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# FR*ui*TROP

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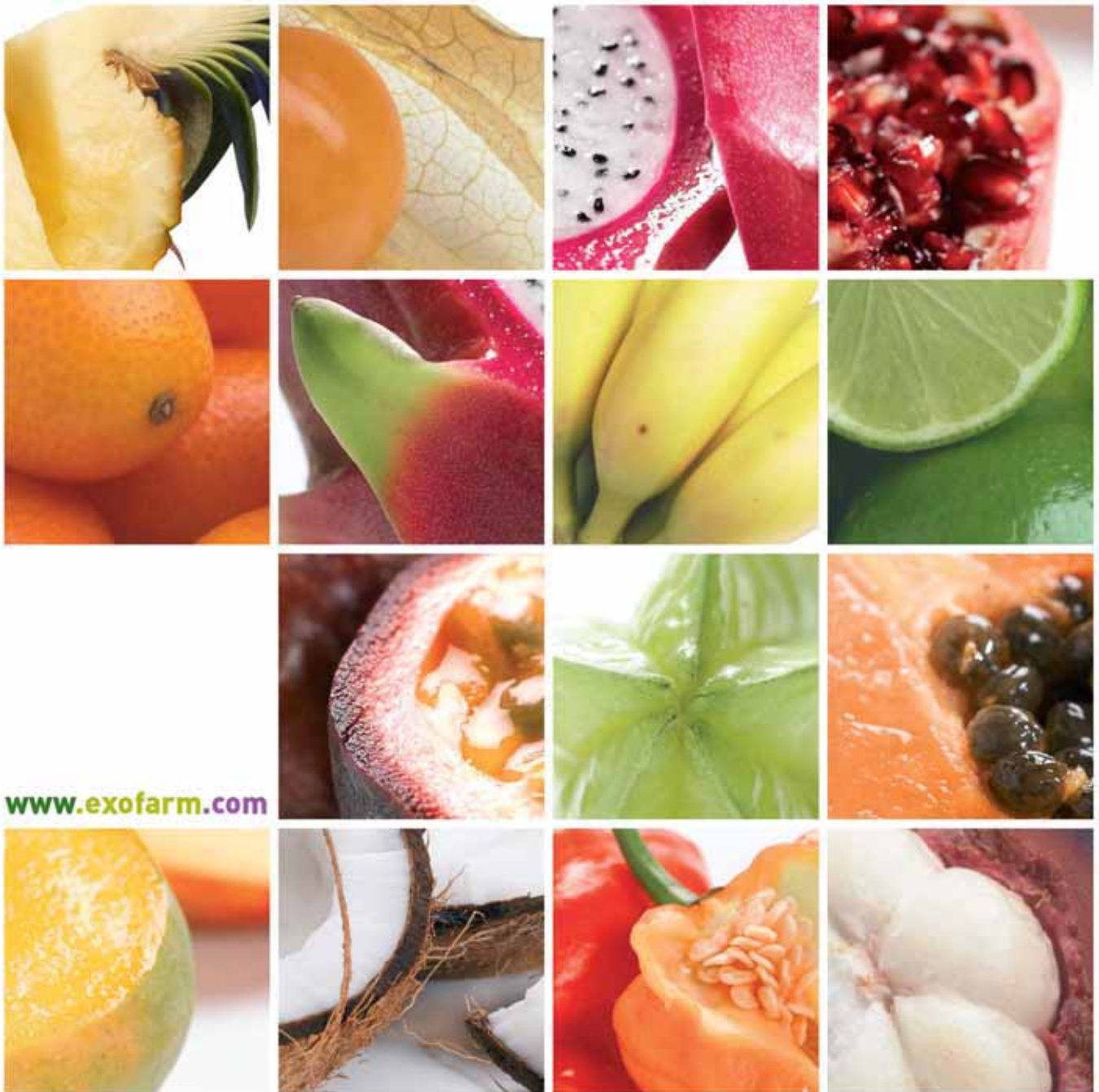
CLOSE-UP:  
SMALL EXOTIC FRUITS

Winter tomatoes:  
a minefield!

Mango in Côte d'Ivoire:  
2008 season

<http://passionfruit.cirad.fr>

# Découvreur de saveurs exotiques



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Norwegian krone	8.52
Canadian dollar	1.5697
Australian dollar	1.9204
New Zealand dollar	2.2015
Brazilian Real	2.7521
Czech koruna	24.48
Polish zloty	3.565
Chinese yuan renminbi	8.9133
Estonian kroon	15.6466
Slovak koruna	30.39
Turkish lira	1.9842
South African rand	13.0194
South Korean won	1 665.72

Source: Central European Bank

Industry should always anticipate its customers' needs in order to maintain performance. This is without a doubt the principle that has encouraged a number of large agro-industry companies to reduce the weight of packets of biscuits and other food products to prevent their customers from becoming obese. And to maintain good margins as this unilateral movement does not include any concessions as regards price.



What happens in industry sometimes takes place in trade. We thus observe a general trend for retail distributors to reduce the size of the fruits sold individually—doubtless for public health reasons again. A large proportion of chains now sell 'shrunk' grapefruit of the '45 or 48 fruits per box' size; this is increasingly taking over from the 40 fruits per box that served as reference until recently. Consumers undoubtedly feel lighter as they lose a little more than 15% of the weight of their purchase, with the fruit weighing slightly more

than 350 g rather than about 420 g. Avocado is also being hit by the trend, with '20 fruits per box' regularly replacing 18.

It is true that we are going through a slump but with such practices, while margins remain constant and often close to 100% for fruit and vegetables, times are hard mainly for growers and consumers!

Eric Imbert

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*Eric Imbert, Pierre Gerbaud, Thierry Paqui, Richard Bright*

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Cover photo: Guy Bréhinier

# Winter tomatoes

Moroccan production has increased very strongly in the last 20 years. The gradual liberalisation of trade with the European Union has stimulated exports. These have increased from 200 000 tonnes at the beginning of the 2000s to 300 000 tonnes today and 85% of this is shipped to the European market.

## The Moroccan boom!

Moroccan production has increased from 300 000 tonnes at the end of the 1990s to 700 000 tonnes today. The cultivated area increased again in the last season, reaching 4 980 ha (3% more than in 2006-07), with 90% of this being the Souss region. Round tomatoes still form more than 80% of exports, complemented by cluster tomatoes (8%) and cherry tomatoes (7%). Exports to Europe have increased in the last five years because of penetration of the northern and eastern European markets following the decrease in supplies of Canary island tomatoes. The planted areas should remain stable this year or perhaps increase as many operators who diversified into courgette, French bean and even green pepper production and exports are now tending to refocus on

the backbone of their range, that is to say round tomatoes. New foreign operators are also still investing in Morocco because of the free trade prospect.

## Production in difficulty in the Canaries

The increase in Moroccan tomato production has obliged Spanish growers to broaden their range. Thus, in large operations, round tomatoes form only 40% of tonnages today, cluster tomatoes account for 30% and other tomatoes (cherry, elongated, kumato, etc.) 30% too. However, other external factors such as drought, pests, etc., also affect crops and result in a decrease in planted areas—these have decreased steadily in the Canaries in recent years. The difficulties began during the 2000-01 season with the appearance of the first virus diseases. The situation worsened with the passage of hurricane Delta in November 2005. Exports thus fell from 50 million boxes in 1999-00 to 23 million last year. As a result the Canary Islands authorities presented a 9-measure strategic support plan in July this year; in particular, this included the funding of all trans-  
port costs

by virtue of a Programme of Options Specifically Relating to Remoteness and Insularity (POSEI), the strengthening of phytosanitary controls to prevent the introduction of pests and the maintaining of aid for modernising greenhouses.

## Cultivated areas shrinking in continental Spain

Likewise, the Murcia region is hanging on with difficulty (230 000 tonnes) and has to handle a serious drought. This requires investment, especially for the recycling of irrigation water. In a similar manner, areas are no longer increasing significantly in Almeria (850 000 tonnes) and vary from one season to the next. They increased last year as a result of the use of land previously under peppers as there had been a pest problem. However, the operators in the region are gambling more on recognition of the quality of their produce by means of the PGI 'Cañada Nijar'. This currently covers 830 ha (six operations) and the figure could soon double as numerous growers are interested. However, the zone also faces another threat with the very recent appearance of the tomato leaf miner (*Tuta absoluta*).

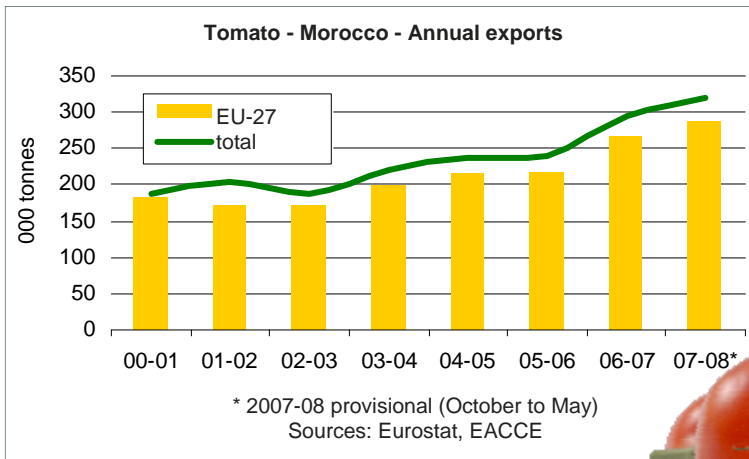
Operators in the zone have just confirmed the presence of the insect but



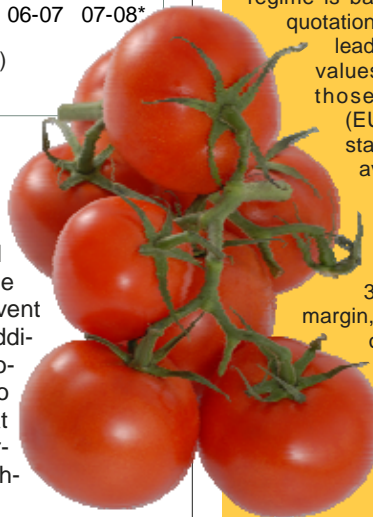
Photos © Régis Domergue

**The winter tomato market has undergone fundamental changes in recent years, without really achieving balance. The increase in Moroccan exports has led Spanish operators to diversifying their range, with segments such as cluster and cherry tomatoes, and shifting their production calendar. The situation has thus changed from year to year. The 2007-08 season was particularly difficult in the winter and the coming one will be crucial in determining whether certain operators continue to produce tomatoes. This is the case in the Canary Islands and also in continental Spain and Morocco, where problems abound: labour, production and transport costs have risen, not to mention new tomato pests such as tomato leaf miner (*Tuta absoluta*) and a background of the liberalisation of trade between the European Union and the Mediterranean countries.**

per production and exports are now tending to refocus on

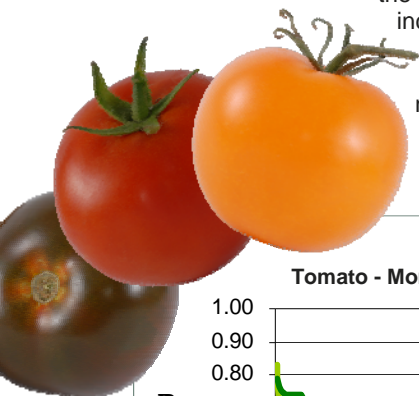


say that they have taken full control measures. Grower awareness has been promoted, greenhouse doors strengthened (double panels) and pheromone traps have been laid out to prevent the pest from reproducing. In addition, the recent use of *Nesidiocoris tenuis* as a predator seems to be fairly effective. It is noted that the pest has also done considerable damage in Algeria and northern Morocco (Nador).



A 2007-08 season out of whack

The 2007-08 season was very unusual. The shifting of the Spanish season (Almeria) and the concentration of shipments in early 2008 were particularly negative features for Spanish operators and resulted in very low prices during the period, while production costs continued to increase. The shift also caused a huge transfer of demand in many European countries to Moroccan production right at the beginning of the season. Thus sales of Moroccan tomatoes at the beginning of the season (October 2007 to January 2008) were 39%

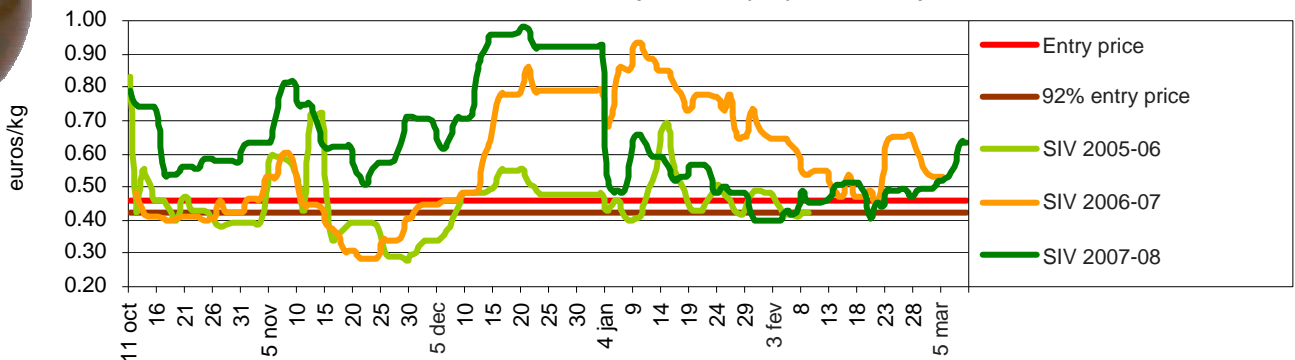


A reminder of the tariff concessions awarded to Moroccan tomatoes in Europe

Morocco currently benefits from a duty-free preferential quota of 213 000 tonnes plus a 20 000-tonne additional quota. Tomatoes are exempted from ad valorem import levies from 1 October to 31 May within the limits of the quota authorised each month, if the entry price agreed by the European Union and Morocco is EUR461 per tonne or more. The entry price regime is based on the principle of recording quotations by product and by source; this leads to the setting of standard import values whose levels are compared to those of the entry prices in force (EUR0.461 per kg for tomato). The standard import value is the weight average of the prices of a product on the European market determined for a given source; these prices are first decreased by the amounts specified in Regulation 3223/94 (customs dues, importer's margin, wholesaler's margin, miscellaneous expenses, etc.). Failure to respect the entry price leads to the payment of a financial penalty called the tariff equivalent, with the amount of this being:

- 2% of the entry price if the standard import value is less than a maximum of 2% of the entry price;
- 4% of the entry price if the standard import value is less than a maximum of 4% of the entry price;
- 6% of the entry price if the standard import value is less than a maximum of 6% of the entry price;
- 8% of the entry price if the standard import value is less than a maximum of 8% of the entry price;
- the maximum tariff equivalent if the standard import value is more than 8% lower than the entry price, equal to the WTO consolidated specific customs duty.

Tomato - Morocco - Evolution of the standard import value (SIV) on the European market



larger than in the preceding season, that is to say 199 000 tonnes in comparison with 143 000 tonnes. In contrast, shipments decreased distinctly from February to the end of April 2008, with a 9% drop in comparison with 2007. Furthermore, the Moroccan quota has been reduced as the European Commission noted that the total had been exceeded by 16 259 tonnes in the preceding season.

2008-09 to be a decisive season

Given the increasing difficulties observed, areas under tomatoes are tending to decrease in Spain. Thus, part of production in Murcia, and especially cherry tomato, is reported to be replaced this season by cucumber. Likewise, areas are reported to be decreasing in the Granada area specialised in cherry tomato. The decrease is also marked in the Almeria region where areas might decrease by 5%, i.e. 400 ha, with a return to the same area as in 2006-07, to the benefit of courgettes and aubergines. In production calendar terms, operators wish to avoid the concentration of supply in January and February that resulted in serious falls in price in the last season.



