencian Community has a cultivation area estimated at between 600 and 800 ha, scattered in coastal zones with hotter microclimates in the provinces of Valencia (Pego, Olivar, Gandia, Sagunto) and above all Alicante (Callosa d'en Sarriá). Temperatures are a limiting factor, in certain zones, especially in Valencia province, since they are mainly planted with Lamb Hass, more cold-tolerant. Surface areas in the south are apparently larger, with more considerable growth in the río Guadiaro valley (approximately 800 ha in Cadiz province, adjoining Málaga province). This zone, well provisioned with water, is nonetheless cooler and windier than the Málaga/Granada zone (frequent use of frost protection systems). Still further south, the cultivation area extends approximately 1 000 ha in the region situated between Huelva and the Portuguese border, where some large-scale projects are under development, at the initiative of private groups and a cooperative in particular. Finally, the Canaries cultivation area, on the strength of its approximately 1 600 ha mainly concentrated on Las Palmas, Tenerife and to a lesser degree Gran Canaria, is also progressing, though mainly with a view to supply the very keen local market, and to a lesser degree shipments to the Mainland.

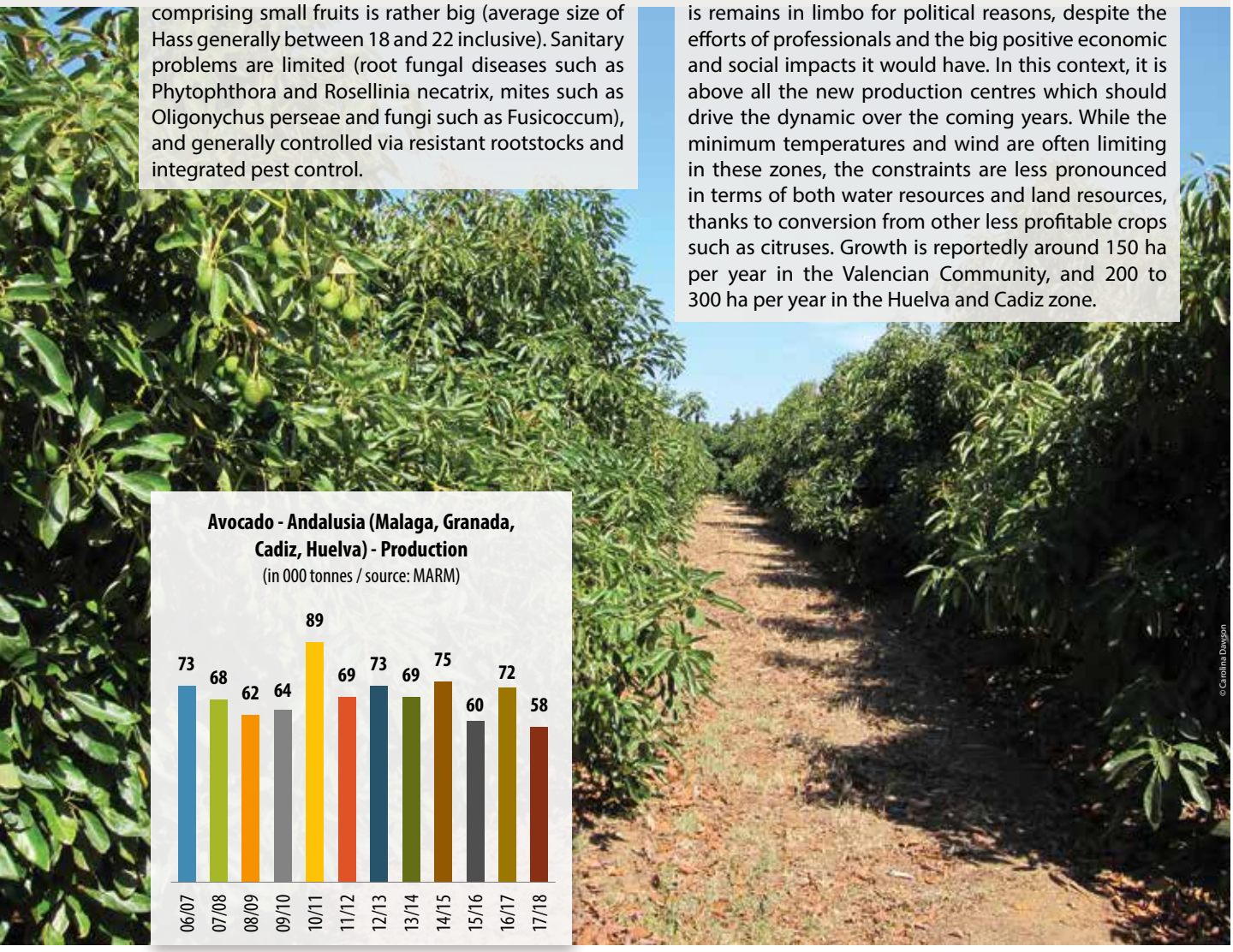


# Avocado – Spain

## Production

The crop was introduced a long time ago to the Canaries (16th Century), but more recently to the peninsula, where the first industrial plantations were set up in the early 1970s. Surface areas, barely covering 1 000 ha by the end of the 1970s, boomed during the 1980s, due to the development of water supply infrastructures and the fall in profitability of open-air market gardening, hit by emerging competition from the Almería zone. They now extend over around 12 000 ha in the Peninsula's export zones. The average farm size varies greatly, with traditional small-sized facilities (less than 5 ha) still common in the Málaga/Granada region (approximately 40 % of surface areas) and in the Valencian Community. Yields are highly dependent on the technical level of the farms and the age of the stock (a wide range of 6 to 14 t/ha for Hass, with an average of around 7 to 8 t/ha). For the same reasons, the share of production comprising small fruits is rather big (average size of Hass generally between 18 and 22 inclusive). Sanitary problems are limited (root fungal diseases such as Phytophthora and Rosellinia necatrix, mites such as Oligonychus perseae and fungi such as Fusicoccum), and generally controlled via resistant rootstocks and integrated pest control.

Spanish production has stagnated between 65 000 and 75 000 t over recent campaigns, despite the good profitability of the crop and a renowned quality level (ultra-fresh fruits due to the immediate proximity of the big European markets). It should only progress in modest proportions in the short term, in the main cultivation centre of Málaga/Granada, where surface areas are expanding at around 150 ha per year. Land pressure is high, in particular in the highly touristy zone in the west of Málaga, whereas the coast of Granada is very rough and difficult to work. Yet above all, availability of agricultural water, from bore holes in the aquifers and rainwater impoundage (Viñuela dam, the main supply source for the area), is a limiting factor. The surface areas of this zone could double in the medium term, if the project aimed at diverting some of the water currently lost from the River Guadiaro toward Axarquía comes to pass. The project is remains in limbo for political reasons, despite the efforts of professionals and the big positive economic and social impacts it would have. In this context, it is above all the new production centres which should drive the dynamic over the coming years. While the minimum temperatures and wind are often limiting in these zones, the constraints are less pronounced in terms of both water resources and land resources, thanks to conversion from other less profitable crops such as citruses. Growth is reportedly around 150 ha per year in the Valencian Community, and 200 to 300 ha per year in the Huelva and Cadiz zone.




**Avocado - Andalusia (Malaga, Granada, Cadiz, Huelva) - Production**
(in 000 tonnes / source: MARM)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# Avocado – Spain

## Production calendar and varieties

The Hass variety makes up approximately 85 % of production, and is on an upward trend. The main smooth varieties are Fuerte and Bacon, the latter also acting as a pollinator and windbreak. The range is rounded off by some Lamb Hass plantations (especially in the cooler region of the Valencian Community), with Reed and Maluma planted recently.

**Avocado - Spain - Production calendar**

| S | O | N | D | J | F | M | A | M | J | J | A |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bacon | | | | | | | | | | | |
| Fuerte | | | | | | | | | | | |
| Hass | | | | | | | | | | | |
| Reed | | | | | | | | | | | |
| Pinkerton | | | | | | | | | | | |

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## Outlets

Shipments to the other EU countries are prioritised, given the logistical advantages enjoyed by Spain. However, the local market, paradoxically practically non-existent in the early 1990s, is constantly progressing. Nonetheless consumption remains among the lowest of the producer countries (approximately 1 kg/capita/year), but is on the rise. The processing sector has expanded in recent years, harnessing the large volumes of very small-sized fruits. It tends to focus on the pre-cooked product segment (two high-tech high-pressure guacamole production units at Montosa and AvoMix, a subsidiary of Reyes Gutierrez).

# Avocado – Spain

## Exports

Exports exceeded 10 000 t over the course of the 1980s. They progressed rapidly between the beginning and end of the 1990s. Volumes have been between 40 000 and 60 000 t in recent campaigns. Spanish exporters are very much targeting the west of the EU, which receives 85 to 90 % of volumes. The geographic proximity enables them to serve all the Community markets with ultra-fresh merchandise, and provide a good quality service (ripening at source, no intermediaries). France remains the main market for the Spanish avocado, taking in more than 50 % of volumes. The UK has become Spain's number 2 customer in recent years, ahead of the Netherlands and Germany. Volumes shipped outside the EU are stable at around 9 000 t per year. The bulk of shipments are aimed at Morocco (entry level small fruits). Some volumes are also exported to distant markets (South Africa).

Spain has in recent years become Europe's second hub (imports more than 90 000 t, mainly from Peru, Mexico and Morocco). While there are around fifty export companies, the majority of volumes are concentrated in the hands of a limited number of large facilities operating both with local produce and imported avocados. The main players are Trops (only cooperative operating with tropical fruits in Europe), Frutas Montosa, Reyes Gutierrez and Grupo La Caña. There is no inter-professional association.


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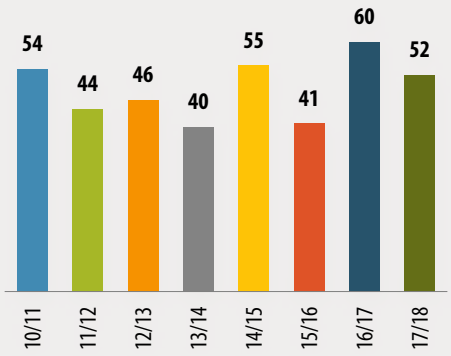
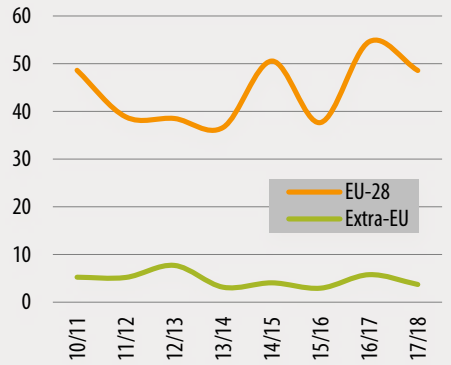
**Avocado - Spain - Exports**
net of re-exports
(*estimate / in 000 tonnes / source: Eurostat)



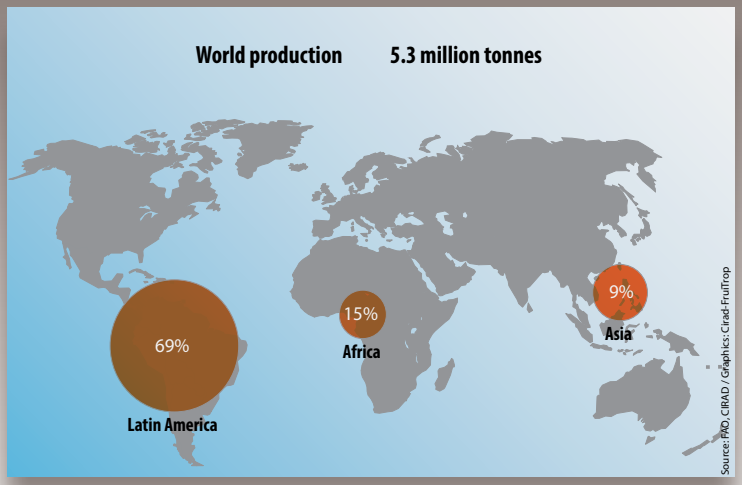

**Avocado - Spain - Exports by destination**
(in 000 tonnes / source: Eurostat)




## Logistics

Logistics are exclusively by road, to serve the EU markets. The vast majority of volumes go via the distribution hubs at the Saint-Charles de Perpignan market, which is approximately 16 hours away. The United Kingdom and Scandinavia receive their shipments within 72 hours. Shipments to distant markets are by air-freight, via Malaga airport.

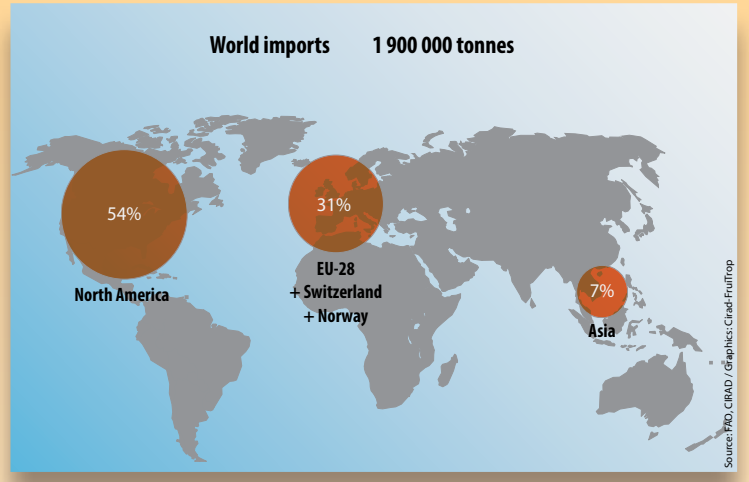
# AVOCADO - Production (2016-17)




| Avocado — Top 9 producer countries | |
|---|---|
| tonnes | **2016-17 or FAO 2016** |
| Mexico | 1 500 000 |
| Dominican Rep.* | 601 000 |
| Peru* | 455 000 |
| Colombia* | 309 000 |
| Indonesia | 305 000 |
| Chile | 215 000 |
| Brazil* | 195 000 |
| Kenya* | 176 000 |
| Rwanda* | 162 000 |

Professional sources (2016-17), *FAO(2014)

# AVOCADO - Imports (2017-18)




| Avocado — Top 7 importer countries | |
|---|---|
| tonnes | **2017-18** |
| United States | 982 227 |
| Netherlands | 279 792 |
| France | 113 271 |
| Spain | 93 839 |
| Canada | 89 052 |
| United Kingdom | 88 532 |
| Japan | 65 703 |

Source: national Customs

| USA - Imports - Main supplier countries | | | | | | |
|---|---|---|---|---|---|---|
| tonnes | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
| **Total** | **561 892** | **603 160** | **780 412** | **917 667** | **846 414** | **982 227** |
| Mexico | 515 143 | 512 276 | 686 404 | 853 617 | 764 680 | 862 596 |
| Peru | 15 860 | 21 617 | 64 448 | 46 284 | 31 573 | 64 420 |
| Chile | 14 721 | 53 305 | 10 600 | 10 362 | 29 354 | 29 454 |
| Dom. Rep. | 16 150 | 15 958 | 15 548 | 7 393 | 20 805 | 25 757 |