The first plantings have thus been performed at least two weeks earlier, but pest pressure and favourable weather conditions have nonetheless obliged many operators to plant late. The decrease in areas is reported to be continuing in the Canary Islands. In contrast, there should not be a

major change in the Moroccan potential, with production substantially larger than the European import quota. However, more and more wage claims and transport problems weigh heavily on the sector. Among other things, these are currently leading to the development of new shipping lines but may lead to the withdrawal of certain foreign operators in the long term. Major questions also concern market evolution in the coming months, the main one being the negotiations between Mo-

rocco and the European Union that should have led to the signing of an agreement in September this year. Talks are currently blocked by the entry price system for fruits and vegetables, especially in the very delicate case of tomato ■

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Tomato — European Union — Imports and re-exports									
Tonnes	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>Intra EU-27</b>	<b>1 771 932</b>	<b>1 866 477</b>	<b>2 010 865</b>	<b>1 959 371</b>	<b>2 075 857</b>	<b>2 187 738</b>	<b>2 256 613</b>	<b>2 377 684</b>	<b>2 386 747</b>
Netherlands	569 267	603 239	570 166	585 844	641 516	723 618	785 366	819 303	800 346
Spain	847 197	904 084	1 031 963	951 305	936 980	905 913	857 058	928 568	798 936
Portugal	8 070	5 164	22 251	35 298	50 767	68 507	101 526	56 079	202 331
Belgium-Lux.	121 220	122 325	124 710	130 645	170 899	162 702	145 568	159 562	145 833
France	70 900	56 983	67 700	68 095	67 291	75 475	91 576	101 143	124 650
Italy	116 602	113 441	125 754	109 785	90 199	112 466	93 977	102 085	104 758
Germany	14 408	26 023	37 534	40 911	58 053	81 483	82 185	90 865	85 632
Poland	3 528	7 178	7 039	16 635	36 554	26 144	51 951	59 157	73 858
Slovakia	3 844	6 186	7 419	5 157	3 595	2 903	5 909	8 073	10 536
Czech Republic	773	342	254	255	293	2 145	5 386	8 465	8 717
United Kingdom	6 466	7 754	7 665	6 356	6 334	10 393	14 919	25 524	8 339
Austria	323	1 420	1 334	1 528	5 785	6 370	7 594	5 250	7 033
Greece	2 370	2 159	508	624	476	2 533	3 790	4 047	4 109
Lithuania	1 278	1 772	2 286	2 714	1 382	2 620	1 940	3 037	3 923
Hungary	1 899	2 671	1 204	772	592	720	1 488	986	1 794
Slovenia	14	42	0	0	12	21	145	704	1 392
Ireland	519	791	343	1 655	1 630	459	1 082	988	1 173
Bulgaria	173	206	32	92	376	84	50	397	756
Denmark	1 530	2 663	1 362	680	953	1 266	614	645	666
Latvia	0	0	0	0	10	155	999	605	541
Luxembourg	501	258	412	158	321	153	309	572	537
Sweden	408	189	319	338	649	740	1 531	355	413
Finland	225	614	153	290	444	119	191	99	247
Cyprus	72	2	2	9	0	7	28	74	68
Romania	37	367	81	71	537	270	56	54	60
<b>Extra EU-27</b>	<b>251 547</b>	<b>211 494</b>	<b>263 384</b>	<b>280 886</b>	<b>292 810</b>	<b>289 495</b>	<b>355 078</b>	<b>355 128</b>	<b>470 319</b>
Morocco	209 372	149 997	187 311	186 122	189 421	191 181	215 027	219 923	301 190
Turkey	17 738	25 698	49 486	61 907	65 752	48 152	76 221	61 846	91 360
Israel	11 776	14 601	13 662	11 001	13 618	15 332	21 010	25 407	26 760
Yugoslavia	1 176	2 022	1 519	3 741	4 526	4 460	7 232	13 000	18 953
Syria	3 914	4 853	2 192	6 456	7 488	19 619	18 389	20 126	10 955
Senegal	860	1 873	2 293	2 736	3 546	4 274	4 735	5 999	7 303
Jordan	1 584	3 745	1 725	3 136	1 575	1 677	1 720	3 150	3 227
Tunisia	1 034	1 820	1 942	1 858	1 867	1 890	2 502	2 136	3 151
Serbia	0	0	0	0	0	0	465	316	2 875
Egypt	227	344	458	831	963	1 012	1 365	1 848	2 372
Bosnia herzegovina	0	24	37	130	113	0	7	0	547
West Bank	0	0	0	118	623	475	432	529	281
Croatia		88	97	29	15	217	96	151	229
Kosovo	0	0	0	0	0	0	0	0	197
Colombia	0	0	0	0	97	337	454	145	124
Dominican Rep.	13	10	13	78	53	36	146	121	119
Estonia		7	3	12	0	374	475	142	88
Albania	4	18	57	102	27	110	0	1	88
South Africa	240	207	114	379	380	176	176	0	72
Ukraine	315	3 468	939	659	1 533	24	476	0	35
Costa Rica	0	0	0	0	70	58	22	5	31
Ethiopia	0	0	0	0	0	0	6	27	28
Switzerland	40	32	20	64	37	23	64	37	23
Moldavia	69	76	16	6	21	108	754	46	19

Source: Eurostat, code 0702



© Régis Domezge

# Mango in Côte d'Ivoire

## 2008 season: first impressions

**The well-known Côte d'Ivoire mango exporters' cycle has changed. Until now, a poor season followed a good one and then there was a medium one, making it possible for export enterprises to maintain a balance. This time, two seasons with crop deficits in 2006 and 2007 were necessary for exporters to finally recover, thanks to the strong decrease in volumes combined with a considerable increase in selling prices on the European markets.**

The season started in a difficult context. All the sector stakeholders were on the alert. The main concerns among growers were the unpaid bills of recent years and fears of a decrease in income. Among exporters, recovering after the disappearance of their incomes and excessive company debt loads was the only alternative. Importers were confronted with a reduction in or absence of funding after the serious losses of the last two years.

A late, shorter season

The 2008 season started more than a fortnight later than in preceding years, when the first 'Kent' fruits were shipped at the end of March. Shipments by air and sea started towards 15th April with late ripening of the first 'Kent' production.

The 'Amélie' season was practically non-existent as less than 10 containers were shipped—about 150 tonnes of fruits. 'Keitt' was little sold as 'Kent' production was amply sufficient and importers showed little interest.

From the start of the season onwards, exporters tried to anticipate the decrease in prices by reducing or even stopping the shipment of small fruits (size 10) that al-

ways sell poorly after two weeks of shipping. Quality problems were centred on the homogeneity of fruit ripeness in both the first and second crops as the difference in ripening of the two was considerable (two weeks).

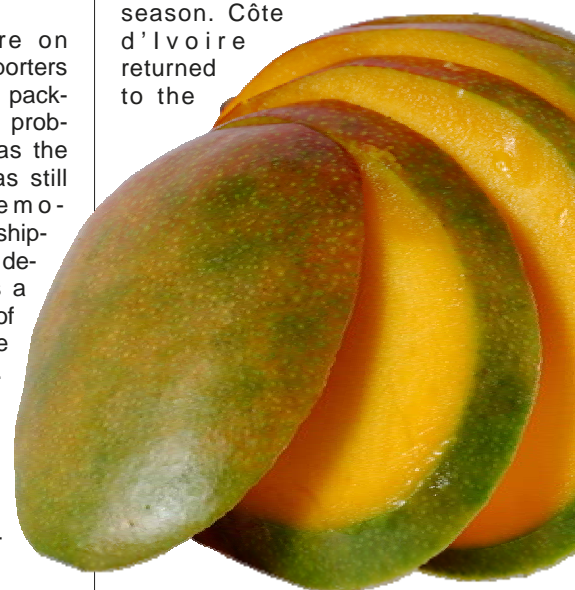
The first rains were on 10 May and some exporters preferred to close their packing stations for fear of problems of anthracnose as the nightmare of 2007 was still fresh in their memories. Others continued shipments, gambling on a decrease in tonnages as a result of the stopping of some exporters and the fall in producer prices. However, the latter were not spared by quality problems at the end of the seasons and difficulties resulting from an encumbered market.

Some 30% of the second production of 'Kent' was not exported and all the 'Keitt' stayed on the trees. 'Kent' plantations were literally under-exploited as regards the second production. The 'Kent' season that lasted for two months (April and May) was concentrated in a single month this year, running from 15 April to 15 May, and was followed by exports of 'Keitt' in June.

Strong decrease in volumes and an improvement in sales

Shipments by sea from Côte d'Ivoire decreased dramatically, with a fall of nearly 30% in comparison with 2007:

491 forty-foot containers in 2008, that is to say about 10 000 tonnes, in comparison with 689 containers in 2007 (14 000 tonnes). The decrease is accounted for mainly by the volumes not exported at the end of the season. Côte d'Ivoire returned to the



average volume shipped in 2004-05. A new feature was noted in that the volumes were not reduced by shortage of production but intentionally by shippers.

In contrast, exports by air held their ground, with a few problems of ripeness and fruit colour at the beginning of the season. Côte d'Ivoire still holds the best position for air mango.

There were no serious logistic problems as containers were available from all the shipping companies with a reefer service to Europe via SDV-SAGA from the terminal at Ferkéssédougou. However, access to the shipping companies with the shortest transit time was limited because of inadequate contain-



Mango — Côte d'Ivoire  
Number of containers shipped from the port of Abidjan

40-foot	2007	2008	difference
Côte d'Ivoire	689	491	- 198
Mali	159	218	+ 59
Burkina	122	106	- 16
Total	970	607	- 155

Source: SDV-SAGA CI - Abidjan

ers (AEL/DELMAS lines), that caused some harm at the beginning of the season.

However, the accumulation of arrivals as a result of delayed ships resulted in marketing problems from the end of May onwards.

The first shipments from Côte d'Ivoire arrived at the end of April under favourable European market conditions with little or no real competition. Prices held at averages of over EUR4.50 per box for the first two weeks, a seemingly impossible performance that exporters in Côte d'Ivoire had not achieved for a very long time. Prices began to tumble in the second and third weeks under the pressure of fruit volume and, as usual, finished the season at an average of EUR3.00 per box, a level well below cost.

### New challenges

The sector is still very delicate. Although the 2008 season was a good one it did not cover the losses of the two preceding years. Production costs increased further as a result of the high prices of inputs and extra costs involved in the certification of enterprises, and will probably not decrease next year.

The profitability of shipping lasting for four weeks is a puzzle for exporters. Can an enterprise survive from one year to the next with such returns? After two disastrous seasons, 'choosing the lesser evil' might well be a suitable slogan for shippers at the end of the 2008 season.

The 'Kent' export slot is narrowing. Will 'Keitt' suffer the same fate as 'Amélie'? 'Keitt' is nonetheless well-coloured and makes it possible to lengthen the export seasons. The search for outlets seems to be a

new challenge for growers in Côte d'Ivoire who have been unable to shift all their 'Kent' and 'Keitt' on the export market. They now know that exports sales of their crops depend on the date of ripening of the fruits and the certification of their farms—in addition to fruit quality and colour.

The certification process is continuing with the renewal of GLOBALGAP certificates and joining of producer groups by new certified enterprises. Certification together with improved quality and a decrease in tonnage will certainly continue to be the main factors in sector sales.

The decrease in producer prices as envisaged by certain importers or exporters is not the best way of making enterprises profitable. The end of the season was clear proof of this. Even if producer prices fell by 20%, the market was unable to take the produce in a satisfactory manner (inadequate quality and decreased demand).

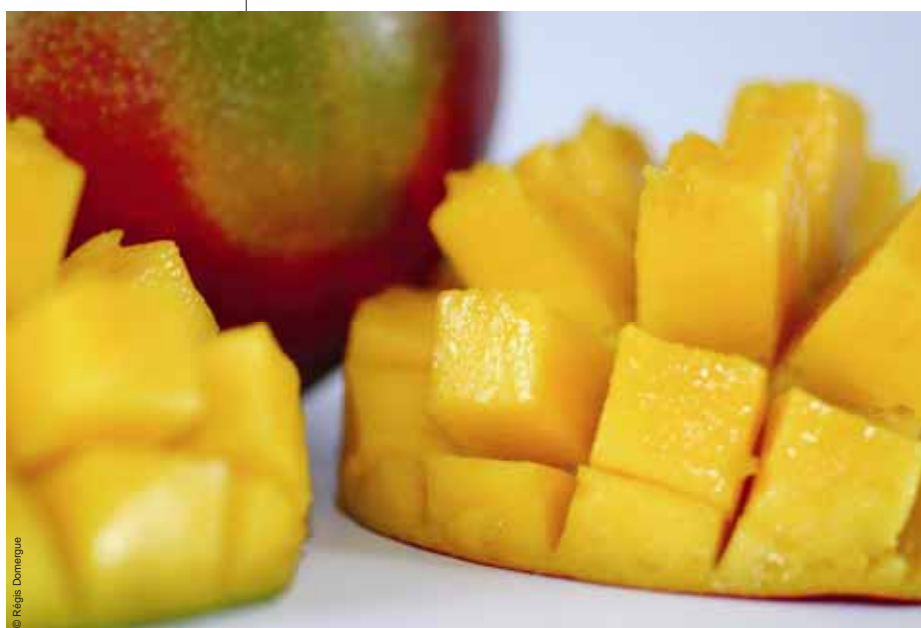
In contrast, the maintaining of exports from Mali seems to form a barrier to an increase in exports from Côte d'Ivoire. At the same or a slightly higher cost price, Malian mangoes are confirming their position, even if Burkina Faso has eased off its shipments by sea. Mali is the only exporting country to have maintained its export tonnages from 2007 to 2008, shipping slightly more than 4 500 tonnes. It would seem to have profited from the early halt to shipments from Côte d'Ivoire. Are Malian exporters pleased with their performance?

More than one positive season is needed for export companies in Côte d'Ivoire to recover the serenity and profitability that they used to enjoy ■

**Alexis Moulin**



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# Small exotic fruits

## Small exotic fruits

A report by Pierre Gerbaud

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## The European market for small exotic fruits

Specific, technical and ethnic



'Small exotic fruits' has been chosen as the title of this month's Close-Up section. There is nothing pejorative about the term; here, 'small' means that the fruits covered are marketed in smaller volumes, even though some such as papaya and coconuts are shipped in substantial quantities that are greater than certain fruits discussed in this section in the past. The notion that the produce is less widespread or less mentioned in discussions of imported fruits should doubtless be added to the question of volume. The term 'exotics' is used because these fruits do come from far away, but here again the word is approximate as some of the fruits are grown nearby. The definition is thus imprecise. But this is intentional, in order to leave the door open to the enormous potential for development of this new section. In any case, this coverage does not claim to be exhaustive and so can be enriched in the future.

Import professionals no longer use anything to innovate and broaden the range of exotic fruits available to their clientele and to consumers. In the 1980s, any fresh opportunity to supply unknown fruits seemed to be a way of increasing import flows and showing strange or surprising fruits with high value-added as a result of their rarity. Was this a fashion? Certainly. But the multiplication of the number of imported products soon became complex as regards management and the economic returns were not as easily garnered as all that. Who remembers salak fruit (*Salacca zalacca*), or many others that fell on the battlefield of this short-lived trend?

### From a plethora of exotic fruits to a more modest range

Were supplier countries ready to ship sufficient quantities for long periods in order to anchor consumption of these new fruits? Were customers open to the very large choice available and the high prices asked? Probably not.

However, their period of all-out development of exotic fruits certainly served to select a range of produce that now forms the foundation for imports of tropical and subtropical fruits. The rapid access to sea transport for pineapple, mango, avocado, litchi, etc. resulted in trade growth for these fruits on the European markets. In contrast, fruits like papayas, passion fruit, carambola and other special items found access more difficult and they were long overshadowed by main players.

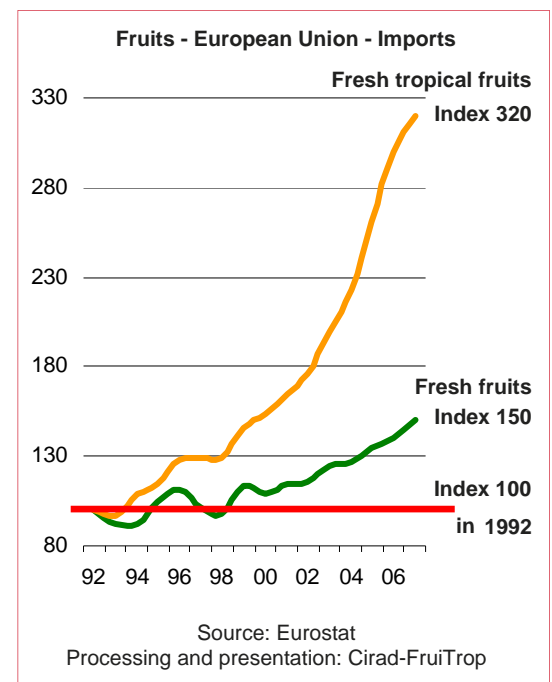
Another basic trend during the same period doubtless also contributed to the temporary waning of the fashion for small exotics. This was the grouping and sometimes the merging of import companies that took place at the time. Business concentration resulted in the refocusing of operations on a narrower range of fruits but one that consisted of produce whose potential was more obvious and more immediate. It was 10 to 15 years before small exotics re-emerged. Little by little, they have established a new position on the European markets, often via import structures of varying sizes and with

differentiated segmentation. The change in consumer habits has played an important role here.

### Small exotics have finally found their position: festive and ethnic

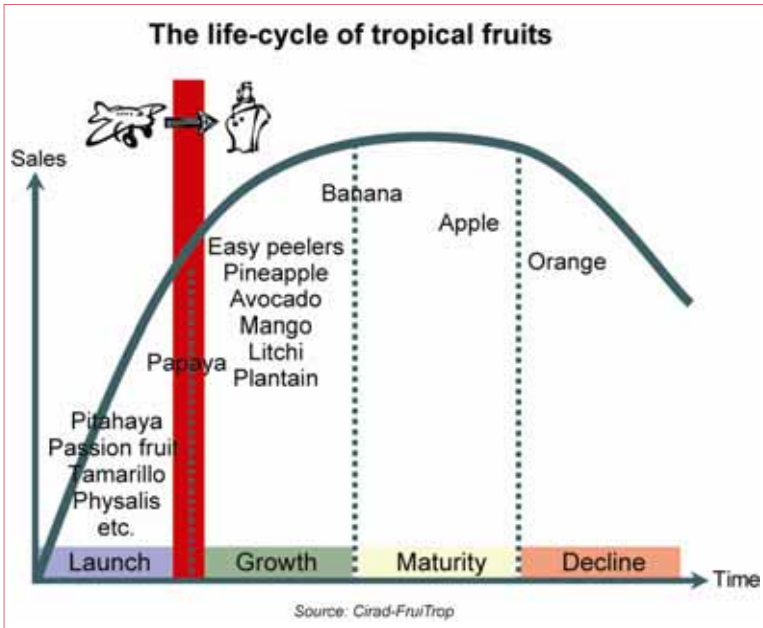
Two main trends that accompanied the development of trade in these 'secondary' products in the range of imported tropical fruits can be identified. The first consists of rare fruits that form part of the broad range of fruits that are available mainly during the Christmas period. At other times of the year they are present on the market for the supplying of the quality retail trade, luxury hotels and traders specialising in making up baskets of fruits.