Source: USDA

| Canada - Imports - Main supplier countries | | | | | | |
|---|---|---|---|---|---|---|
| tonnes | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |
| **Total** | **47 185** | **46 139** | **57 089** | **69 953** | **76 118** | **89 052** |
| Mexico* | 36 299 | 33 451 | 44 958 | 62 150 | 71 607 | 83 346 |
| Peru | 2 282 | 2 905 | 5 542 | 2 627 | 1 130 | 3 567 |
| USA* | 7 372 | 8 910 | 5 649 | 4 494 | 2 785 | 1 076 |
| Dom. Rep. | 351 | 456 | 534 | 483 | 379 | 629 |
| Chile | 659 | 261 | 65 | 3 | 3 | 20 |
| Others | 222 | 156 | 341 | 196 | 214 | 414 |

Sources: COMTRADE and *national Customs

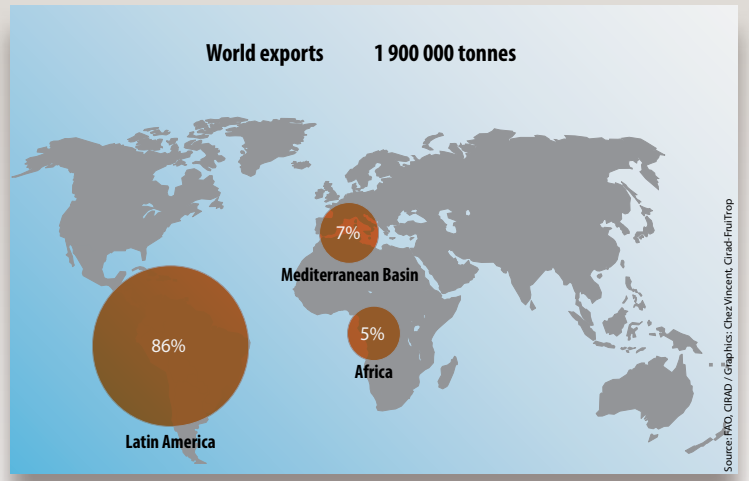
| South America - Main markets | | | | | | | |
|---|---|---|---|---|---|---|---|
| tonnes | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| **Total** | **15 048** | **17 670** | **18 403** | **21 125** | **21 760** | **24 152** | **22 757** |
| Argentina | 5 493 | 9 179 | 9 621 | 13 208 | 10 807 | 12 784 | 19 033 |
| Chile | 1 880 | 698 | 3 882 | 2 659 | 9 285 | 11 151 | 3 584 |
| Colombia | 7 190 | 6 023 | 3 904 | 3 128 | 1 130 | 217 | 133 |
| Ecuador | 485 | 1 770 | 996 | 2 130 | 538 | - | 7 |

Source: COMTRADE

| Central America and Mexico - Main markets | | | | | | | |
|---|---|---|---|---|---|---|---|
| tonnes | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| **Total** | **27 486** | **42 132** | **42 266** | **38 184** | **38 777** | **37 975** | **32 511** |
| Salvador | 9 262 | 13 754 | 12 666 | 12 213 | 12 269 | 12 570 | 12 005 |
| Honduras | 6 426 | 10 412 | 11 405 | 10 263 | 11 379 | 9 972 | 10 613 |
| Costa Rica | 9 958 | 13 731 | 13 061 | 12 424 | 11 187 | 9 334 | 7 783 |
| Guatemala | 900 | 3 312 | 2 923 | 3 211 | 3 942 | 6 081 | 2 110 |
| Mexico | 940 | 923 | 2 211 | 73 | - | 18 | - |

Source: COMTRADE

# AVOCADO - Exports (2017-18)




| Avocado — Top 6 exporter countries | |
|---|---|
| tonnes | **2017-18** |
| Mexico | 1 134 000 |
| Peru | 246 000 |
| Chile | 157 000 |
| Israel | 54 000 |
| Spain | 52 000 |
| Kenya | 47 000 |

Professional sources, national Customs

| European Union - Imports - Main supplier countries | | | | | | |
|---|---|---|---|---|---|---|
| tonnes | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
| **Total, incl.** | **262 115** | **307 358** | **349 426** | **413 717** | **507 582** | **539 464** |
| **Total N. Hemis.** | **128 824** | **157 266** | **167 741** | **220 318** | **278 351** | **301 853** |
| Chile | 41 074 | 62 968 | 42 797 | 78 244 | 90 138 | 92 467 |
| Mexico | 9 085 | 6 293 | 12 918 | 45 593 | 36 884 | 60 993 |
| Spain | 38 500 | 36 700 | 50 600 | 37 700 | 55 200 | 48 600 |
| Israel | 35 175 | 42 844 | 46 086 | 34 995 | 56 600 | 41 567 |
| Colombia | 486 | 1 142 | 3 740 | 11 189 | 24 024 | 28 000 |
| Morocco | 840 | 4 766 | 7 798 | 7 115 | 9 552 | 21 746 |
| Dom. Rep. | 2 503 | 1 810 | 3 034 | 4 445 | 5 527 | 7 345 |
| Greece | 474 | 740 | 765 | 987 | 424 | 560 |
| United States | 687 | 3 | 3 | 50 | 2 | 575 |
| **Total S. Hemis.** | **133 291** | **150 092** | **181 686** | **193 399** | **229 231** | **237 611** |
| Peru | 62 618 | 86 260 | 101 971 | 114 321 | 144 367 | 157 744 |
| Southern Africa* | 49 083 | 45 165 | 56 713 | 50 962 | 54 095 | 43 984 |
| Kenya | 17 078 | 13 313 | 15 604 | 20 728 | 23 444 | 25 425 |
| Brazil | 3 959 | 3 928 | 5 265 | 3 535 | 3 908 | 7 189 |
| Tanzania | 133 | 968 | 1 643 | 3 278 | 2 948 | 2 987 |
| Others | 306 | 300 | 447 | 497 | 337 | 280 |
| Argentina | 114 | 158 | 43 | 78 | 133 | 3 |

* South Africa, Zimbabwe, Swaziland / Source: Eurostat

| Other West European countries - Main markets | | | | | | | |
|---|---|---|---|---|---|---|---|
| tonnes | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| **Total** | **13 644** | **14 779** | **17 148** | **20 600** | **23 746** | **27 120** | **28 215** |
| Switzerland | 6 789 | 7 340 | 7 915 | 9 516 | 11 376 | 13 823 | 14 694 |
| Norway | 6 555 | 7 090 | 8 787 | 10 496 | 11 673 | 12 411 | 12 422 |
| Iceland | 300 | 349 | 446 | 588 | 697 | 886 | 1 099 |

Source: COMTRADE

| Russia - Imports - Main supplier countries | | | | | | |
|---|---|---|---|---|---|---|
| tonnes | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
| **Total** | **11 817** | **13 948** | **14 404** | **9 677** | **14 961** | **17 783** |
| **Total N. Hemis.** | **7 883** | **9 431** | **8 209** | **5 914** | **9 738** | **10 466** |
| Israel | 7 512 | 9 004 | 8 123 | 5 814 | 9 614 | 10 234 |
| Spain | 305 | 280 | 1 | - | - | - |
| Chile | 66 | 147 | 86 | 99 | 123 | 232 |
| **Total S. Hemis.** | **3 934** | **4 545** | **5 208** | **3 763** | **5 223** | **7 317** |
| Kenya | 330 | 405 | 232 | 497 | 1 735 | 4 260 |
| Peru | 1 259 | 1 462 | 982 | 1 069 | 1 586 | 2 100 |
| South Africa | 2 345 | 2 678 | 3 994 | 2 197 | 1 902 | 957 |

Source: COMTRADE

| Other East European countries - Main markets | | | | | | | |
|---|---|---|---|---|---|---|---|
| tonnes | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| **Total** | **1 529** | **1 948** | **2 636** | **2 749** | **2 850** | **2 324** | **3 321** |
| Ukraine | 1 249 | 1 623 | 2 068 | 1 852 | 1 231 | 1 685 | 2 218 |
| Belarus | 229 | 255 | 482 | 744 | 1 441 | 388 | 770 |
| Serbia | 51 | 70 | 86 | 153 | 178 | 251 | 333 |

Source: COMTRADE

| Japan - Imports - Main supplier countries | | | | | | |
|---|---|---|---|---|---|---|
| tonnes | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
| **Total** | **62 687** | **56 836** | **57 372** | **67 241** | **67 394** | **65 703** |
| Mexico | 56 373 | 50 278 | 52 758 | 63 986 | 63 549 | 59 192 |
| Peru | | | | 25 | 969 | 3 347 |
| United States | 5 140 | 4 971 | 2 124 | 80 | 1 174 | 2 585 |
| New Zealand | 639 | 695 | 1 704 | 2 467 | 1 527 | 461 |
| Chile | 535 | 892 | 786 | 683 | 175 | 118 |

Source: national Customs

| China - Imports - Main supplier countries | | | | | | |
|---|---|---|---|---|---|---|
| tonnes | 2012 | 2013 | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
| **Total** | **2 870** | **4 223** | **13 629** | **22 165** | **31 068** | **42 683** |
| Chile | | | 1 092 | 5 783 | 13 405 | 15 029 |
| Mexico | | | 10 794 | 14 223 | 10 919 | 17 690 |
| United States | | | 243 | 1 052 | 644 | 927 |
| Peru | | | 1 154 | 520 | 2 802 | 6 437 |
| Others | | | 346 | 587 | 3 298 | 2 600 |

Source: national Customs

| Other Asian countries - Main markets | | | | | | | |
|---|---|---|---|---|---|---|---|
| tonnes | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| **Total** | **2 862** | **3 320** | **4 062** | **5 302** | **6 113** | **10 103** | **15 247** |
| South Korea | 402 | 534 | 722 | 1 097 | 1 515 | 2 915 | 5 979 |
| Singapore | 1 497 | 1 691 | 2 015 | 2 815 | 2 991 | 4 210 | 5 737 |
| Malaysia | 523 | 565 | 773 | 956 | 1 075 | 2 377 | 2 932 |
| Thailand | 440 | 530 | 552 | 434 | 532 | 601 | 599 |

Source: COMTRADE

| Oceania - Main markets | | | | | | | |
|---|---|---|---|---|---|---|---|
| tonnes | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| **Total** | **14 695** | **9 629** | **10 967** | **19 889** | **15 214** | **19 757** | **16 407** |
| Australia | 14 695 | 9 627 | 10 941 | 19 889 | 15 214 | 19 757 | 16 407 |
| New Zealand | - | 2 | 26 | - | - | - | - |

Source: COMTRADE

| Persian Gulf - Main markets | | | | | | | |
|---|---|---|---|---|---|---|---|
| tonnes | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| **Total** | **9 228** | **16 985** | **22 604** | **26 818** | **36 400** | **39 476** | **39 167** |
| Saudi Arabia | 2 056 | 7 736 | 10 156 | 10 312 | 16 697 | 17 527 | 20 451 |
| U.A.E. | 5 347 | 7 352 | 10 077 | 13 250 | 15 841 | 17 000 | 15 304 |
| Kuwait | 1 001 | 857 | 1 247 | 1 601 | 1 791 | 2 084 | 2 341 |
| Bahrain | 116 | 266 | 382 | 726 | 791 | 955 | 545 |
| Qatar | 360 | 486 | 598 | 904 | 1 280 | 1 910 | 526 |
| Yemen | 348 | 288 | 144 | 25 | - | - | |

Source: COMTRADE

| Africa - Main markets | | | | | | | |
|---|---|---|---|---|---|---|---|
| tonnes | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| **Total** | **10 277** | **11 790** | **15 675** | **11 517** | **11 671** | **8 134** | **7 687** |
| Morocco | 6 683 | 8 817 | 9 130 | 7 627 | 6 749 | 3 975 | 4 417 |
| South Africa | 2 156 | 1 660 | 2 308 | 1 962 | 2 246 | 2 416 | 2 733 |
| Namibia | 674 | 518 | 734 | 802 | 647 | 774 | 537 |
| Burkina Faso | 679 | 683 | 589 | 1 046 | 1 436 | 767 | - |
| Egypt | 85 | 112 | 2 914 | 80 | 593 | 202 | - |

Source: COMTRADE

# Avocado

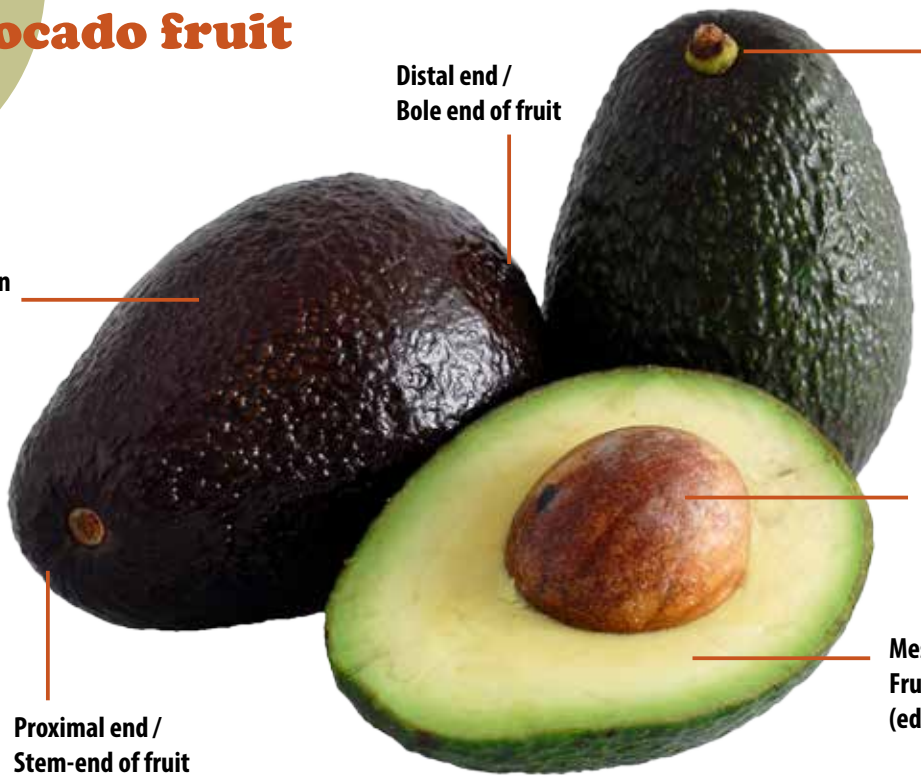
## Common Avocado Quality Defects

by **Richard Nelson,** richard.nelson@sfr.fr

*The purpose of this article is to describe and to provide background on some of the mostly commonly observed "defects" affecting avocados sold in Europe. This list is not exhaustive and excludes most cosmetic defects (including pest-related injuries), since fruits with such defects are usually visible and discarded at source.*

Due to insufficient European production of avocados (mainly from Spain), the vast majority of the avocados sold in Europe are imported, and thus have to be transported long distances from their production areas. The time from orchard to European consumer outlet can be as short as a week to ten days (e.g. from Israel or Morocco) to a month or more (e.g. from Mexico, Kenya, Chile, South Africa, Peru). Refrigeration and other technologies such as controlled atmospheres are used to delay in-transit ripening. These are complex processes, and fruit quality can be negatively affected if the correct procedures have not been followed or if anything untoward happens. However, the root cause of many of the most common quality defects is often in the orchard, resulting in the fruits not being in optimal condition to be able to withstand long distance transport. Various quality defects have very similar appearances and are often incorrectly identified by European receivers. It is hoped that this article will assist the European Trade in correctly identifying some of the more common avocado quality defects.