The second responds to the development since the 1990s of so-called 'ethnic' trade. The taking into account of the consumption styles and habits of populations of foreign origin within the European Union is very probably an important



Photos © Guy Bréhiner





turning point in the segmentation of these products from afar. Long ignored or exploited informally, they benefited from more formal structuring during the 1990s. This aspect of the exotics market also displays distinct development features. For example, the market for plantain, with substantial import volumes (nearly 70 000 tonnes in 2007), is not approached in the same way as that of dragon fruit—limited to a few hundred tonnes. In one case, the market is for a staple and almost universal foodstuff in the countries of origin of immigrant populations in Europe. In the other, imports meet more occasional demand from the same populations, together with that of curious European consumers as the fruits is perceptible by a broader fringe of the population.

In general, the import volumes of the ethnic products plantain, tubers and, to a less extent,

coconut, have increased considerably insofar as they can be shipped by sea, a cheaper method of transport with higher capacity. In contrast, ethnic fruits that are also intended for broader sales remain very marginal in terms of tonnage and have the image of luxury fruits for European consumers. Imports are more modest and mainly by air.

These main lines are obviously contradicted by exceptions that generally confirm the rule. The volumes of papaya imported for the European market have increased slowly since the 1990s. However, after the tremendous increase in mango imports, numerous market observers predicted a great future for papaya. It was not until the emergence of the variety 'Golden' (that can be shipped by sea), promoted by Brazil, that consumption gained ground at the beginning of the 2000s. Consumers have perhaps lost out in comparison with 'Solo' papayas shipped by air and whose taste qualities are often emphasised. Market segmentation has also played a special role for this fruit with the appearance of the large-fruited 'Formosa' variety a few years ago, destined for the ethnic and catering markets.

*Gustibus et coloribus non est disputandum*

We thus return to the fundamental principles of the success or failure in the marketing of a fruit. Why is progress difficult for papaya where mango sales rocketed? Beyond the question of the constraints related to the fruit itself—often reduced by agricultural research (choice of variety, cultural methods, etc.)—the 'fruit' as an entity must find its public. In spite of the proverb 'There's no arguing about tastes and colours', the shape, colour, flavour and texture of a fruit seem to form the essential foursome for its emergence, although this is related to production capacity of course. Pineapple would thus seem to be the ideal pattern with an original shape, attractive colour (after possible treatment) and a characteristic taste. Avocado has an easily identifiable shape, colour that would not seem to be a great selling point and a comparatively neutral taste but that can easily be complemented by culinary additions. Mango is not a great attraction via its not very individual shape, which varies according to the variety, but its colour and pleasant taste make up for this. This pattern also applies to the range of small exotic fruits. The shape and colour of passion fruit are seen as not very attractive by European consumers but the pulp texture and learning how to eat it probably have an adverse effect on trade flow although the flavour is particularly rich. Matching these criteria is even more difficult if the convenience of the product is included.



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General features of the small exotics sector	
Price	At the import stage, prices are even throughout the year but very likely to rise during periods of strong demand. Retail prices are very high in traditional and specialised shops, with 'ethnic' chains setting prices lower.
Margins	The smaller the volumes the higher the margins at all stages in the chain.
Volumes	Limited to very limited. Closely targeted supply peaks during periods of strong demand.
Distribution channels	The specificity of the channels (specialised importers in particular) is strongly related to the degree to which the fruit is marginal. Plantain and papaya use import channels that are little different to those of the major fruits. Other members of the small exotics group go through specialised channels. Final retail distribution is shared between the large retail chains (very present during periods of strong demand), retail shops that go for quality ranges and the shops selling to ethnic groups.
Supply	Supply was first led by Latin America and especially Colombia (Cape gooseberry, tree tomato, granadilla, etc.) thanks to the range of Andean fruits. Asia then took over, broadening the range to include carambola, dragon fruit and mangosteen. Africa has kept the markets for violet passion fruit and 'Solo' papaya. Madagascar and, to a lesser extent, South Africa rule the litchi market. As regards the big fruits among the small ones, Brazil is heavily dominant in papaya and Costa Rica, Ecuador and Colombia are exclusive plantain suppliers.
Seasons	Very marked. The periods of strong demand are the end of the year and religious festivals: Christmas, Easter, the Chinese New Year, Passover, Ramadan, etc.
Standards	The more a fruits is considered to be a minor one, the less it is covered by standards, whether public or private. The Codex Alimentarius is attempting to set up minimum standards for products.
Consumption trend	Generally fairly low or stagnating. Strongly linked with the economic situation. Papaya and plantain consumption have even lost ground.
Factors opposing development	Availability of postharvest technology with, as a corollary, access to sea freight facilities. High retail prices. Unknown preparation or consumption methods. The development of a 'ready-to-eat' range is a pathway for progress. Lack of careful handling and advice in the shops.



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Solo sunrise  
Papaya from  
Ecuador...

...and all  
exotic and  
ethnic fruit  
and vegetable



Fruit of the world



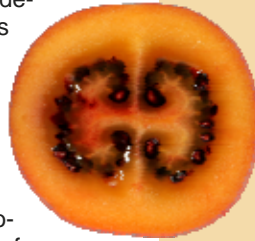
GLOBALG.A.P.

## Growth to accompany efforts in promotion and presentation

Although totally or partially ethnic fruits have experienced an expansion phase in recent years, this results essentially from their former absence on the European markets. They can continue to grow but the rate may well decrease in the future. Indeed, this very specific demand has its limits. It is fixed and not very variable insofar as the demography of the populations concerned is changing little and eating habits change with new generations. Traditional meals are increasingly concentrated at weekends or holidays and so more uniform consumption affects the consumption of special products.

Sales of small exotic fruits may increase if promotion is intensified in order to make the public familiar with these products that are still considered as strange. However, sales are still concentrated on holiday periods. More regular marketing would require a specific promotion effort by supermarket chains and also an effort in presentation and storage. All professionals have been surprised by the lack of freshness of these fragile fruits negligently abandoned in unattractive displays. In addition, recent consumer preoccupations related to the emergence of an 'ecological conscience' (carbon balance, food miles, etc.) are not in favour of the importing of these products from far away, even though most travel with the luggage of the same consumer-tourists returning from exotic destinations ■

**Pierre Gerbaud**, Consultant  
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© Guy Bréhiniér

- The product sheets have been compiled using various references, including:
- professional sources
  - Le verger tropical by Fabrice & Valérie Le Bellec, Orphie
  - La protection des fruits tropicaux après récolte, Etienne Laville, Cirad-Coleacp
  - Les spécialités, Fruits et Légumes, a retail stock guide, Ctifl
  - Produce availability & merchandising guide, The Packer, 2008
  - Saveurs et qualité de nos produits d'Outre-mer, Odeadom
  - www.aprifel.com
  - www.afssa.fr

The FruiTrop team is particularly grateful to the companies NETA, EXOFARM and SIIM for supplying, free of charge, the fruits used for the photographs illustrating this Close-Up section.

## What is a climacteric fruit?

The somewhat uncommon adjective 'climacteric' has nothing to do with the idea of 'climate' but refers to a critical period in the life of an organism. A climacteric fruit is thus one that displays a particularly critical stage at a certain moment during its development and ripening. Conversely, a non-climacteric fruit does not possess this feature.

The overall development of fruits is commonly monitored by measuring respiration, that is to say the exchanges of oxygen and carbon dioxide between the fruits and the surrounding atmosphere either in the orchard or in storage. The respiration is initially high and then decreases markedly during growth. It then falls even more until harvesting and is very low during ripening and the beginning of senescence.

The respiration rate of a non-climacteric fruit can thus be represented by a curve that falls steadily to zero. In contrast, respiration recovers distinctly but briefly in climacteric fruits at ripening and the start of senescence. It can be said that in this category of fruits, the ripening period is a 'critical' stage since this is an acceleration of inevitable deterioration.

The 'seriousness' of this critical period of course varies according to the fruit. Some are more strongly 'climacteric' than others, e.g. banana, avocado and mango. It must be added that this recovery in respiration rate in climacteric fruits is a condition for attaining their full taste and aroma potential during ripening.

This feature must therefore be taken into account to maintain maximum control of the period between harvesting and consumption and to ensure high fruit quality.

In non-climacteric fruits, low temperatures are sufficient to reduce the respiration of freshly picked ripe fruits. For example, temperatures of some + 3° to + 5°C enable good conservation of citrus for several weeks without deterioration in quality.

In climacteric fruits picked green, such as banana, avocado and mango, the storage temperatures recommended cannot halt the return of gas exchanges at the climacteric peak, leading to the anarchical ripening of fruits in the same batch or in different batches.

Controlled ripening of climacteric fruits using ethylene as a catalyst is used to avoid this problem.

Ethylene triggers the return of the gas exchanges of the climacteric peak, ensuring uniform ripening resulting in high quality fruits. The fact that a fruit is 'climacteric' is not a defect on condition that those who harvest it, control subsequent stages and eat it are informed.

### Tropical fruits

#### Climacteric

- Avocado
- Banana
- Carambola
- Cherimoya
- Guava
- Passion fruit
- Mango
- Papaya
- Plantain

#### Non-climacteric

- Litchi
- Mangosteen
- Pineapple
- Rambutan
- Tree tomato

## Product sheet

**Carambola**

*Averrhoa carambola* L.  
(Oxalidaceae)  
Other name: star fruit

**Description**

**C**arambola fruits grow on a thick shrub that can reach a height of about 10 metres when it is old. The fruits grow below long leaves or at shoot tips. The tree is found throughout the tropical and subtropical zones but can withstand short periods of cold. The fruit is ovoid with five or six very marked ribs, justifying the name 'star fruit'. It is green and turns yellow when ripe. The flesh is also yellow and then whitish towards the centre. The thin translucent skin is strongly

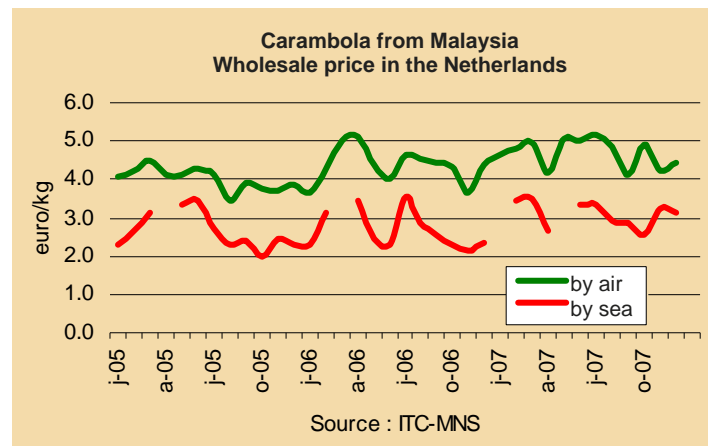
bonded to the flesh, whose firm texture is similar to that of cucumber. A few flattened beige seeds are found in the centre of the fruit. Fruit length varies from some 7 to 15 cm and width from 5 to 8 cm. There are two main types of carambola, one being very acid and the other sweeter. The latter is shipped to Europe in small quantities.

The acidulated, slightly sweet taste is pleasant but not very fragrant. The repu-

tation of carambola has been gained by its original shape that makes it essential in gastronomic presentations and cocktails. The whole of the fruit can be eaten as the skin is closely attached and the few seeds that it contains are soft. Jelly and jam can be made out of it. It is also used in Asian cuisine in curries and relishes. Its high calcium oxalate content makes it a good spot remover for textiles. The juice is also used for polishing metals.

**Supplier countries and calendar**

Although carambola is grown in numerous countries, only a few supply the European market. Most of supply is from Malaysia, with complementary sources such as Brazil, Israel, etc. European imports are limited to a few thousand tonnes per year. The essentially decorative aspect of carambola means that it plays a marginal role in the range of exotic fruits. It has modest position but has become more affirmed in recent years. The absence of consumption on a more everyday basis probably limits an increase in the volumes shipped. Progress could be made in Europe with wider distribution on markets that have hitherto been little exploited. However, its perishability and the fact that it is only imported by air (high cost) are definite handicaps for low-income consumers.



Photos © Guy Bréhiniér

**Packaging and sizing**

Carambolas for the European market are often shipped in individual plastic bags or paper wrapping. They are then placed vertically in a telescopic box padded with synthetic foam on the sides, top and bottom. This protection prevents the particularly delicate fruits from impacts with each other. The least impact soon results in browning of the skin, especially on the ribs. Other types of packaging include cardboard trays, but these are not used very often.

Carambolas are graded according to the number of fruits per box, generally weighing 3 kg. The most common sizes are 18 to 24 fruits, i.e. average fruit weight of 125 to 160 g. Smaller fruits are packed in cardboard trays but these form a marginal proportion of shipments.

CARAMBOLA Nutritive value (pulp/100 g)	
Energy	35 Kcal
Carbohydrate	9.4 g
Vitamin C	30 mg

## Nutrition

Carambola is low in calories and rich in antioxidants and minerals.

## Post-harvest

Carambola is a climacteric fruit. Picked green, it becomes golden yellow when ripe and is extremely fragile. The slightest impact during picking or packing bruises the skin. It must be picked carefully and wrapped individually.

The recommended storage temperature range is 5 to 8°C. The first chilling injury appears at 5°C or less. The epidermis and pulp turn brown. After pre-refrigeration treatment, carambola is stored at temperatures that depend on requirements: 6°C for durations of about 10 weeks or 10°C for storage for 5 weeks. Its shelf-life is 7 days when ripe.



## Regulations

Carambola is covered by Codex Alimentarius standard 187/1997 amended in 2005.

Photos © Guy Bréhiniér



What care is needed for tropical trees?  
How are they pruned?  
What kind of grafting for what species?  
How can chemical inputs be limited?  
Distinguishing between pests and beneficials, etc.

*This book addresses the main cultural techniques for tropical fruit production, always seeking a balance for growing produce without harm to the environment.*

However, it presents above all more than 120 fruit species that grow in tropical, subtropical or Mediterranean climates—covering plants considered as major, minor, forgotten or promising for the future.

**Le verger tropical**  
**Cultiver les arbres fruitiers**

Fabrice & Valérie Le Bellec. 2007  
Edition Orphie, [www.orphie.net](http://www.orphie.net)  
272 pages in colour  
ISBN 978-2-87763-384-0  
Public retail price: 30 euros





## Product sheet

## Passion fruit

*Passiflora edulis*  
(Passifloraceae)

## Description

Passion fruit grows on a climbing vine that clings with tendrils and whose base lignifies with age. It can attain a length of several tens of metres. According to the variety, the plant grows in the tropics or in a warm, humid subtropical climate. Production starts 6 to 9 months after planting and continues on the same plant for 3 to 5 years. The nature of the plant means that it requires training for commercial production. The generic

name groups many species, few of which are produced commercially. The variety most commonly sold on European markets is *Passiflora edulis* Sims, with purple or violet spherical fruits 4 to 5 cm in diameter. The second variety is *Passiflora edulis flavicarpa*, with yellow fruits that are usually larger (5 to 8 cm). These ovoid berries have a thick white inner epidermis and contain a large number of edible seeds in an aril that is yellow-orange to green, depending on the variety. The fruit wrinkles and hardens at

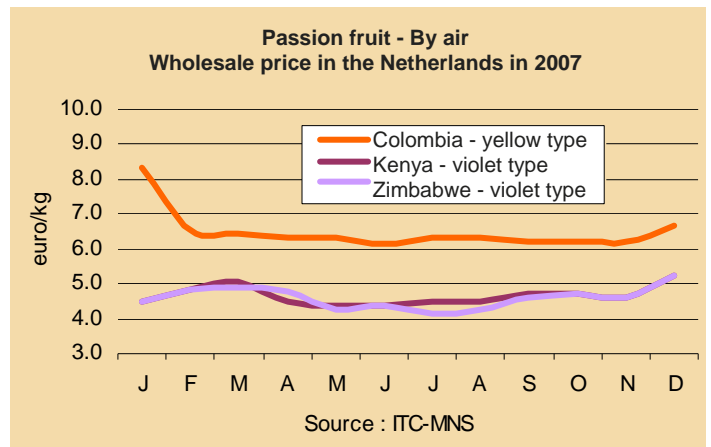
maturity. Several other types of passion fruit are also available on European markets, including najanrilla or granadilla from Colombia that are pear-shaped with orangey skin or hybrids with fruits of various sizes and a brown-pink colour.

Passion fruit is eaten fresh. Its exceptional fragrance makes it an essential tropical fruit. Its unattractive appearance and the problem of seeds slow its commercial development as a fresh fruit. In contrast, it is widely used in the agrofood industry as juice (single or concentrate) and as a base for dairy products, ice cream, etc.

## Supplier countries and calendar

It is difficult to estimate the quantities of this fruit imported to Europe as there are no accurate statistics. However, the figure must be between 4 000 and 5 000 tonnes per year. The largest exporters to the European market are not necessarily the countries that grow the most, like Brazil, Peru and Ecuador where production tends to be processed. Most of the quantity sold on the European markets consists of purple, spherical fruits. They are shipped mainly from East and southern Africa (Kenya, Zimbabwe, South Africa, etc.) and Colombia. Other types, and especially the hybrids that are paler purple and larger, complete supply (Israel, Réunion). The yellow varieties are marginal, like the pear-shaped, orangey Colombian fruit (granadillas and najanrilas) and the more acid spherical fruits from Thailand (maracuya). Purple passion fruits are available throughout the year depending on the origin.

Passion fruit is often used processed as juice, etc. For this reason, the distribution of fresh fruits is less well developed. It is perceived more as an additional exotic fruit. Eating it fresh is not very easy and this limits consumption. It is more commonly used to flavour fruit salads as it contributes its fragrance and in the making of more sophisticated desserts (sorbets, pastries, etc.) than in its natural form. The potential for developing sales is probably limited.



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## Packaging and sizing

Purple passion fruits are generally packed in cardboard trays or flap closure boxes measuring about 30 cm by 20 cm, with a net weight of 2 kg. Some sources also ship their fruits packed in rows in trays or flap boxes. Yellow passion fruits are usually packed in cardboard trays; sometimes with cavities.

There is no specific sizing system for passion fruit. However, a 2 kg box contains 48-50 purple fruits. Some sources pack fruits individually with shrink film for better keeping qualities.



PASSION FRUIT Nutritive value (pulp/100 g)	
Energy	54 Kcal
Carbohydrate	13 g
Vitamin C	20 mg
Provitamin A	1 000 to 2 000 IU

## Nutrition

Passion fruit is a low-energy fruit and fairly rich in carbohydrate and minerals. It is an excellent source of vitamin C and provitamin A. The seeds have a high oil content and the leaves have emetic virtues.

## Post-harvest

Passion fruit is climacteric. When it ages, the epiderm wrinkles but this does not affect the quality of the pulp.

It keeps well for 4 to 5 weeks at 8 to 12°C. The shelf-life depends on the stage of maturity but is generally 5 or 6 days.



## Regulations

There is no specific standard for this fruit. The importing of passion fruits in Europe requires the submission of a phytosanitary certificate from the country of origin.

### The main passion fruit varieties

The genus *Passiflora* (Passifloraceae) is the richest in fruit species with over 60 examples. Several species are also of ornamental interest because of the singular, spectacular form of their flowers, and some are used for their sedative, antispasmodic, antibacterial and anti-insect properties. Several cultivated species are described.

The species *Passiflora edulis* is a vigorous liana, with stems 20, 50 or even 80 metres long. **Purple passion fruit** has small, globular to ovoid fruits 4 to 9 cm long and 4 to 7 cm in diameter with a moderately brittle pericarp and strongly aromatic dark yellow pulp forming 35 to 50 percent of fruit weight.

Yields are fairly low at 5 to 10 per hectare per year. It originated in southern Brazil and northern Argentina and Paraguay and is suited to tropical and subtropical regions and can even withstand light frost. For this reason, this form is that most commonly cultivated at high latitudes or elevations, as in Australia and Kenya.

The **yellow passion fruit** *Passiflora edulis f. flavicarpa* is more vigorous than the purple variety. Its fruits are round to oval with a smooth, yellow surface and also more attractive than purple passion fruit. The pericarp is harder and the fruit is larger—from 6 to 12 cm long and 4 to 7 cm in diameter and weighing 60 to 150 g. They are less aromatic and slightly more acid. Yellow passion fruit requires high temperatures (20 to 34°C) and grows better at a low elevation. Yields are high at from 10 to 25 tonnes per hectare per year and as much as 55 tonnes in certain cases, with a juice yield of 30 to 46 percent.



**Sweet passion fruit** or sweet granadilla (*Passiflora ligularis*) still grows wild from Mexico to Bolivia and in Venezuela. It is a vigorous liana. The fruits are round to ovoid and measure 5 to 9 cm long by 4 to 7 cm in diameter. A point extends the peduncle and the pericarp is thin and brittle, pale brown to orangey and sometimes violet and has small pale spots or streaks. The pale grey pulp is aromatic and slightly acidulous and much appreciated when eaten fresh. The fruits keep very well. The species is usually grown at an elevation of 1 400 to 2 200 m near the equator, with extremes at 800 and 3 000 m, and 70 percent relative humidity. It can withstand short, very light frosts. Sweet passion fruit begins to flower at the end of the ninth month and produces fruit 75 to 80 days later. It yields 10 to 15 tonnes per hectare per year. The juice yield is 30 percent.



**Giant granadilla** (*P. quadrangularis*)—badea—is grown in the West Indies and the part of South America. The fruit is yellowish green, sometimes pinkish and ovoid to oblong. It is 20 to 30 cm long and to 18 cm in diameter. It weighs an average of 2.8 kg and can reach 4 kg. The pulp is pale, white to orangey and sweet and acidulous. The flavor varies but is always less marked than that of the other passion fruit varieties.

**Banana passion fruit** (*P. mollissima*)—curuba in Colombia, tacsos in Ecuador and tumbos in Bolivia and Peru—is an oblong fruit 6 to 10 cm long and 3 to 5 cm in diameter, with more or less rounded extremities. It weighs 50 to 150 g. The pericarp is pale yellow, green in rare cases, more or less pubescent, thin and flexible but leathery. The pulp forms 60 percent of fruit weight and is salmon pink to dark orange. It has low acidity and is very pleasantly aromatic but usually astringent.

From: *L'amélioration des plantes tropicales* published jointly by Cirad/Orstom - 1997



Produce sheet

## Ginger

*Zingiber officinale* Roscoe  
(Zingiberaceae)

### Description

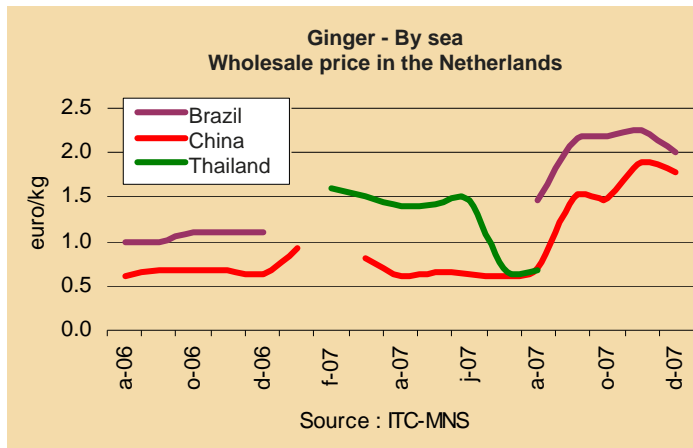
**G**inger originated in India and Malaysia. It is a perennial herbaceous plant in tropical and subtropical climates; it has few requirements as regards soil but seeks shady, moist areas. Multiplication is by planting fragments of rhizome. The underground part of the plant produces extremely aromatic horizontal

rhizomes. They have a characteristic twisted shape and are covered with a thin beige or greyish skin. The flesh is yellow. The rhizomes are harvested ten months after planting. Classified as a spice, ginger has a slightly lemony more or less spicy flavour. It is eaten fresh, grated or cubed,

preserved or dried. It is used in curry powder in particular. It is a condiment with numerous physiological and therapeutic virtues, stimulating salivation and digestion. However, its great success owes much to its supposed aphrodisiac qualities!

### Supplier countries and calendar

Ginger is grown all the year round and imported continuously. The main sources for the European market are China, Brazil and Thailand.



### Packaging and sizing

Ginger is generally packed in cardboard or sometimes plastic boxes that are either telescopic or have large flaps with a varying amount of ventilation. The most commonly used basic packing contains a net weight of 13.6 kg and 10-kg boxes are also shipped from China. Packaging in 5 and 8 kg units exists but more for specific orders. Many operators repack in 5-kg cardboard trays. The rhizomes must be sound and large like those from Thailand and Brazil. Those from China are sometimes smaller. They must be smooth, shiny and 'plump'.

Ginger is essentially an ethnic product used in Asian cuisine in particular. Customers seek aromatic, spicy ginger and prefer rhizomes with few fibres. Large 'hands' are preferred as they give more when peeled for culinary use. Hands with fingers that are not entwined are also preferred for the same reasons. Some sources such as Brazil succeed in grading by the size of the hands packed. The two main sizes are XL and L (extra-large and large).



Photos © Guy Bréhiner

GINGER Nutritive value (pulp/100 g)	
Energy	60 Kcal
Carbohydrate	10 g
Vitamin C (max.)	35 mg

### Nutrition

The energy value of ginger is negligible, consisting mainly of starch. It contains some vitamin C and B and above all a great variety of protective substances.

### Post-harvest

Ginger is sensitive to low temperatures. It develops symptoms of chilling-injury at temperatures lower than 13°C; the tissue softens and the rhizome is rapidly damaged by various moulds. It is therefore stored at 13°C with 65% relative humidity in ventilated packaging, and can thus be kept for several months.

### Regulations

Ginger is covered by Codex Alimentarius Standard 218/1999 amended in 2005.



Product sheet

**Guava**

*Psidium guajava* L.  
(Myrtaceae)

**Description**

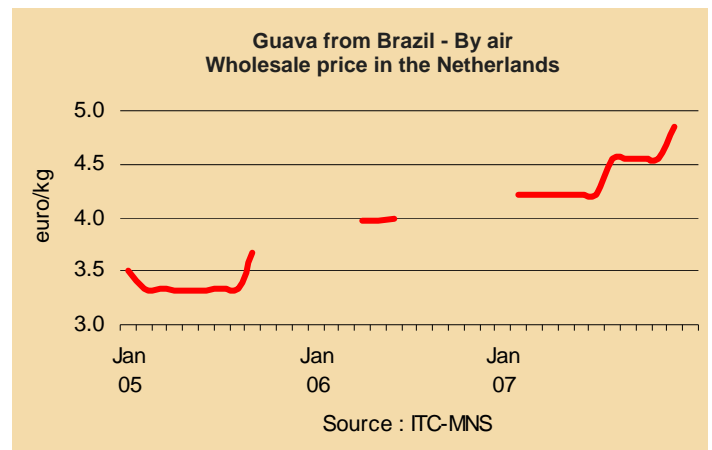
**G**uava grows on trees that reach a height of 8 metres. The smooth, twisted trunk has peeling bark. It is not very demanding in terms of soil quality and grows in the tropics and sub-tropics. The fruit is a fleshy berry that is more or less pear-shaped depending on the variety. The fine, clinking skin is green, turning pale yellow when ripe. The fruits

reach a diameter of 5 to 8 cm. The flesh is slightly floury, reminiscent of certain varieties of pear; small hard, beige edible seeds are found in the centre of the fruit. Flesh colour varies with the variety from white to red by way of creamy colours. Only large-fruit varieties are sold on the international market. The greater part of production is processed (jam, jelly, sor-

bets, nectar, juice, fruit paste, dairy product flavour bases, etc.). Fresh consumption is limited by the fragility of the fruit and its curious smell when ripe. White-fleshed guava is the main type sold on European markets. It is seen as a complementary fruit in the range of exotics and purchased mainly during festive periods.

**Supplier countries and calendar**

Brazil is the main source shipping regular small volumes to the European market.



**Packaging and sizing**

Guavas are generally packed in cardboard trays or flap boxes containing 3 to 4 kg. The fruits are often packed in heat-sealed film for protection and to extend shelf-life. Guavas are sized according to the number of fruits per box.

GUAVA	
Nutritive value (pulp/100 g)	
Energy	31 Kcal
Carbohydrate	5.5 g
Vitamin C	243 mg

**Nutrition**

The average composition of guava (without the seeds) displays

10 to 15% sugars and a great deal of vitamin C: 25 to 1 000 mg depending on the fruit, its ripeness and the variety. The vitamin C content decreases from the skin towards the centre of the fruit. All parts of the tree are rich in tannin, especially the bark (10%) but also leaves, roots and the epicarp of the fruit. The mineral content is also high, with substantial amounts of phosphorus and potassium. The fibre content is high.



Photos © Guy Bréhiniér

**Post-harvest**

Guava is a climacteric fruit and is ready to eat when the flesh is soft to the touch. When too ripe, its fragrance becomes too strong and even unpleasant.

A temperature range of 8 to 12°C is recommended for storage for two to three weeks. It is sensitive to low temperatures (less than 1.5°C). Ripe guava cannot be kept for more than a few days at 20°C.

**Regulations**

Guava is covered by Codex Alimentarius Standard 215/1999 amended in 2005.



Product sheet

# Mangosteen

*Garcinia mangostana* L.  
(Clusiaceae)

## Description

Mangosteen is a slow-growing tree that can reach a height of 20 metres. It has a slender, conical habit. Incision of the trunk releases latex that coagulates to form a yellow dye. Optimum conditions for growth are to be found in hot, humid equatorial zones. Its slow growth and fruiting after eight to ten

years obviously make the fruit rare and these are also a limiting factor for cultivation in planted orchards. Mangosteen is a spherical berry that is slightly flattened at the top and the bottom; it is 5 to 7 cm in diameter and weighs 50 to 150 g. A four-leaf calyx crowns the fruit at the base of the stalk.

Mangosteen has smooth, corky peel several millimetres thick. This is green, turning violet-brown when ripe. Inside, 5 to 8 white-fleshed segments containing one or more grains are arranged like mandarin segments but are not bonded together. The flesh is juicy with fine fragrance but oxidises rapidly.

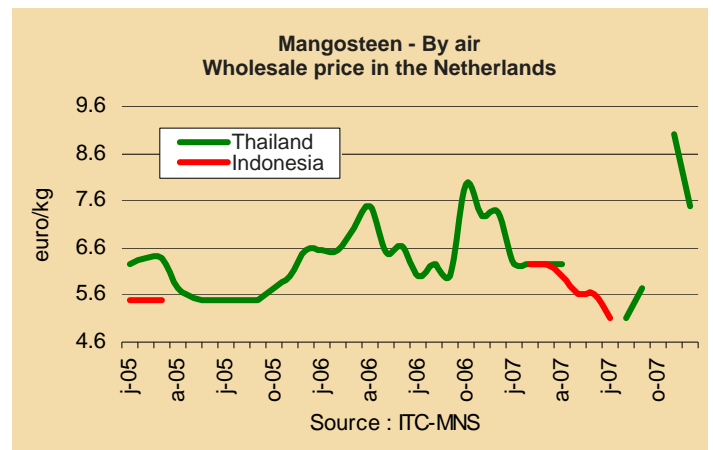
## Supplier countries and calendar

Most of world production is concentrated in Thailand and Indonesia. The two countries are also the main European market suppliers. However, fruits from other sources are also present but in smaller quantities and for shorter periods. These other sources include Côte d'Ivoire and Guatemala.

## Packaging and sizing

There is not really a specific type of packaging for mangosteens as varies according to the source. Cardboard flap boxes seem to be most commonly used but their dimensions vary. They generally contain 2 to 3 kg of fruits. These are packed loose, in layers and sometimes in 1-kg punnets. Fruits packed in layers may be padded with paper or foam.

No specific sizing system is used. Reference can be made to the Codex standard.



MANGOSTEEN Nutritive value (pulp/100 g)	
Energy	65 Kcal
Carbohydrate	16.3 g
Vitamin C	5 mg

## Nutrition

Mangosteen is rich in carbohydrate and fairly low in vitamin C. It also

contains high levels of potassium (135 mg) and magnesium (31 mg).

## Post-harvest

Mangosteen is a non-climacteric fruit. When ripe, it is brownish to dark violet and slightly soft to the touch. It cannot be eaten when it is too hard. The fruits are picked when they have ripened on the tree and then develop very quickly.

It can be kept for two to three weeks at room temperature and for as long as seven weeks at 4 to 8°C.



Photos © Guy Bréhiner

## Regulations

Mangosteen is covered by Codex Alimentarius Standard 204/1997 amended in 2005.



Product sheet

## Coconut

*Coco nucifera* L.  
(Arecaceae)

### Description

Coconuts grow on coconut palms, slender trees 20 to 30 m tall. The greyish trunk is covered by annular leaf scars and topped by a crown of 25 to 30 long pinnate leaves. Coconut grows mainly in hot, humid tropical climates. The coconut is a large drupe containing liquid albumin that solidifies during maturation, giving copra. The fruit consists of a smooth case containing a nut with a

thick, woody shell that forms the coconut itself as sold in Europe. The colour of the nuts on the trees varies from green to yellow according to the variety. The coconuts sold on European markets are more or less dark brown. The pulp is an intense white colour.

Coconut is eaten fresh but this is limited as the nuts are difficult to open. It is

therefore used more in the food industry, being used in biscuits and the manufacture of coconut milk. The oily pulp is also used in the manufacture of margarine and soap.

Numerous cultivars with different properties are found. The fruits sold in Europe tend to be rounded, 20 to 30 cm long and 15 to 25 cm in diameter.