## Anatomy of an avocado fruit



# Black or brown marks on fruit skin

A variety of phenomena can cause such marks on avocado skins, hence there being considerable confusion as to the correct identification of such defects. A common fault is to refer to all black marks as anthracnose infection, which is rarely the case, especially for unripe fruits.

## 1. Lenticel damage

Lenticels are the slightly raised pores on the surface of the skin of an avocado, which allow the fruit to "breathe". Damage results in the blackening of the lenticels themselves, as well as in some instances, also the blackening of a small area of the skin immediately surrounding the individual lenticels caused by water loss through the damaged lenticels. These areas may also become more sensitive to low temperatures, resulting in the appearance of chilling injury symptoms (see point 2 below). The primary cause of damage to lenticels is rough handling during the picking or packing process. The susceptibility of the lenticels to damage is also sometimes increased by cold and wet weather during or immediately preceding harvest. Cold air flowing across the surface of the fruit (e.g. from a cold store's refrigeration unit at the packing station) can also induce lenticel damage. It is incorrect and inaccurate to describe an avocado displaying such symptoms as "having too much lenticel". All avocados possess lenticels, so one needs to specify that the lenticels have been damaged. The symptoms of lenticel damage can develop days to weeks after the fruits have been packed and deemed to be of satisfactory export quality. Lenticel damage may thus be considerably more pronounced upon reception in Europe. Avocado cultivars with thick / rough skins (e.g. Hass, Maluma) have more prominent lenticels, which are thus more prone to damage. However, for ripe fruits of such cultivars, the symptom is often barely visible due to the masking effect of the darkened skin. Lenticel damage is purely a cosmetic defect which does not affect eating quality. There is no concrete evidence that lenticel damaged fruits are more liable to develop secondary pathological infections.

Lenticel damage

## 2. Black Cold Injury

This is the term used by the South African avocado industry to refer to what is generally a post-harvest external chilling injury, characterised by shiny dark brown to black lesions / marks on the skin of the avocado, most commonly at or towards the bole-end of the fruit. The lesions are slightly sunken and have clearly defined edges. The symptom starts developing within a few days of packing, and is almost always visible immediately upon arrival in Europe. Black Cold Injury can occur on both hard and soft fruits, although receiving agents usually observe the symptom on fruits which have been delivered in a hard condition. The purple to black colour of the skin of ripe Hass (and other dark-skinned avocados) usually masks the symptom. The primary cause of Black Cold Injury is from avocados having been transported at inappropriately low temperatures, but there is also a risk that hard avocados can develop Black Cold Injury when stored under excessively cold conditions after European delivery. It is also important to note that it is not unusual to find that within the same consignment only fruits from certain growers have been affected

Black Cold Injury

Black Sun Burn

Rubbing

by Black Cold Injury. The most common cause for certain fruits being more prone to Black Cold Injury is fruit physiological immaturity at time of harvest. As avocados become more physiologically mature prior to harvest, their oil content increases and moisture content decreases, and in the process they become less susceptible to lower post-harvest temperatures. Larger avocados (e.g. Code Sizes 8,10,12,14) are more prone to post-harvest chilling injuries than is the case for smaller fruits. This partially explains why some avocado cultivars which tend to bear a higher percentage of larger fruits (e.g. Pinkerton, Edranol, Lamb Hass) are also more prone to Black Cold Injury. Tree condition as well as orchard nutritional imbalances can influence the susceptibility of avocados to Black Cold Injury, hence the differences between the fruit from different growers or orchards. In the overall majority of cases (especially for Fuerte and Hass avocados), the presence of a Black Cold Injury lesion on the exocarp of an avocado does not have an adverse effect on the internal / eating quality of the fruit, with the fruit pulp not being affected. However, it has been noted that some cultivars such as Pinkerton often develop secondary infections such as Anthracnose within regions of the fruit skin affected by Black Cold Injury lesions. Black Cold Injury lesions are post-harvest symptoms and are not caused by low orchard temperatures.

## 3. Black Sun Burn

In contrast to Black Cold Injury, black lesions caused by sunburn are not sunken – they may in fact be slightly raised. Black sunburn lesions are usually shinier in appearance than is the case for Black Cold Injury. A region of yellowed skin ("yellow sunburn") sometimes surrounds black sunburn lesions. Black sunburn injury does not affect the eating quality of avocados.

## 4. Rubbing

Black discoloration as a result of sensitisation of the skin caused by rubbing during the picking or (more usually) the packing process. Symptoms can be virtually identical to Black Cold Injury. Black marks caused by rubbing are commonly found on the widest portion of the fruit, and where present it is common that more than one fruit per carton exhibits this cosmetic defect. Rubbing lesions have no effect upon internal quality.

## 5. Sooty Mould

Sooty Mould is often confused with external chilling injury symptoms. It is a naturally occurring fungus present in avocado orchards. These fungal infections can develop on

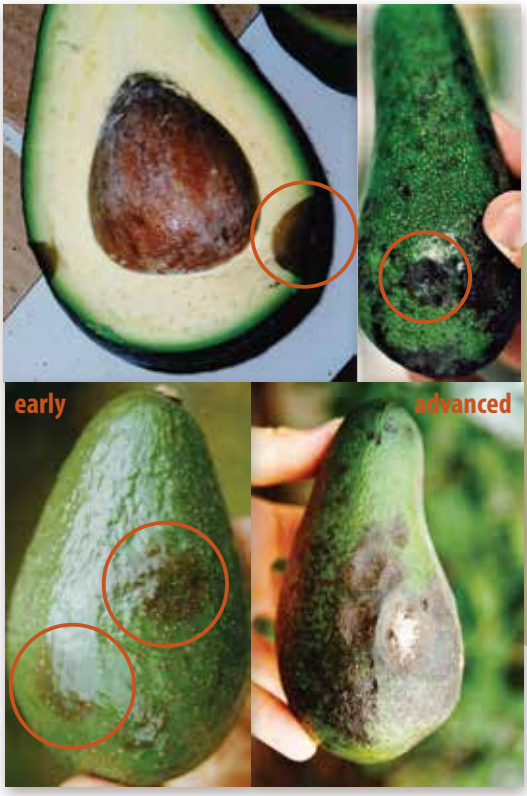
the fruit skin, most commonly at the pedicel end of a fruit, with streaks of the fungus running longitudinally down the fruit towards the bole. Sooty mould is light grey in colour and is generally removed during the washing process prior to packing. Such infections make fruits unsightly, but do not affect the internal eating quality of the avocado.

Sooty Mould

## 6. Anthracnose and Stem-end Rot

**Anthracnose** is the generic term to describe infections caused by fungi of the genus Colletotrichum. However, in avocado fruits, Dothiorella and other fungi can also be involved in secondary infections with similar appearance. Anthracnose commonly develops on over-ripe fruits and can also develop in transit. Early stages of Anthracnose infections are characterised by circular brown to black external lesions which may become sunken and exhibit a white fungal development in the centre of the lesion during the advanced stages of infection. Internally, infections penetrating the exocarp are characterised by a half-moon-shaped discoloration of the flesh.

Anthracnose




**Stem-end Rot** affects the pedicel end of the fruit and is often caused by the same fungi that cause anthracnose infections elsewhere on the fruit. Stem-end Rot is characterised externally by a blackening of the skin surrounding the stem ("pedicel") end of the fruit. The fungi enter the fruit via the cut end of the pedicel itself or other sites of injury caused to that part of the fruit during harvest (e.g. by clippers used to cut the fruit from the tree). Physiologically less mature fruits are far more likely to be affected by Stem-end Rot, one of the reasons being that less mature fruits take longer to ripen, which also allows the pathogen more time to develop. Stem-end Rot often also affects the vascular tissue, resulting in symptoms of vascular browning or blackening. When high percentages of this defect are noted, it is most likely that the fruits were under-mature when harvested. A high incidence of Stem-end Rot is also an indication of inadequate disease control in the orchard.