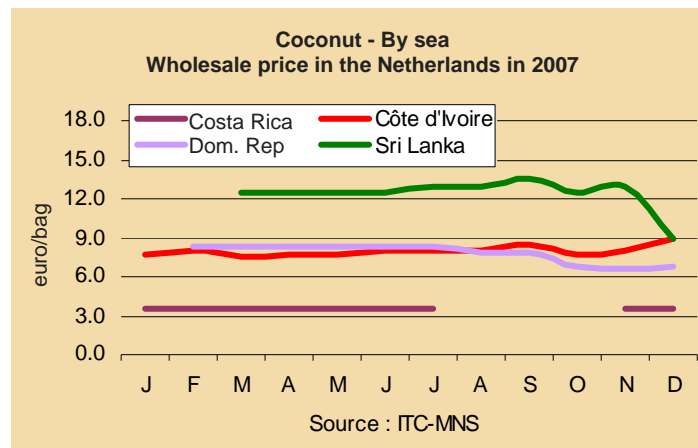
### Supplier countries and calendar

Fairly few countries supply the European Union. Indeed, six sources account for 95% of total imports of some 33 000 tonnes per year. Sri Lanka, Côte d'Ivoire and the Dominican Republic account for 34, 30 and 13% of community supply respectively. Deliveries of coconuts are stable throughout the year, but with a dip in volumes in the first quarter. The coconuts from the Dominican Republic have a good image on European markets while those from Sri Lanka display more uneven quality. Given the difficulty of eating them because of the hard shell, coconut is a complementary fruit. However, its use in certain exotic cuisines means that it

is available to ethnic markets. Other forms of coconut sales are marginal. Reference is made to the fresh coconuts imported from the West Indies for their milk, used in cocktails. This is usually a very small trade flow responding to specific orders. Prepared coconuts are also a very limited category. The nuts are pared in a square fashion and packed in shrink film. The consumer pierces the top of the fruit and extracts the milk easily.



Photos © Guy Bréhinier



Coconut — European Union — Imports									
Tonnes	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>EU-27 imports, of which</b>	<b>27 118</b>	<b>29 002</b>	<b>30 130</b>	<b>31 085</b>	<b>31 907</b>	<b>30 454</b>	<b>31 456</b>	<b>34 378</b>	<b>33 096</b>
<b>Sri Lanka</b>	6 213	6 773	7 189	5 200	5 195	6 159	9 988	10 556	11 195
<b>Côte d'Ivoire</b>	9 825	9 260	9 862	10 285	9 126	7 901	8 992	11 231	9 878
<b>Netherlands</b>	4 288	3 776	5 426	5 958	6 002	7 742	7 901	6 257	8 048
<b>Dominican Rep.</b>	5 554	7 076	7 018	8 574	11 186	10 981	3 495	4 104	4 264
<b>France</b>	435	240	252	451	760	1 380	2 082	10 207	2 534
<b>Costa Rica</b>	627	1 177	938	810	1 361	1 361	1 589	1 764	2 260
<b>Indonesia</b>	882	1 116	946	1 179	466	222	2 826	3 034	2 250
<b>Thailand</b>	1 081	529	602	602	742	750	752	968	1 205
<b>Philippines</b>	1 255	1 063	1 427	2 368	2 231	1 745	1 636	1 243	771
<b>Vietnam</b>	30	0	21	221	345	98	723	114	374
<b>Trinidad &amp; Tobago</b>	240	347	338	190	140	209	191	192	142
<b>India</b>	93	62	75	31	12	73	62	156	138
<b>Singapore</b>	208	263	84	220	24		140	67	127
<b>Brazil</b>	18	62	137	161	536	449	471	218	104
<b>Ghana</b>	58	161	3	1	26	11	72	194	72
<b>Malaysia</b>	377	258	384	294	204	98	174	43	47
<b>Cuba</b>	0	11	0	0	1	0	5	16	45

Source: Eurostat, code 08011900

## Packaging and sizing

Coconuts are generally shipped in sacks of 40 to 50 nuts in sea containers. These are repacked on delivery in cardboard trays of 8 to 15 nuts as required.

Sizing of the coconuts sold on the European market is generally performed on the basis of weight, with a preference for nuts weighing about 1 kg.

## Nutrition

Coconut milk and pulp have undoubted nutritive value.

COCONUT Nutritive value (pulp/100 g)	
Energy	353 Kcal
Carbohydrate	6.2 g
Vitamin C	2.5 mg

Fresh white pulp contains some 40% oil, 43% water and 17% non-oil dry matter. The milk contains the same minerals as the pulp but has a low caloric value.



© Guy Bréhiner

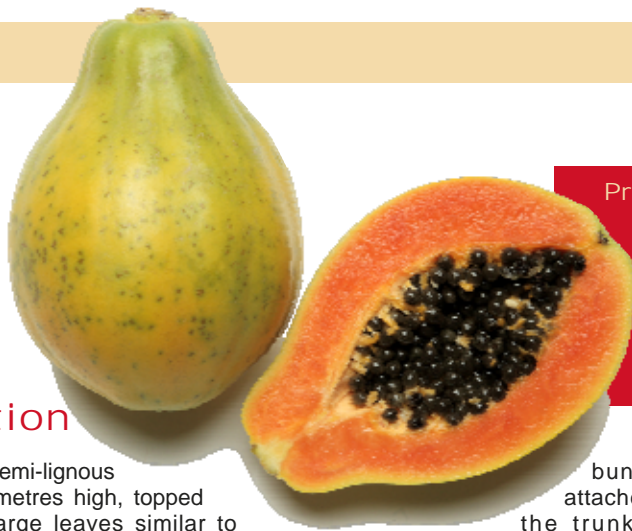
## Post-harvest

The recommended storage temperature range is 0 to 2°C. Coconut can be kept at room temperature for about two weeks with no real deterioration of quality. Large temperature differences should be avoided nonetheless. Its shelf-life is 1 to 2 months.

When cracks appear in the shell, the pulp may be contaminated by various moulds (*Aspergillus* spp., *Penicillium* spp.).

## Regulations

There are no particular standards for coconuts.



Product sheet

**Papaya**

*Carica papaya* L.  
(Caricaceae)  
Other name: pawpaw

**Description**

**P**apaya is a semi-lignous tree 5 to 7 metres high, topped by a crown of large leaves similar to those of fig. It grows in the hot, humid tropics. It is short-lived (3 to 5 years) but fruits continuously from the year of planting onwards. It is a sexual plant, making it difficult to produce homogeneous fruits. To overcome the disadvantage, fruit production for international trade is generally performed using self-fertilising hermaphroditic plants. The 'female' fruits are generally more rounded and little sold for export. Papaya fruits grow in

bunches attached to the trunk beneath the crown of the tree.

Papaya is an ovoid berry, oblong to globular, measuring from 10 to 30 cm in length according to the variety. The fruit is green, turning yellow as it ripens. The smooth, fragile epidermis is a few millimetres thick. The cross-section reveals orangey to red flesh around a central cavity filled with spherical, non-edible grey or black seeds.

Many varieties exist but those most frequently seen on the European market are 'Solo 8', 'Sunrise' and 'Golden' among the varieties with small fruits (300 to 700 g) and 'Formosa' among those with large fruits (more than 1 kg).

The fruit is generally eaten fresh but can be used in the production of juice, jam, dried fruits, ice cream, etc. Both tree and fruit contain papain, a proteolytic enzyme with digestive properties, also used in pharmacy and certain industries (tanning)

**Supplier countries and calendar**

Although it is widely distributed in the tropics, papaya is little exported to the European Union. Annual supply totals 35 000 to 38 000 tonnes. Four supply countries ship nearly 90% of this: Brazil, Ecuador, Côte d'Ivoire and Ghana. The first of these alone accounts for 67% of EU supply. The recent development of the European market for papaya resulted in the rapid emergence of Ecuador as a supplier from 2003 onwards. It became the second largest supplier of the European market in 2004, a position that it has kept with a volume soon stabilising at 4 000 to 5 000 tonnes per year.

The calendar of availability of papaya in Europe is very regular, with monthly arrivals of 2 000 to 3 000 tonnes throughout the year, with no period of disturbance.

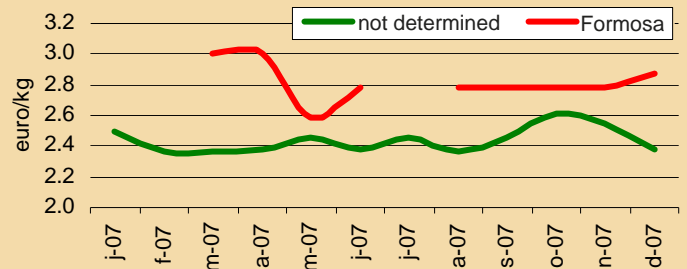
Papaya is an extremely delicate fruit and was long imported by air only. Changes in product logistics were the only way of increasing European imports. The planting of the variety 'Golden' in Brazil, the main supplier, doubtless made it possible to ship papaya by sea in recent years and hence to sell it in supermarket outlets. This variety is more robust during transport and forms the basis of the steady increase in import volumes. The change in variety accompanied the threefold increase in Europe imports over a period of about ten years. The other exporting countries have replanted with 'Golden', with the exception of Ecuador, which is continuing its exports with a variety bred from 'Solo' and 'Sunrise'. The large fruit variety 'Formosa' has also developed in recent years in response to demand from local authorities and caterers as these prefer this variety used in fruit salads and exotic dishes. Its development is also the result of its success on ethnic markets as its fragrance is more marked than that of 'Golden'. 'Formosa' is shipped mainly by air for reasons of its fragility. The import flow has been steady for about five years.



European consumption has changed little in recent years, with the positions of the major importing countries remaining much the same. The Netherlands are well in the lead, followed by the United Kingdom, Spain, Portugal and France. When intra-European movements are taken into account to better identify consumer countries, Germany joins the list above. Without any dramatic increase, European market imports are increasing steadily.

Development of the papaya market is probably coming up against the fragility of the fruit and its special taste features. It is susceptible to postharvest fungal attacks that shorten its commercial life. The characteristic flavour of papaya also slows consumption. However, its use in different exotic cuisines contributes to wider sales. These sometimes contradictory characteristics account for the fairly slow progress of European imports.

Papaya from Brazil - By air - Wholesale price in the Netherlands

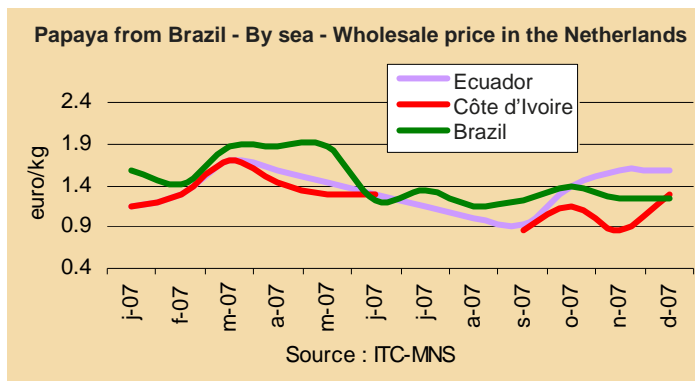


Source : ITC-MNS



Papaya — European Union — Imports									
Tonnes	1999	2000	2001	2002	2003	2004	2005	2006	2007
Extra EU-27, of which	14 021	16 802	18 848	26 724	38 910	41 939	41 856	37 916	36 506
Brazil	10 322	13 505	15 304	20 332	29 111	29 344	31 855	26 942	24 645
Ecuador	2	88	25	14	1 272	4 367	3 387	4 078	4 740
Côte d'Ivoire	382	317	236	340	232	1 164	1 398	1 857	1 806
Ghana	1 790	1 859	1 937	1 414	1 649	1 860	1 334	1 223	1 042
Thailand	230	244	362	645	789	495	671	700	951
Pakistan	2	0	1	1 301	2 007	1 676	1 152	785	885
Egypt	4	0	0	172	191	170	297	827	705
India	4	13	23	1 288	2 004	1 722	1 067	519	622
St Lucia	0	0	0	0	0	36	12	38	155
United States	208	237	309	236	267	106	63	82	150
Turkey	69		0	0	0	0	0	0	140
Jamaica	318	259	226	235	181	52	32	30	136
Vietnam	1	0	2	0	2	5	16	20	100
Kenya	10	2	6	5	19	88	50	74	65
Malaysia	103	98	127	122	97	97	69	58	55
South Africa	292	67	79	95	41	31	1	21	45
Sri Lanka	7	5	5	43	117	121	41	22	33
Uganda	0	0	2	2	11	6	8	18	31
Dominican Rep.	2	3	10	19	118	213	106	158	28
Israel	14	0	61	8	15	5	1	140	25
Costa Rica	0	23	0	0	4	0	3	20	22
Cameroon	7	18	44	51	27	27	13	4	22

Source: Eurostat, code 08072000



Source : ITC-MNS

PAPAYA	
Nutritive value (pulp/100 g)	
Energy	47 Kcal
Carbohydrate	11.6 g
Vitamin C	60 mg

## Nutrition

Papaya is low in calories and in sodium but rich in potassium and vitamins C and A.

## Post-harvest

Papaya is a climacteric fruit. It is fragile and requires much care during picking and transport. It is sensitive to temperatures lower than 7°C, that cause the formation of small depressed dark green spots that are readily colonised by moulds.

Papayas are picked when green-ripe and can be stored for 3 to 4 weeks at 8 to 12°C. When ripe, they can only be stored for 2 weeks at 8°C. The fruits ripen in two or three days when stored at 12 to 18°C. Shelf-life is 3 to 5 days.

## Packaging and sizing

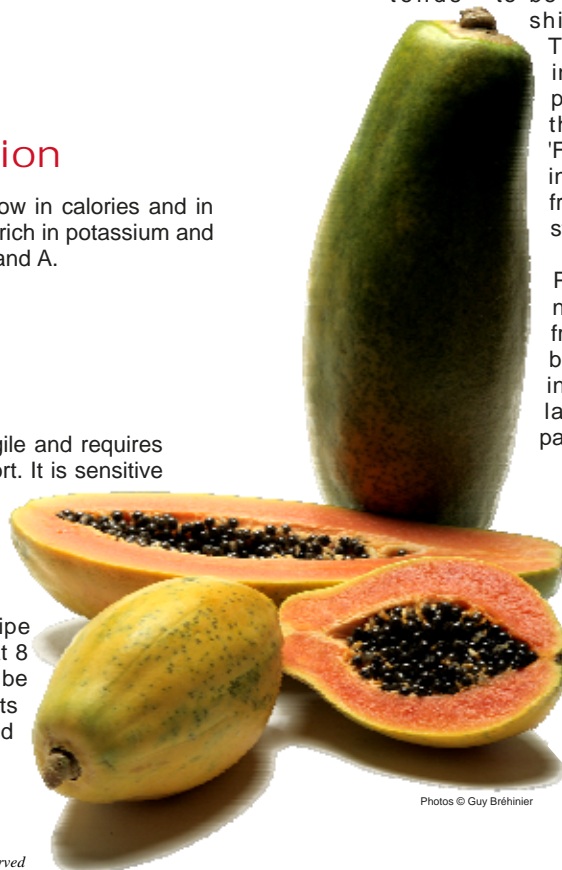
Papayas for export to Europe are generally packed in 3.5 kg cardboard trays. Some shippers prefer to use 5 to 6 kg telescopic cardboard boxes but this tends to be reserved for shipments by air.

The fruits are usually wrapped individually in paper or expanded polystyrene protection to prevent them from bruising each other. 'Formosa' papayas are usually packed in 4.5 kg cardboard trays with the fruits protected by an expanded polystyrene sleeve.

Papayas are sized according to the number of fruits per box. Six to 10 fruits are generally packed in a 3.5 kg box. The number varies from 8 to 14 in telescopic boxes. Three to four large 'Formosa' variety fruits are packed in each 4.5 kg box.

## Regulations

Papaya is covered by Codex Alimentarius Standard 183/1992 amended in 2001.



Photos © Guy Bréhiniér

Product sheet

# Physalis

*Physalis peruviana* L.  
(Solanaceae)

Other name: Cape gooseberry



## Description

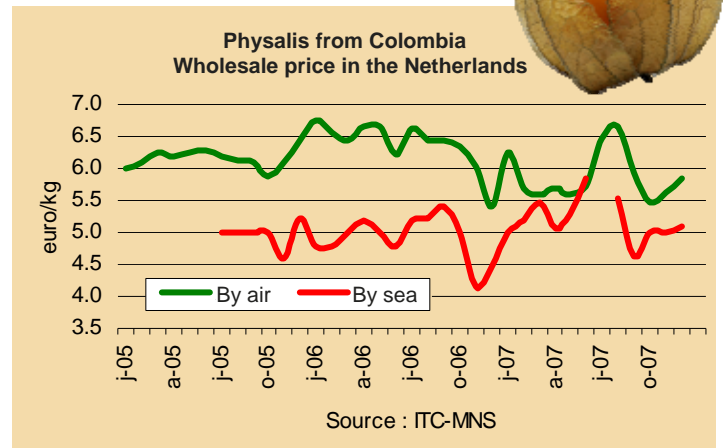
**P**hysalis (Cape gooseberry) is a shrub growing no taller than 1.5 metres. The more or less velvety heart-shaped leaves are 6 to 15 cm and up to 10 cm wide. It grows in the tropics and subtropics. It originated in the Andean

zones of Venezuela and Colombia and grows in highland areas at between 800 and 3000 metres. The plant is rustic and has little in the way of requirements. It does not like windy positions or freezing temperatures. The fruit is a yellow-orange berry the size of a small cherry. It is enclosed by a calyx the shape of a paper lantern that turns beige

when ripe. The flesh is the same colour as the fine skin enveloping it and contains numerous small edible seeds. The pulp is sweet, aromatic and acidulated. The fruit is generally eaten fresh but can be used in jams, pastries, chutneys and ice cream. The calyx gives it an undeniably decorative quality often used in pastry, confectionery and cooking.

## Supplier countries and calendar

Although it is widely distributed around the world, physalis growing for commercial purposes—for the European markets in particular—takes place particularly in its region of origin. Colombia's dominance in the supply of the fruit hides the more modest exports from other sources such as South Africa. Physalis is available all the year round on the European market, with an increase in volumes at the end of the year. The German and northern European markets seem particularly active and a large proportion of deliveries to Europe go to these destinations.



PHYSALIS Nutritive value (pulp/100 g)	
Energy	31 Kcal
Vitamin A	1.613 mg
Vitamin C	60 mg

## Nutrition

Physalis is rich in vitamins C and A.

## Packaging and sizing

Physalis are packed in small plastic punnets with ventilation holes and translucent closure held by an elastic band. Punnets may be round or square and contain 80 to 125 g of fruits. They are packed in cardboard trays that hold 8, 12 or 16 punnets.

The most commonly used packaging sizes are 100 and 120 g. The trays hold 1.5 to 1.9 kg net weight.

As the fruits are generally shipped in the calyx it is difficult to size them precisely. Shippers tend to present fruits of similar size in the punnets to achieve visual homogeneity rather than true sorting by size. Several sources have considered shipping physalis without the calyx but this has been unsuccessful as the fruit no longer has any decorative interest at all.



## Regulations

Physalis are covered by Codex Alimentarius Standard 226/2001 amended in 2005.

## Post-harvest

The recommended storage temperature is 12 to 16°C.

Photos © Guy Bréhénier



Product sheet

# Pitahaya

*Hylocereus* spp.  
(Cactaceae)

Other name: pitaya, dragon fruit

## Description

**P**itahaya grows on a crawling or climbing xerophytic plant with a triangular green stem bearing short spines. It can grow to 6 to 12 metres. The fruits are attached directly to

branches. The plant is wide-spread in tropical and subtropical zones (hot, more or less humid climate) and sometimes in certain highland areas. The fruits are berries of varying size (from that of an apple to that of a grapefruit, 150 to 600 g) and bear warty scale or leaves depending on the type. The epidermis is

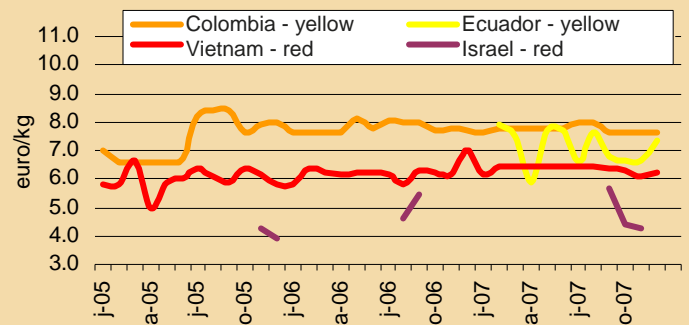
a few millimetres thick and soft to the touch. According to the variety, colour varies from golden yellow to bright red. The fruit contains continuous but slightly spongy white or violet-red pulp scattered with small edible seed. The main varieties available on the European market have yellow skin and white flesh, red skin and white flesh and red skin and flesh. The fruit is usually eaten raw but can also be prepared as juice or sorbet.

## Supplier countries and calendar

Most of the yellow pitahayas on the European market are from Colombia, which has made the fruit one of its export specialities for a number of years. It is also exported by Israel and Ecuador. Red pitahayas or dragon fruits tend to be shipped from Asia, especially Vietnam, but also recently from Israel. The quantities sold are still moderate at a few hundred tonnes per year. The fruit has a fairly neutral flavour and is refreshing but its main feature is its unusual shape that means that it is used as decoration in bowls of fruit or in mixed fruits juices, a speciality at certain establishments in recent years. Yellow pitahaya from Colombia is usually tastier than the other types found on the European markets. It forms part of the range of exotic fruits sold at delicatessens and specialised retailers. Dragon fruit is very fragile and fairly tasteless. It is eaten mainly by Asian populations in Europe. In contrast with many imported fruits available throughout the year, pitahayas and dragon fruits display a marked seasonal presence, accounting for their long absence at certain times of the year. Yellow pitahaya is usu-

ally sold all the year round. However, supply varies somewhat as Colombian production comes more from gathering than cultivation. Dragon fruit is rarer from March to June.

Pitahaya - By air - Wholesale price in the Netherlands



Source : ITC-MNS

## Packaging and sizing

Cardboard trays with depressions holding 2 to 3 kg of fruits are generally used for small yellow pitahayas (from Colombia). Yellow or red dragon fruits are often packed in telescopic cardboard boxes holding about 5 kg of fruits.

Sizing of pitahayas and dragon fruits corresponds to the number of fruits per box.

## Post-harvest

The recommended storage temperature range is 8 to 12°C..

PITAHAYA Nutritive value (pulp/100 g)	
Energy	53 Kcal
Carbohydrate	11.8 g
Vitamin C	8 mg

## Nutrition

Pitahayas with red flesh have antioxidant and colouring properties.

## Regulations

Pitahaya is covered by Codex Alimentarius Standard 237/2003 amended in 2005.

Photos © Guy Bréhinier





Product sheet

## Plantain

*Musa paradisiaca*  
(Musaceae)

### Description

Plantain is one of the cooking bananas (plantain, highland banana). Like dessert banana, it is a herb, each stem of which gives a single bunch and then dies, being replaced by suckers. It is tall (4 to 6 metres) and produces a large bunch consisting of several hands of fruits. It is grown mainly in Africa, Latin America and the West Indies. There are numer-

ous varieties, classified as the 'French' type (numerous hands, medium-sized fingers) and the 'Horn' type (few hands, large fingers).

In contrast with dessert banana, plantain converts little of its starch to sugar. It is long, measuring 30 to 40 cm. It is harvested green after 10 to 13 months of

cultivation, depending on production conditions, and turns yellow when it ripens. Its composition is similar to that of potato and is a staple vegetable in its cultivation zones. When ripe, it is fried or grilled. When green it is boiled or prepared as purée. It can also be dried and milled to make flour used in the agrofood industry or as purée for babies.

### Supplier countries and calendar

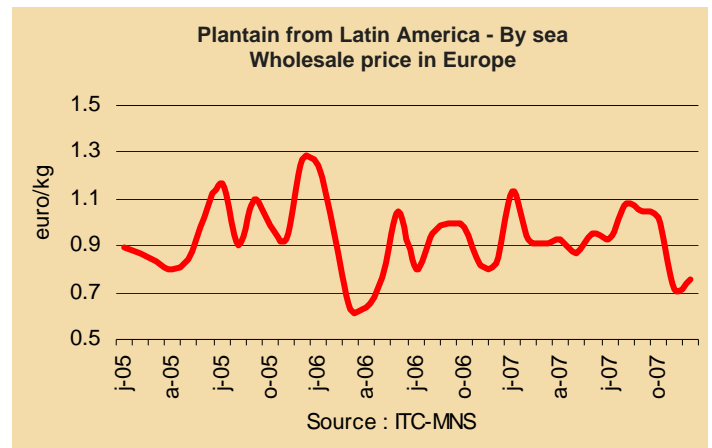
Nearly 55% of world cooking banana production is in Africa. However, its share of world trade is nil. Thus Uganda, the leading cooking banana producer, is only fourth on the list of EU suppliers, shipping a tiny quantity totalling about 1000 tonnes. This paradox is explained by very strong and dynamic domestic demand and inability to intensity cropping with a view to exports.

Furthermore, the plantain market in Europe is very competitive and purchase prices are often rock-bottom. For the same reasons as for dessert bananas, the Latin American chains are more competitive than their African counterparts. As a result practically the entire market is held by Latin America, with Ecuador, Colombia and Costa Rica in the lead.

Plantain is imported to Europe all the year round, with the total in the neighbourhood of 60 000 to 70 000 tonnes.



Photos © Guy Bréhiniér



### Packaging and sizing

Plantain is wrapped individually in fingers in telescopic cardboard boxes with a net weight of 25 or 50 lb, i.e. about 11.3 and 22.7 kg. As plantain is fairly robust, the fingers are placed directly in the boxes with no extra packaging. Fruit homogeneity, length and grade are the criteria used by buyers.



© Régis Domergue

Plantain — European Union — Imports									
Tonnes	1999	2000	2001	2002	2003	2004	2005	2006	2007
Extra EU-27, of which	68 644	74 649	75 222	44 771	88 932	56 868	55 025	74 597	68 449
<b>Ecuador</b>	37 068	38 368	46 647	24 062	61 250	31 205	33 339	36 080	34 017
<b>Colombia</b>	26 813	26 312	16 413	16 333	13 800	17 929	17 001	25 863	25 605
<b>Costa Rica</b>	3 216	4 881	8 754	3 270	7 778	6 221	3 403	8 936	6 769
<b>Uganda</b>	24	31	70	80	98	154	371	1 040	1 553
<b>Ghana</b>	142	140	198	285	292	214	124	211	181
<b>Dominica</b>	557	661	546	335	351	234	368	293	167
<b>Dominican Rep.</b>	19	21	20	3	6	18	61	21	48
<b>St Lucia</b>	0	0	0	0	0	2	1	7	41
<b>Panama</b>	520	3 855	790	160	270	47	0	943	24
<b>Surinam</b>	36	7	12	9	12	16	13	254	11
<b>Cameroon</b>	148		22	24	8	3	5	7	8

Source: Eurostat, code 08030011



PLANTAIN Nutritive value (pulp/100 g)	
Energy	132 Kcal
Carbohydrate	30 g
Vitamin C	11 mg

## Nutrition

Plantain is energy-rich and easy to digest. It contains substantial amounts of fibre, starch (27% in comparison with 20% in potato), magnesium (33 mg) and potassium (350 mg).

Plantain carbohydrate consists mainly of starch. Before cooking, 66% of the starch resists pancreatic amylase (the enzyme that can break down starch molecules into smaller particles). After cooking, transformation of starch by amylase is complete. However, if the plantain cools after cooking, 10% of the starch resists the amylase. For better digestibility it is thus preferable to eat plantain soon after cooking.

## Post-harvest

Plantain is a climacteric fruit. Unlike dessert bananas, it does not transit by a ripening facility. It ripens naturally in 8 to 10 days; the peel tissue softens and the chlorophyll is broken down, making the fruit increasingly yellow.

Recommended storage temperatures range from 7 to 13°C. It should not be placed in cold storage.

It has a 21-day shelf life.

## Regulations

There is no particular standard for plantain.



Product sheet

## Rambutan

*Nephellium lappaceum* L.  
(Sapindaceae)

### Description

Rambutan is a vigorous tree that grows to a height of 15 to 20 metres. The elongated leaves are shiny, dark green on the surface and lighter green underneath. It grows in a hot, humid tropical climate. A drier period is essential to trigger flowering and hence a good crop. This varies considerably, ranging from 25 to 200 kg per tree. When conditions are good, fruiting starts about three years after budding or

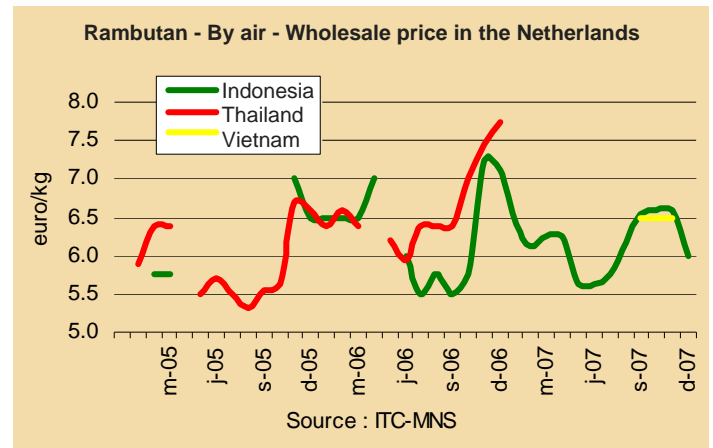
layering. Trees grown from seed take longer to start fruiting—about five or six years.

The rambutan fruit is round to oblong and 5 to 6 cm long. It consists of a soft but fairly thick shell scattered with soft spines that vary in colour from yellow to red when the fruit is ripe. It is a member of

the same botanical family as litchi, often preferred to rambutan. The shell contains whitish, more or less translucent pulp (aril) with a smooth brownish seed. The flesh clings to the central seed more or less firmly according to the cultivar. The pulp is acidulated, with a pleasant taste. Rambutan is generally eaten fresh but it is also used in preserves and jams. The leaves, bark and grilled seeds have medicinal properties.

### Supplier countries and calendar

Rambutan originated in Malaysia and spread widely throughout humid tropical Asia before reaching similar climatic zones on other continents. However, most of the rambutans supplied to the European market are from Asia and especially Thailand and Indonesia. Other sources also ship fruits to the European market but in much smaller quantities. Such sources include Madagascar and Guatemala. For a number of years, rambutan has made it possible to prolong the Madagascan litchi export season as it is available later. But since the strong development of litchi exports by sea, sailing times have naturally prolonged the season, encroaching on the rambutan export period and the sales window has closed gradually. Thus rambutan is sold more during the periods when litchi is little present or absent from the market. It also has a trade position during the Christmas and New Year period where it extends the range of festive exotics. The fruit is fragile and the rapid oxidation of the soft spines affects the value. Rambutan is more of an original top-of-the-range fruit with genuine success with customers although the latter often prefer litchi during the Christmas period.



RAMBUTAN Nutritive value (pulp/100 g)	
Energy	63 Kcal
Carbohydrate	14.5 g
Vitamin C	17 à 32 mg

### Nutrition

Rambutan is less rich in potassium than litchi but contains more vitamin C.

### Packaging and sizing



Rambutans are generally packed in 2 kg net weight boxes. They are either packed in two layers in a telescopic or flap box measuring some 300 x 400 mm or pre-packaged in 1 kg punnets covered with film, like the produce from Thailand. The punnets are then packed in the shipping box in pairs.

There are no specific size categories. Reference is made to the Codex standard.

### Post-harvest

Rambutan is a non-climacteric fruit. The recommended storage temperature is 3.5°C. Its physiological development and possible deterioration are similar to those of litchi. It is also susceptible to Phomopsis stalk rot.



Photos © Guy Bréhinié

**Regulations** Rambutan is covered by Codex Alimentarius Standard 246/2005.



Product sheet

## Tree tomato

*Cyphomandra betacea* (cav.) Sendt.  
(Solanaceae)

Other name: tamarillo

### Description

Tree tomato is a rustic, little ramified tree 3 to 6 metres tall. It originated in the Andean forests. Although it is widespread in other subtropical zones, tree tomato has only been cultivated on a large scale in South America and New Zealand. It likes highland zones (up to 2 500 m) in the tropics and subtropics. The evergreen leaves are grouped at the ends of the shoots and give a musky fragrance. They reach a length of 15 to 30 cm and are up to 12 cm wide. The

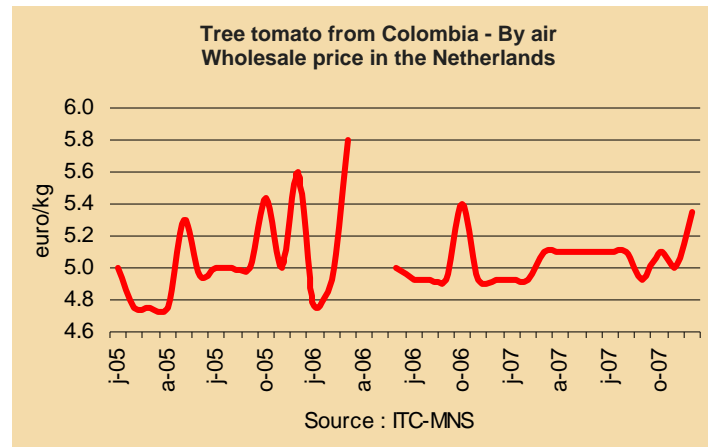
fruits are ovoid berries the size of an egg and have long stalks. They vary in colour from violet red to orangey yellow and sometimes darker streaks run the length of the fruit. The fairly thin epidermis clings strongly to the flesh, giving the fruit a slight bitterness. The flesh is remi-

niscient of tomato; the pulp has a sweet and sour flavour, little fragrance and is refreshing.

Tree tomato is often eaten fresh but can also be processed to make jam, jelly, sorbets, dried fruit or can be cooked. When not quite ripe it is used to make chutney and curry. In the Andes, it is often served in juice form with added milk.

### Supplier countries and calendar

Tree tomato is a complementary fruit par excellence. Small volumes are imported to Europe and Colombia is the leading supplier. The fruit is available all the year round but demand is stronger during the Christmas period when it broadens the range of rare fruits available. It is also sold by delicatessen type retailers or for the composition of baskets of exotic fruits.



### Packaging and sizing

Tree tomatoes are generally packed in cardboard trays (2.5 kg) with depressions.

The size corresponds to the number of fruits per box, with the most common being between 24 and 30.



TREE TOMATO Nutritive value (pulp/100 g)	
Energy	27 Kcal
Carbohydrate	10 g
Vitamin C	25 mg
Vitamin A	150 to 500 IU

### Nutrition

Tree tomato is low in calories and rich in vitamins A, E and C and also in phosphorus and calcium.

### Post-harvest

It is a non-climacteric fruit. Tree tomato can be stored for two or three months at 4 to 8°C.



Photos © Guy Bréhiniér

### Regulations

There is no specific standard for this fruit.



Producer country sheet

## Papaya in Côte d'Ivoire

The leading West African supplier of papaya to the European Union, Côte d'Ivoire is ahead of Ghana and in third position after Brazil and Ecuador. With the increase in shipments of the variety 'Golden' by sea, exports have rocketed in recent years and should continue to grow. However, a few handicaps do remain and should be cleared in order to stabilise exports at around 4 000 tonnes, the objective set by operators in the chain.