Stem-end Rot

## 7. Carbon-dioxide poisoning / "Suffocation"

This occurs as a result of malfunction of a controlled atmosphere system, resulting in a build-up of carbon dioxide, causing suffocation of the fruit. External symptoms are similar to Black Cold Injury, but the lesions are considerably more sunken and generally

Carbon-dioxide poisoning / "Suffocation"

confined to the pedicel end of the fruit. Another difference compared with Black Cold lesions, is that suffocation lesions tend to be a dark "chocolate-brown" colour and shiny in appearance, whereas Black Cold lesions tend to be dull and dark-brown to black in colour. The severity of the internal disorders caused by carbon dioxide poisoning varies according to the extent and duration of the malfunction. Carbon dioxide poisoned avocados will usually not ripen properly or at all, and may be difficult to cut open. Flesh can be dried-out and grey to black. If symptoms of carbon dioxide poisoning are found in a container, it is extremely likely that all fruits in the container will be affected and will not ripen properly, even if some fruits do not display the characteristic external symptoms. Such fruit will not be of acceptable eating quality and ought to be destroyed. In more extreme cases, the symptoms are immediately apparent upon removal of the fruit from the container and an unpleasant odour may be noticeable when the container doors are opened. However, it is important to note that such symptoms can also develop 24 hours or more after the fruits have been removed from the modified atmosphere of the container. There is therefore always a risk that fruits which were judged to be sound upon reception, develop suffocation symptoms later on. It is thus important that consignments of avocados that are to be forwarded to a client by a receiving agent, should be subjected to an additional quality control, even if these fruits had already been identified as being of acceptable quality during standard reception procedures.

## Skin discoloration following prolonged refrigeration

It is sometimes noted – specifically for certain green-skinned avocados (e.g. Fuerte, Edranol), where the exocarp characteristically remains green upon ripening – that the exocarp acquires a brownish, unsightly tinge upon ripening. Such symptoms are far less common for dark-skinned cultivars and are often difficult to distinguish from the progressive skin colour change as the fruits ripens. Several years ago, the South African avocado industry identified, defined and named two such quality defects, which at the time were classified as chilling injuries – hence the (still used) terms Brown Cold Injury and Dusky Cold Injury for these symptoms.

### Brown Cold Injury

Brown Cold Injury is a brown discoloration of the avocado exocarp, the blemishes having defined but not sunken edges. The lenticels remain green and healthy


## About the Author:

***Richard Nelson*** *is an independent fruit quality assessor and consultant based in France. For more than two decades he was employed by the South African tropical fruit industry as their technical representative in Europe, monitoring fruit quality and identifying the causes of fruit quality problems. He has an extensive knowledge of the pre-harvest and post-harvest factors impacting upon avocado quality, and provides trouble-shooting services and guidance to the international avocado industry.*

within the blemished area. Brown Cold is rarely seen on hard, unripe fruits. Far more commonly, the symptom develops when the fruits ripen under refrigeration, such as when transport times have been unusually long as a result of lengthy shipping delays, or following prolonged cold storage after arrival in Europe. The fruit flesh is normally unaffected when Brown Cold Injury symptoms are present, but such fruits are unattractive and unmarketable. It is unclear why certain avocados are more susceptible to Brown Cold Injury, but inappropriate refrigeration conditions are quite likely to be a contributing factor, in particular unacceptably low relative humidity levels in European cold-stores.

Brown Cold Injury

### Dusky Cold Injury

It is the author's belief that this quality defect is a more severe form of Brown Cold Injury, with internal quality commonly being affected. The symptom is a diffuse greyish-brown discoloration of the exocarp, which is usually confined to the distal (bole) end of the fruit upon ripening. The disorder is most common when avocados have been stored under refrigeration for an excessively long period of time and when they have ripened under refrigeration. Flesh discoloration is common for fruits displaying Dusky Cold Injury. The symptom is not distinguishable externally on ripened dark-skinned cultivars such as Hass.

Dusky Cold Injury

## Internal Flesh Discoloration

### Grey Pulp

The most common such defect, and the only one that will be discussed in this article, is what is referred to by the South African avocado industry as Grey Pulp, also commonly referred to as Internal Browning and (less accurately) as Internal Chilling injury. This is characterised by grey or brownish discoloration of the fruit flesh and is more pronounced and thus more commonly observed in ripe fruits. A number of factors can contribute to the development of Grey Pulp in avocados, the most important of these being incorrect temperature management, prolonged cold-storage and, fruit physiological maturity. By far the most common cause of Grey Pulp is physiological over-maturity at time of harvest.

Fruits which were physiologically very-mature (not RIPE, since avocado fruits do not ripen on the tree) at the time of harvest, have a higher likelihood of developing Grey Pulp once the fruits ripen. Inappropriately low transit temperatures can play a role in the development of Grey Pulp, but it should be stressed that since lower transport temperatures are often used for end of season (i.e. physiologically very mature) fruits which would otherwise ripen more rapidly, in such cases the root cause is still physiological maturity. Fruits from some growers are known to be more susceptible to the disorder, probably related to nutritional factors. It is important to note that the temperature at which avocados are stored after arrival in Europe, as well as the length of time of that storage will greatly influence the incidence and degree of severity of Grey Pulp development ■

Grey Pulp

# Avocado

## Varieties

*Avocado is a dicotyledon of the genus Persea of the Lauraceae family. More than 200 varieties are 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 to 900 g. The epidermis is fairly thin (0.8 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 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.

## 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 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).

## 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 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.

## Reed

**Guatemalan race**

**Flowering type:** A
**Fruit shape:** spheroid
**Skin:** medium thickness, slightly rough, pliable
**Oil content:** 19 to 20%
**Average weight:** 400 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.

## 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 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.

Photos © Guy Bréhinier

# 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. 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 small 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 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 to 7°C at the beginning of the season and 4.5 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 to 8°C but for no more than three weeks. In practice, professionals keep all the classic commercial varieties at between 5 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 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

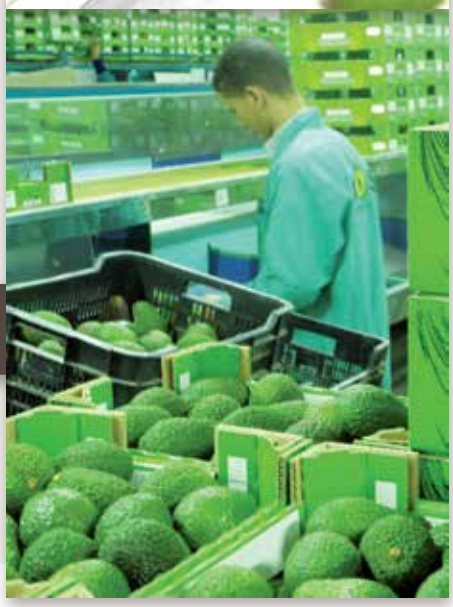
Fruits with the desired maturity index are sorted, washed and graded before packing. Each market has its own packing requirements.

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

| 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 |



Photos © Eric Imbert

## Ripening

The ideal temperature for ripening is 15 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 to 6°C). Misting is not recommended.

# Main types of post-harvest physiological deterioration of avocado

### Storage-related damage

**Chilling injury.** This damage is caused by low temperatures—generally lower than 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.

**Anthracnose**. 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 in the epidermis favours infection by the pathogen.