### Production zone

Papaya is grown mainly in the forest zone in the south of the country. The large export plantations are in the Tiassalé region some 150 km from Abidjan, the economic capital. The crop has been grown in Côte d'Ivoire for about 40 years. Export production was initially supported by the Azaguié fruit research station (now the CNRA) and 'Solo' was the main variety grown. Today, hardly any papaya is grown in the traditional Abidjan-Azaguié production area. According to the CNRA, it accounts for only 2% of the area under papaya in comparison with 77% in 2003. The damage caused by Papaya Ringspot Virus—widespread in the region—partly explains why growers are abandoning the crop. The virus is a serious threat to papaya production in Côte d'Ivoire. Cropping has now shifted to the Tiassalé region that is free of the disease so far. More than 97% of the crop is grown there against only 13% in 2003.

### Production and varieties

According to the FAO, papaya production in Côte d'Ivoire covers 550 hectares with a crop totalling 4 300 tonnes in 2007. However, there are no accurate national statistics concerning area and tonnage trends. The crop has increased continuously for about a decade thanks to the introduction of new varieties. Initially consisting mainly of the variety 'Solo', export production has increased with the introduction of 'Golden' by SCB (Société des Cultures Bananières), the main papaya exporter in Côte d'Ivoire and also the largest producer/exporter of banana. 'Golden' is more resistant to diseases—especially rust—and handling (picking, packing and transport). It also keeps better during marketing. The plantations have full trickle irrigation and production units are modern. Most of the export plantations are certified. Control of mites and drainage to prevent mosaic disease are the main production problems. Management of the different stages of maturity of 'Golden' shipped by sea is also a problem that has not been solved. This handicap will certainly continue to bridle the development of exports by sea unless a solution is found rapidly.



Côte d'Ivoire — Papaya — Production calendar for Golden

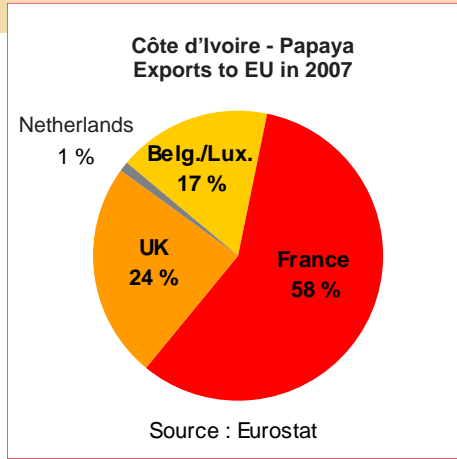
N	D	J	F	M	A	M	J	J	A	S	O
large											
			medium								
							small				

### Production calendar

Papaya is harvested all the year round but volumes vary considerably according to climatic factors. Production is practically nil in June, July and August as a result of the low

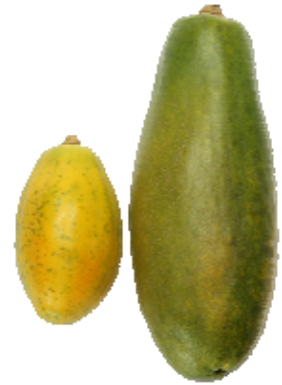
temperatures during Harmattan periods. The development of mites during the dry season (from January to April) is also a limiting factor. Production is more homogeneous during the rest of the year, with strong peaks in November, December and January.



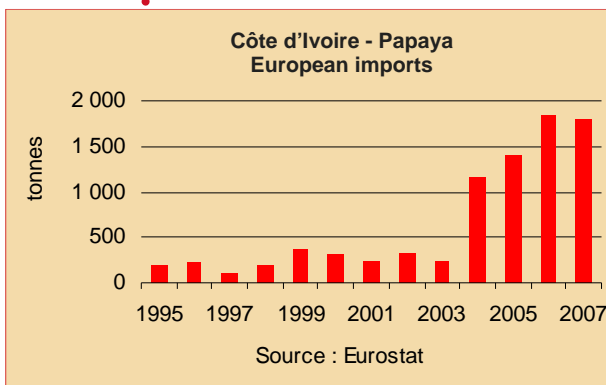


### Outlets

The production of 'Golden' papaya is devoted mainly to the export market while 'Solo' is much more present on the domestic market. Processing is still artisanal and modest, with the production of juice, jam and purée. Processed products are mainly for consumption on the domestic market.



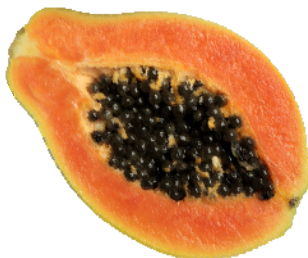
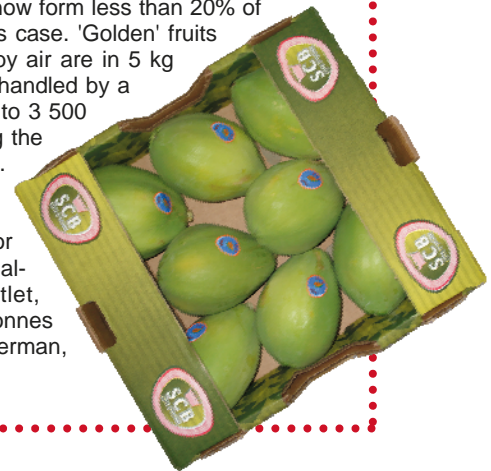
© Guy Bréhiner



### Exports

Papaya exports started in the 1980s and 1990s with small volumes shipped by air. A promising, non-traditional sector, it benefited from support from World Bank projects, with the creation of cooperatives, new plantations, sector organisation, etc. Exports doubled between 1995 and 1999, increasing from 196 to 382 tonnes of 'Solo' shipped by air. A few trials of shipment by sea were conducted at the time but without much success. Exports then exceeded 1 000 tonnes in 2004 with the start of the shipment of 'Golden' by sea. They have since increased steadily thanks to better sea freight logistics, reaching 1 805 tonnes shipped to the European markets in 2007. Shipments by air have decreased drastically and now form less than 20% of

total exports. 'Solo', a much more fragile variety, is the favourite in this case. 'Golden' fruits shipped by sea are packed in 3.5 kg boxes while fruits for shipment by air are in 5 kg boxes. Little 'Golden' is shipped by air. More than 80% of exports are handled by a single operator, SCB, that plans to increase shipments to attain 3 000 to 3 500 tonnes in 2008. However, the marketing difficulties encountered during the 2007 season remain serious constraints for the development of exports. Strong competition from Brazil and Ecuador, inadequate support for growers in Côte d'Ivoire (practically no agronomic support, lacking of funding, etc.) and small farm size are all factors that make the sector delicate. Gaining a firm position on the European market is a real challenge under these conditions. France is still by far the largest outlet, followed by the United Kingdom and Belgium, with more than 1 000 tonnes imported in 2007. Papaya from Côte d'Ivoire is also found on the German, Spanish and Dutch markets.



© Guy Bréhiner

### Logistics

Although papaya can travel at 8°C in the holds of banana boats, exports are entirely containerised. Most shipments are in containers loaded on to banana carriers via the company AEL, which has the capacity for 50 to 100 deck containers depending on their size. Papaya exports use the same sea logistics as the other fruit sectors in Côte d'Ivoire (banana, pineapple and mango) and can also be carried by all the other shipping companies with a reefer service to Europe (see **Fruitrop 153**, February 2008, p. 30).

Côte d'Ivoire — Papaya — Sea freight				
Market	Main shipping lines		Transit time	Observations
	Port of departure	Port of arrival		
EU	Abidjan	Port Vendres	9 days	AEL (reefer line)
		Antwerp	10 days	



# Indicators

The main fruits	In shares by total volume and expenditure on fruits for the month in France		
	%	Volumes	Expenditure
Peach/nectarine		34	34
Apple		12	11
Apricot		9	11

Pages

The trends for the main produce of the month significantly influence the overall situation of the fruit market. A column entitled 'Indicators' discussing these fruits precedes the pages devoted to a selection of exotic and citrus fruits.

Avocado.....	33
Banana.....	35
Orange.....	37
Grapefruit.....	38
Litchi.....	39
Mango.....	40
Pineapple.....	41
Sea freight.....	42

## JULY-AUGUST 2008

**Peach/nectarine** The supply deficit was a little less severe than in June but remained very significant, especially in August. In this context, sales were fluid even though the weather conditions were unfavourable for consumption and prices were very high at both production and retail stages.

July-Aug. 08 / July-Aug. 07			
Price	↗	Vol.	↘

**Apple** Supply was much smaller than usual. The volumes from the southern hemisphere that supply the market in July continued to be very moderate as a result of a shortfall in bicolour apple production in New Zealand and shipping allocation that did not favour the EU market. So the French season started very well in August on an empty market. Prices held at levels markedly higher than average.

July-Aug. 08 / July-Aug. 07			
Price	↗	Vol.	↘

**Apricot** Very limited volumes were available. The production deficit was very marked, especially for the variety 'Bergeron'. The season finished early at the beginning of August. Prices held at a very high level.

July-Aug. 08 / July-Aug. 07			
Price	↗↗	Vol.	↘↘

**Sea freight** The hopes, perhaps expectations, which operators harboured at the end of June, that the charter market would remain strong over the summer months were brutally dashed at the start of July with a dramatic downturn in Spot activity. After a steady but diminishing stream of fixtures, a sudden accumulation of vessels at the Canal coincided with a not unexpected loss of interest in chartering from the banana traders.

July-Aug. 08 / July-Aug. 07			
large reefers	↘	small reefers	↘

**Notes concerning market appraisal methodology**

The statistics on the following pages are estimates of quantities put on the market in France. They are only calculated for the main supplier countries and are drawn up using information on weekly arrivals or market release statements by representative operators. The figures in the 'Main fruits' section above are provided by the CTIFL, with SECODIP being the source. The data published in the French market pages are provided solely as a guide and CIRAD accepts no responsibility for their accuracy.



# Avocado

## JULY-AUGUST 2008

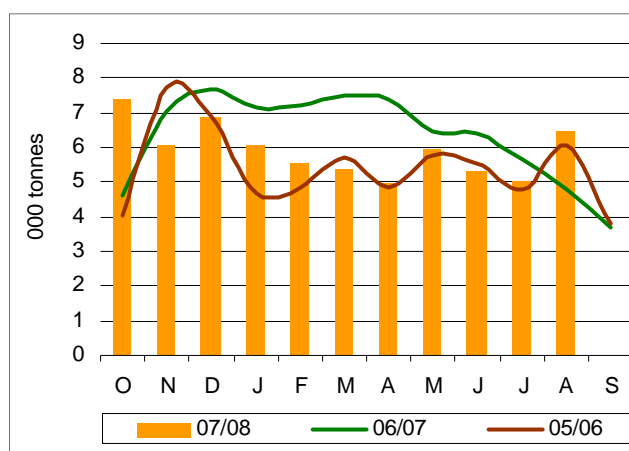
The market behaved in yo-yo fashion during the two summer months. The recovery that started in June was confirmed in July. On the one hand, demand remained at a good level thanks to a fairly large number of promotion operations by supermarket chains. On the other, supply returned to an average level. However, the South African season continued to develop. Arrivals were distinctly larger than average with substantial volumes of 'Hass' making up for the somewhat moderate quantities of green varieties. However, shipments from Peru were down as orders had been reduced during the difficult period in June. The average monthly price was higher than usual. But the market experienced another downswing in August. Demand slowed markedly while overall supply was well above average. Large volumes arrived from South Africa and those from Peru also increased during the last two-thirds of the month. Prices weakened and sank below cost price in the last part of the month. Kenya shipped a moderate complementary quantity throughout the period.

## Monthly and annual comparisons

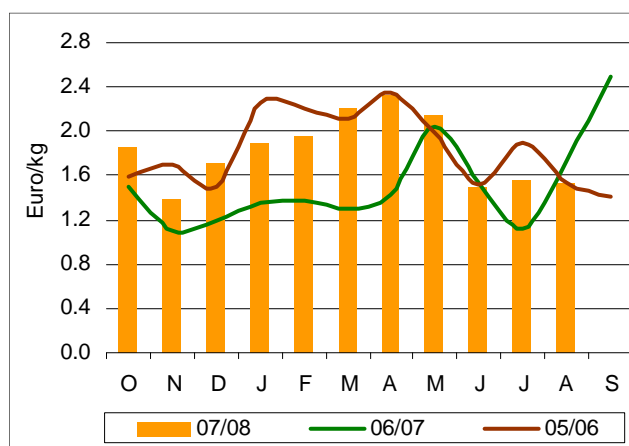
Volumes	Price
<b>August 2008 / July 2008</b>	
↗ + 28%	= ↘ - 1%
<b>July-August 2008 / July-August 2007</b>	
↗ + 10%	↗ + 9%

## Estimated market releases in France

### Volumes



### Price at import stage



## Estimated market releases in France by origin

Tonnes	July 2008	August 2008	Comparisons (%)				Total season 2007/2008	Season comparisons (%)	
			2008/2007		2008/2006			07-08/06-07	07-08/05-06
			July	August	July	August		July-August	July-August
Peru	2 493	3 370	- 22	+ 64	+ 9	+ 29	11 770	+ 34	+ 27
Kenya	428	797	- 29	+ 29	- 61	- 34	3 549	- 18	- 43
South Afr.	2 101	2 274	+ 13	+ 20	+ 49	+ 34	8 851	+ 26	+ 48
<b>Total</b>	<b>5 022</b>	<b>6 441</b>	<b>- 11</b>	<b>+ 34</b>	<b>+ 5</b>	<b>+ 6</b>	<b>24 170</b>	<b>- 42</b>	<b>- 39</b>



COMPAGNIE  
FRUITIERE

Avec Kirikou,  
**1 surprise**

à collectionner  
dans votre sachet  
de bananes



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# Banana

## JULY-AUGUST 2008

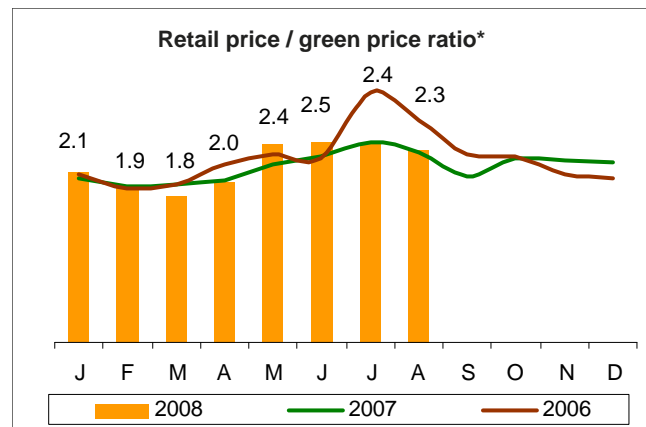
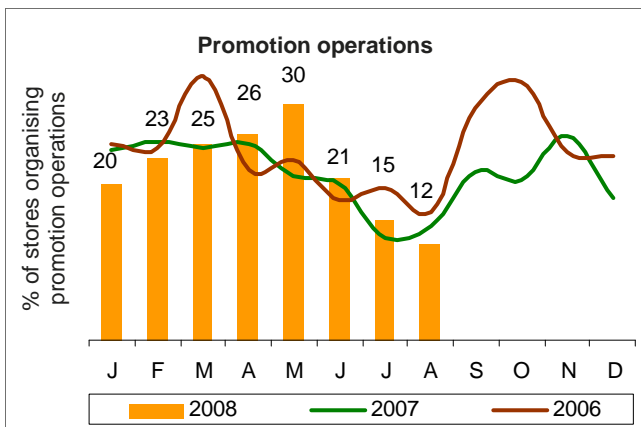
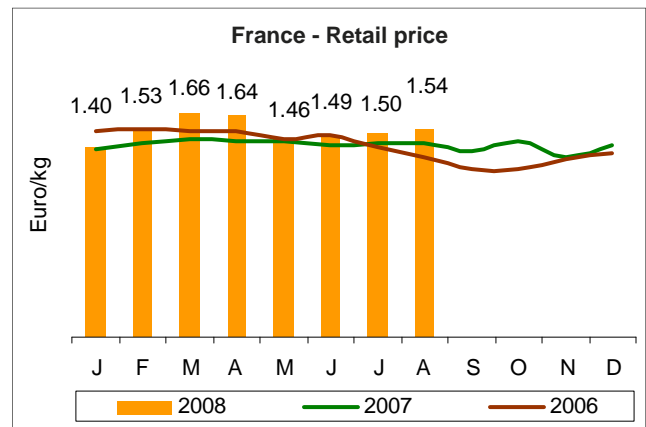
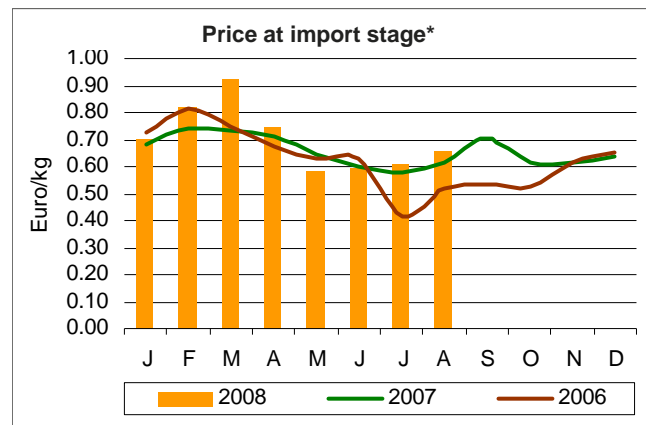
The European market behaved well during the summer period, when there is often a serious crisis. However, supply was fairly substantial in July. The deficit in cumulated shipments from the French West Indies and Africa was still marked. However, arrivals of dollar bananas were very large as the volumes exported to Europe from all the major sources were more substantial than in 2007. Nevertheless, demand was good for the season. On the one hand, the weather was cooler than usual during the first three weeks and, more important, competition from the season's fruits was much more limited than in 2007 as a result of the serious deficit of stone fruits. Prices thus remained higher than normal, especially in France and Italy.