**Avocado — Post-harvest diseases caused by pathogenic fungi**

| Pathogens | Diseases |
|---|---|
| *Alternaria* spp | Black rot |
| *Botryodiplodia theobromae* | Stem-end rot |
| *Botryosphaeria ribis* (*Dithiorella gregaria*) | Stem-end rot |
| *Colletotrichum gloeosporioides* | Anthracnose: Black rot |
| *Fusarium* spp | Stem-end rot |
| *Penicillium expansum* | Blue mould |
| *Pestalotiopsis perseae* | Brown spots |
| *Phomopsis perseae* | Brown rot |
| *Phytophthora citricola* | Small surface injuries |
| *Pseudocercospora purpurea* | Soft rot |
| *Rhizopus stolonifer* | Corky patches on epidermis |
| *Trichothecium roseum* | Pink rot |

# The harvest stage in the case of climacteric fruits

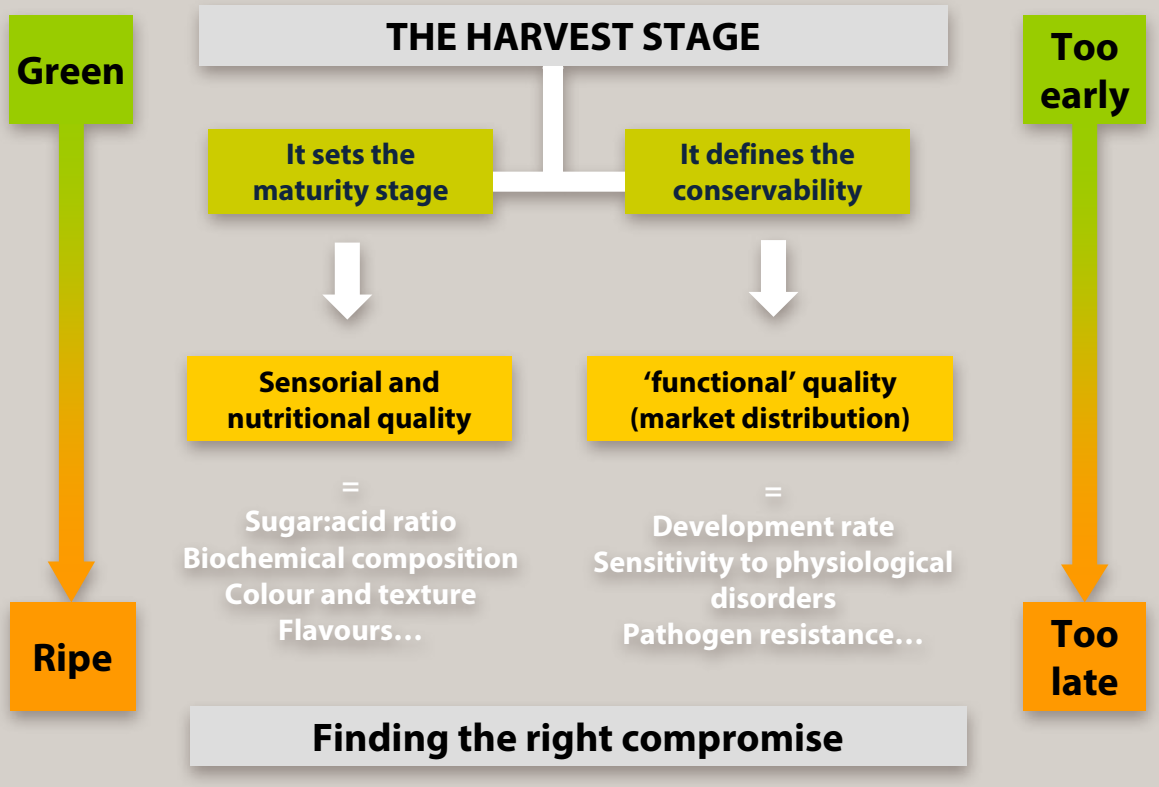
This stage is particularly important since the state of maturity of the fruit is "set" upon harvesting (see FruiTrop No.198, page 29, maturation article). The impact of the harvest stage is split into two aspects (see diagram):

- 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.



# Sea freight

## H1 2018

**The first half of 2018 was not really the six months stakeholders or commentators had expected. For the most part, the charter market was in balance and the fleet gainfully employed. So much so, that when there was additional demand, operators were able to raise rates sufficiently to force a mini peak in the TCE average.**


© Denis Loeillet

Some spot activity was generated by weather-disrupted schedules, which affected both the reefer and container mode. However, the consequences for the carriers were significantly greater, as they struggled to re-position capacity to cover liner commitments. The delays exposed the lines by both highlighting the relative inefficiency of the carrier operation against the specialized reefer and revealing a shortage of 'buffer' equipment required when schedules are affected by variables beyond their control.

Despite throwing all they could offer at cargo interests, the gains the carriers made in Chile, Argentina and the banana business were incremental rather than spectacular. It could also be argued that these minor gains were the result of a deliberate decision by the reefer operators to concede market share by offering less capacity and not the outcome of a price war between the modes. This would suggest that there is a continuing role for the reefer: the question is, at what price?

When, rather than if, there is extensive demolition of the specialized mode, there won't be enough equipment to compensate the loss of capacity if carrier/lessor investment remains at the same level as it is today. The number of boxes manufactured will need to rise significantly in order for service levels to be maintained. The danger is that until rates rise, neither carrier nor lessor will be willing to invest further. If they do not, the result will be a short

term capacity shortage, which may then morph into a longer term crisis if declining specialized reefer capacity is not sufficiently well offset and container pricing stay sub-economic.

By offering cut-throat deals either to gain market share or to fill slots for freight efficiency, the carriers are inadvertently lulling cargo interests into believing that a low-priced environment is sustainable in the long term. Attempts at 'educating' or threatening customers thus far have failed, largely because market forces have triumphed over what has become oligopoly control of trade lanes now that the industry has rationalized. This result in itself is counter intuitive – surely the more concentrated the supply, the more power there is in the hands of the suppliers? If so, the lines should be able to make General Rate Increases stick..?

That they cannot is, ironically, principally the result of their own actions. How so? There are two elements to the reefer container capacity supply equation: slots and equipment. The ongoing, dramatic increase in reefer slot availability is attributable solely to the carriers – the slot oversupply is a direct consequence of the new generation of containership newbuildings, which have been built for scale efficiency for dry cargo. The beauty of these vessels is that they contain a high number of reefer slots, which can be cross-utilized for dry if/when necessary. Equally, each of the slots is a potential reefer revenue earning opportunity.

But there has been an unexpected downside. Whether it is because the lines are struggling on load factors for dry, or they are deliberately gunning for reefer market share reefer rates remain depressed. And by offering marginal or sub-economic rates on reefer, they are effectively abusing the facility of additional slots against themselves and one another!

This may change either when demand for dry cargo matches capacity supply - or the carriers start to price logically. Until then, cargo and retail customers should continue to benefit from the battle. Strangely, the current market appears weighted heavily in favour of the customer even when there isn't enough equipment, which coincidentally is the second element of the equation.

Bearing in mind that it is also in the interests of the carriers to make equipment available, there should be no cause for concern. Indeed, to the end of June, reefer container manufacturers had been commissioned to build 60 000-plus x 40' high cubes, putting the industry on track for a full year total of 130 000 (260K TEU). However if global trade concerns persist and the latest gloomy economic (Drewry) forecast for the carriers proves to be accurate, this figure may have to be revised downwards. If the carriers cannot or do not invest in equipment, will the reefer lessors continue to step in? What happens if they don't?


Such a scenario will be stress tested for the first time in H1 2020 and then again in H1 2021, when demand for lucrative charters from what are likely to be heavy South Atlantic squid catches will test the resolve of operators committed to supplying tonnage elsewhere. Assuming that the reefer fleet two years hence bears some resemblance to the existing profile, owners of older units may find themselves obliged to choose between a marginally profitable pool arrangement and a golden parachute payday. If it's the latter and the lines are not ready to mitigate the collateral loss of specialised reefer capacity because they don't have the equipment, it's going to be disastrous for cargo interests and retail customers alike…

The current position in the small segment is a little clearer: as is the forecast. Although the average age of the small and handysize vessel fleet is greater than that of the large units, vessel owners continue to enjoy the luxury of modest profits, such is the balance between supply and demand. Stakeholders on either side of the chartering divide appear to be united in their understanding of the importance of one to the other: voyage rates have neither dived nor soared during periods of supply abundance or scarcity respectively.

While there may not be widespread investment in new tonnage, aside from the four Orange Class vessels due to be delivered later this year to GreenSea, owners are reported

to be increasingly inclined to spend USD 1m per vessel for those older units due for special surveys. But with the average age of the derricked fleet larger than 200'cbft above 27 years, such expenditure will be enough to carry vessels beyond the reach of the next big squid season, but realistically not much further.

The following calculations put the longer-term future of the small and handysize segment into perspective: the current cost of financing a 300'cbft newbuild runs upwards of USD 9 000-10 000 per day for a period of approximately 15 years – in TCE terms, this figure is equivalent to 100c/cbft±. Given that the highest ever Reefer Brief annual TCE average for the small segment was 91c/cbft in 2015 and the average annual figure since 2010 is only 73c/cbft, the gap between historical yield and requisite earnings is wide enough to run a reefer through.

This is not to say that the magical 100c/cbft will never materialize - ceteris paribus, the supply/demand balance must soon tip heavily in favour of operators given the contraction in size of the fleet. However it does illustrate the scale of the risk, the breadth of belief and leap of faith owners will need to take in order to justify such investment. Difficult though times ahead will be, the Seatrade formula for the small segment is likely to be more successful than its fully cellular solution for its large units.

The one major disappointment for container and reefer alike in H1 was the rise in price of oil. The increase forced the container lines and Seatrade into declaring Emergency Bunker Surcharges and took a significant edge off what would otherwise have been an outstanding performance by the small segment. However things may be changing: if President Trump succeeds in persuading Saudi Arabia to pump enough oil to offset the anticipated losses from Iran, Libya and Venezuela, and OPEC agrees to relax production restrictions, bunker prices may ease to more manageable levels. Given the critical importance the cost of bunkers has on the viability of the mode, an ongoing high-price fuel environment will serve to precipitate the extinction of the reefer.

## Seatrade

If what Seatrade CEO Yntze Buitenwerf is quoted as saying in the article published in a recent edition of Lloyds List is to be believed, rumours of the reefer operator's imminent demise are greatly exaggerated. Quite the opposite in fact! Among a series of statements he makes in the article, Mr. Buitenwerf says that such are the successes of the partnerships Seatrade has forged with carriers CMA CGM and Hapag Lloyd, the reefer operator is actually set fair for sizeable expansion this year and beyond.

So wide is the divergence between the speculation on the financial health of the operator and its own forecast, it is worth analyzing what Mr. Buitenwerf says in the Lloyds article in more detail.

The premise for Mr Buitenwerf's optimism appears to be Seatrade's contribution to what he claims is the success of the newly configured Meridian service. The article reads as follows: "Having deployed a service from New Zealand to Europe for many years, Seatrade brought CMA CGM on board to transform the service. "This resulted in the carrier agreeing on a three-year charter to operate the string, while additional calls were added in Peru. "Seatrade provides the reefer know-how. "While on the outside this may look defeatist by bowing to the carriers' expansionist agenda, Mr Buitenwerf says the joint venture is still very much on Seatrade's terms."

For perspective, an alternative version of the same story might read: in switching its regular New Zealand to N Cont Meridian service from specialized reefers to its newbuild Colour Class reefer containerships, Seatrade effectively destroyed a cash cow that it had developed over two decades. The upgraded Meridian service had fundamental design flaws, which led to Seatrade first seeking an alliance with CMA CGM and then handing the service over lock, stock and barrel to the carrier for the price of a 3-year sub-charter on three of its Colour Class newbuilds.


With no alternative reefer or liner services available, the move effectively bounced Seatrade's customers in New Zealand and Peru into long-term contracts with CMA. Also as a consequence, Seatrade closed its office in Mount Manganui with its staff either taking redundancy or absorbed by the carrier. The original envisaged 6-vessel, 10-day frequency service transformed into a weekly, 13-vessel service with approximately double the number of port calls than those initially planned, causing voyages to take longer.

Whichever narrative is more accurate, Mr Buitenwerf chose the article to reveal that Seatrade has recently issued a tender for another six to eight dedicated reefer containerships, in keeping with its most recent fleet additions. The vessels are supplementary to its current orderbook, in which four dedicated reefer containerships are confirmed, with an option for four more units, he says. The first of these vessels is due for delivery in the second half of this year, 12 months later than scheduled due to delays in Chinese yards, he added. If this is true, Seatrade clearly has the finance necessary to underpin its expansion.

On the newbuilds, Mr. Buitenwerf freely admits that the vessels will have to be designed sufficiently differently in order to be able to deliver the 'absolute premiums' that the existing vessels currently achieve. This, he says, is because "others can build the same". Well, yes – but others are not building directly competitive tonnage, which begs the question: why not? What can Mr. Buitenwerf see that others cannot? Into which trades will the newbuilds be deployed? Or will they be chartered out? If Seatrade failed at the first hurdle to utilize the vessels in one of its own trades, why should it succeed next time?

Perhaps the answer lies in Seatrade's vision of the near future for reefer transportation? Clearly, unless more specialized reefer vessels are built, there will come a time when the mode is displaced. With the writing on the wall, previous and existing blue chip specialized reefer charterers such as the banana majors, have demonstrated that they are ever more inclined to 'defect'.

On the other hand, with so much low-cost slot capacity available on third party liner services and enough reefer slot-heavy box tonnage available either for charter or purchase, there is no immediate appetite for an independent Colour Class-type solution. For example, in deciding to build its own cellular vessels (for delivery in 2019-20), Del Monte spurned the opportunity to charter in. If the period charters up for renewal at the end of this year and next remain with reefer, the opportunities for a fully cellular option to replace either existing modal alternatives appears to remain limited – certainly in the short term.

Assuming that Seatrade is indeed anticipating the arrival of four more of the same specification vessels by the end of 2018, into which trades are they likely to fit?

Seatrade operates two liner services: the Rayo banana service from Ecuador to the UK/N Cont and the Caribanex, which has morphed into an extension of the Geest service from the Dominican Republic, French West Indies and Colombia, and which also runs into the UK and N Cont. Given that the carriers already operate competitive liner services into N Cont from Guayaquil, containerizing the Rayo would likely end the same way as the Meridian, so can be ruled out. Meanwhile, any switch decision on the Caribanex is contingent partly on infrastructure at the Dominican Republic port of Manzanillo, but principally on what long-term logistical future Geest sees for its business.

Meanwhile, there is another circle that Seatrade will have to square: in order for the company to operate the units, it will need to raise the finance to commission or lease more equipment – say 2 500 containers. It's a bit of a mystery! On the plus side, the reefer community won't have long to discover Seatrade's intentions ■

**Richard Bright**, consultant
info@reefertrends.com

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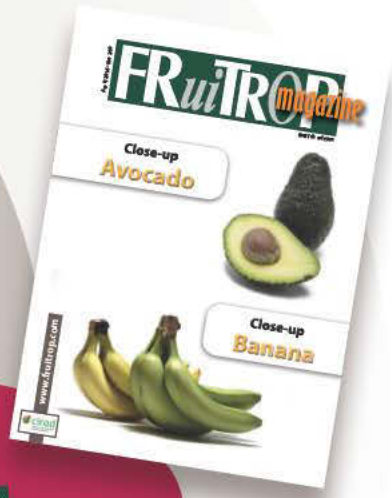


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