Prices held at a good level in August. The weather continued to be favourable for banana consumption, especially in mid-month, while competition from the season's fruits remained very moderate. The apricot season finished in the first week of the month and supplies of peach and nectarine dwindled earlier than usual. Furthermore, the volumes available decreased distinctly. Arrivals of dollar bananas returned to a level close to normal while the deficit in fruits from FWI + Africa became more marked.

Monthly and annual comparisons	
Volumes*	EU reference price**
<b>August 2008 / July 2008</b>	
↘ - 18%	↗ + 8%
<b>July-August 2008 / July-August 2007</b>	
↘ - 15%	↗ + 6%

\* Arrivals from Africa/West Indies    \*\* Green price in Germany (GlobalGap)

## French banana market — Indicators



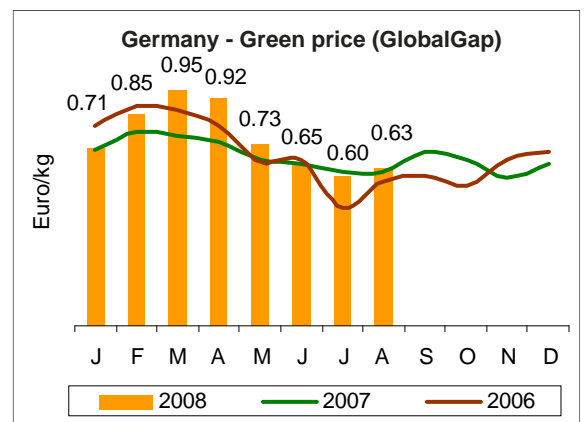
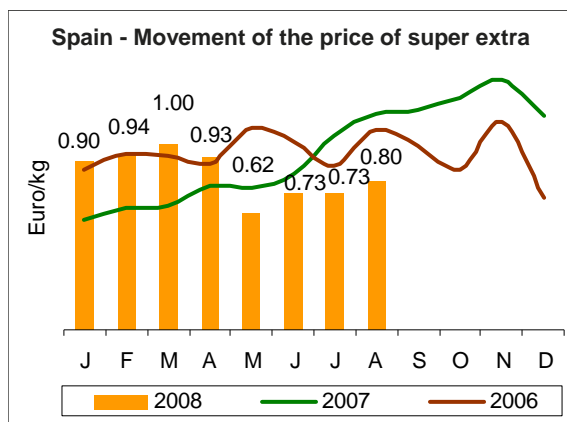
\* African origin

European banana market — Indicators

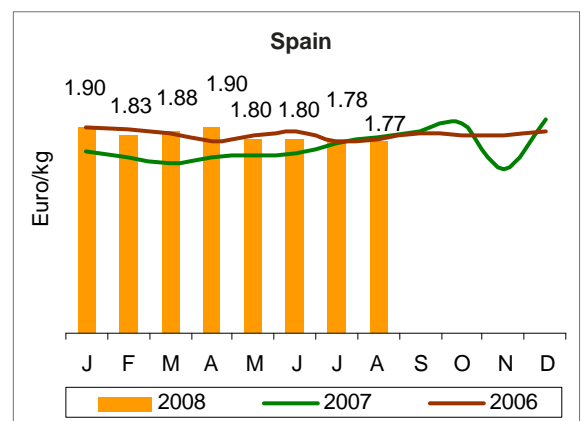
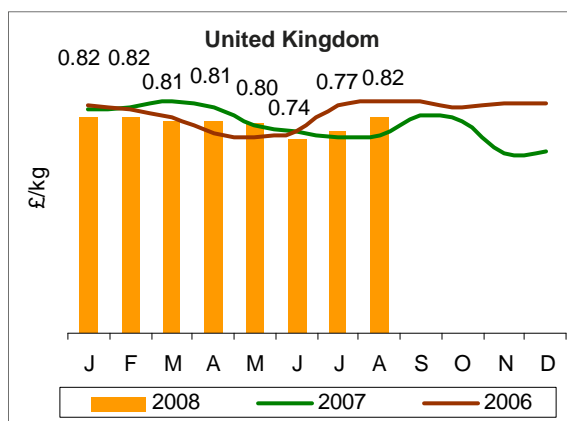
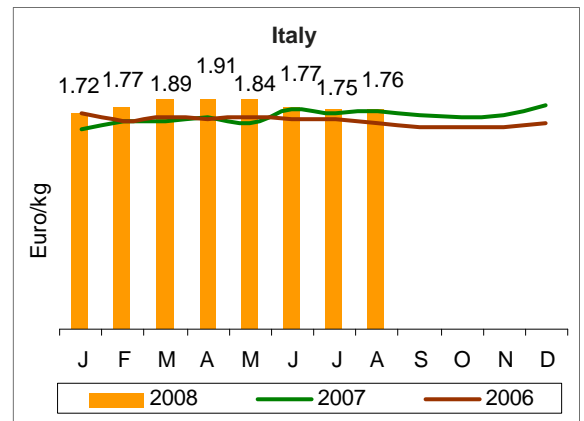
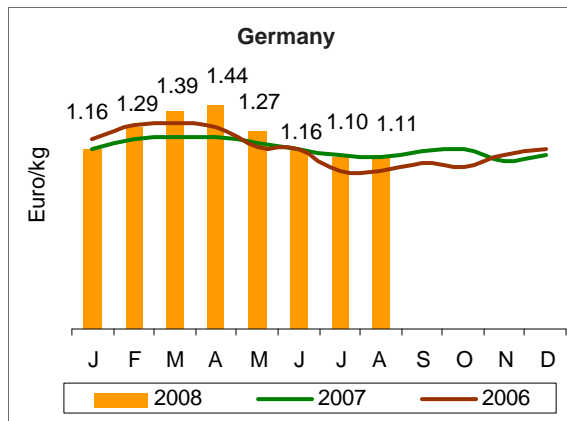
Main origins in Europe

Tonnes	July 2008	August 2008	Comparisons (%)				Total season 2008	Season comparisons (%)	
			2008/2007		2008/2006			2008/2007	2008/2006
			July	August	July	August			
Martinique	11 367	7 644	- 32	- 50	- 27	- 57	87 825	- 36	- 31
Guadeloupe	4 068	4 259	+ 5	+ 9	+ 7	- 10	26 485	- 16	- 10
Canaries	24 681	20 932	+ 18	+ 12	+ 42	+ 14	245 021	+ 10	+ 16
Côte d'Ivoire	8 242	7 782	- 20	- 33	- 33	- 48	77 410	- 28	- 43
Cameroon	16 746	13 718	+ 22	- 14	- 12	- 22	161 086	+ 11	0
Ghana	4 151	3 354	+ 144	+ 20	-	-	30 162	-	-

Green price in Europe



Retail price in Europe



Sources : CIRAD, SNM, TW Marketing Consulting



# Orange

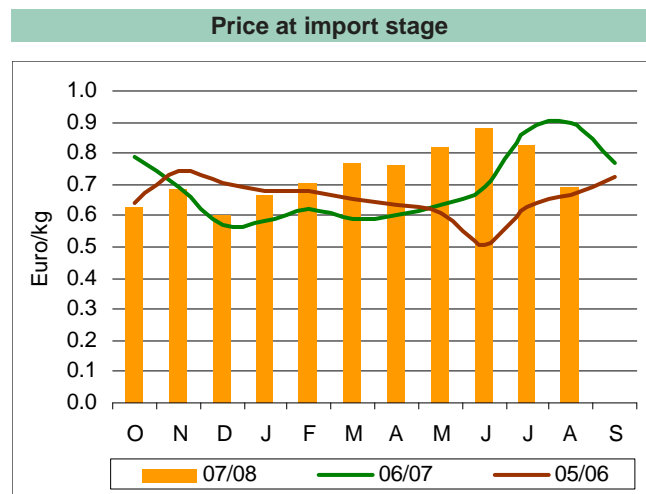
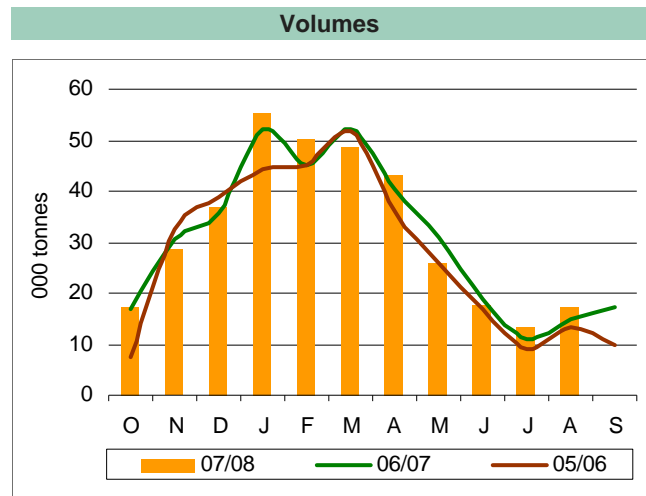
## JULY-AUGUST 2008

Limited since the beginning of the season, supply from the southern hemisphere increased and was clearly greater than average in both July and August. Arrivals from South Africa increased throughout the period, with the peak of the season for 'Navel' and then for 'Valencia'. Shipments were large, especially in August, thanks to a good 'Navel' harvest and shipping allocation favouring the EU at the expense of Russia and, even more so, the Far East. Volumes of 'Valencia' from Argentina were also large. Production was substantial and exporters also preferred the EU market to Russia. 'Valencia' from Spain and Brazil formed a limited complement.

The market became cumbersome but kept its balance in July. Demand was typical of the season and no stocks were available at the beginning of the month. The situation then worsened considerably at the beginning of August. The stocks available and sluggish demand—this did not recover and was much slower than usual in the second half of the month, especially in northern Europe—sent the market into a downward spiral. The average price was fairly high in July and then much lower than the average in August.

Monthly and annual comparisons	
Volumes	Price
<b>August 2008 / July 2008</b>	
↗ + 30%	↘ - 16%
<b>July-August 2008 / July-August 2007</b>	
↗ + 18%	↘ - 16%

## Estimated market releases in France



Estimated market releases in France by origin									
Tonnes	July 2008	August 2008	Comparisons (%)				Total season 2007/2008	Season comparisons (%)	
			2008/2007		2008/2006			07-08/06-07	07-08/05-06
			July	August	July	August		July-August	July-August
Spain	2 782	1 072	- 21	- 19	- 16	- 42	270 544	- 7	+ 2
South Africa	10 343	16 300	+ 40	+ 19	+ 78	+ 42	30 346	+ 31	+ 57
Morocco	253	-	+ 261	-	-	-	14 485	+ 90	+ 24
<b>Total</b>	<b>13 377</b>	<b>17 372</b>	<b>+ 22</b>	<b>+ 16</b>	<b>+ 47</b>	<b>+ 31</b>	<b>315 375</b>	<b>+ 14</b>	<b>+ 15</b>



# Grapefruit

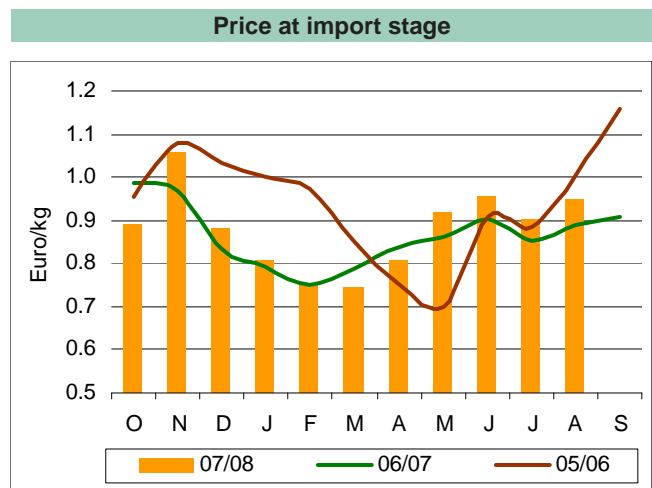
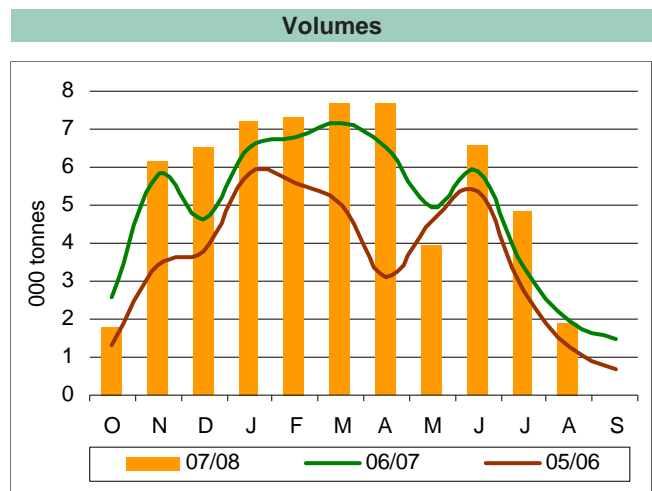
© Eric Imbert

## JULY-AUGUST 2008

After being average in June, arrivals were much more substantial than in 2006 and 2007, especially in July. As is seen every year, deliveries from South Africa started to decrease at the beginning of July but remained 15 to 20% larger than those of 2007. In addition, shipments from Argentina were also larger to both eastern and western European markets. Mexico (Michoacán) and then Honduras shipped complementary volumes as in 2007—in mid-July and at the beginning of August respectively. Demand was average in France but somewhat slow in northern Europe. It was focused on South African fruits and this kept their prices high. In this context, the situation was more difficult for Argentina, especially as quality problems were observed in certain brands. Likewise, the arrival of Mexican and Honduran fruits on the market was fairly laborious. The average price during the period was higher than in 2007 but this conceals disparities between supply sources.

Monthly and annual comparisons	
Volumes	Price
<b>August 2008 / July 2008</b>	
↘↘↘ - 61%	↗ + 5%
<b>July-August 2008 / July-August 2007</b>	
↗↗ + 27%	↗ + 6%

## Estimated market releases in France



Estimated market releases in France by origin									
Tonnes	July 2008	August 2008	Comparisons (%)				Total season 2007/2008	Season comparisons (%)	
			2008/2007		2008/2006			07-08/06-07	07-08/05-06
			July	August	July	August		July-August	July-August
Argentina	1 894	81	+ 70	- 72	+ 68	- 58	5 230	+ 13	+ 23
South Afr.	2 960	1 814	+ 31	+ 10	+ 82	+ 68	9 805	+ 5	+ 28
<b>Total</b>	<b>4 854</b>	<b>1 895</b>	<b>+ 76</b>	<b>+ 49</b>	<b>+ 12</b>	<b>- 17</b>	<b>15 035</b>	<b>+ 26</b>	<b>- 31</b>





# Litchi

Litchi — Import prices on the Dutch market Euro/kg		
July-August	Min	Max
<b>By sea</b>		
Thailand	2.10	2.50
Thailand (large fruit varieties)	2.20	3.00
Israel	3.00	4.00

## JULY-AUGUST 2008

**T**he European litchi market was fairly limited in July and August. The Thai export season gradually came to an end, leaving the market open to Israeli produce. Most Thai litchis were marketed in the Netherlands, while Israeli fruits were shipped more widely to the various European markets right from the beginning of the season. The prices for produce from both sources remained fairly stable throughout the summer, with limited demand. The small deliveries matched supply requirements.

The Thai litchi export season started at the end of April and finished at the end of July. Arrivals dwindled markedly in the second half of the month and stored goods were also sold. This resulted in a fall in prices. A worsening of fruit quality was observed from the beginning of July onwards and this affected selling prices, first patchily and then for all goods. Most of the shipments from Thailand arrived in the Netherlands before being forwarded to the various European markets. It would seem that the reluctance to buy litchi in France in the summer was confirmed this year once again, with very small, erratic sales. This season, Thailand seemed to increase shipments of varieties with large fruits ('Chakrapat' and 'Emperor') in addition to its usual range. These fruits started to arrive at the end of June/beginning of July and ceased in the first weeks of August, thus extending the traditional Thai season by a few extra weeks. The first arrivals of these large fruits were well-received and then interest gradually waned and prices fell. A few

batches shipped by air were also sold on the French market at high prices (EUR9.00-10.00 per kg). Marketing stopped for lack of customer interest after the sale of small quantities.

The sale of Thai litchis became more difficult from mid-July onwards because of competition as shipments of Israeli started. After being fairly high in the first three weeks of July, prices of Israeli litchis weakened at the end of the month and stabilised at about EUR3.00-3.50 per kg until the end of August.

Israeli litchis appeared on the French market in mid-July. Prices were steady at some EUR3.00-3.50 per kg until the end of the month in spite of slow demand as sales were limited by the quantities available. Prices weakened to about EUR2.50-3.00 per kg in August and then firmed to EUR3.00-3.50 per kg at the end of the month because of the small quantities available. In parallel, a few batches of 'Nomaïtchi' (a seedless variety) arrived by air and were sold

at EUR6.00 per kg. These fruits were sold through delicatessen type channels.

In Belgium, the sale of Israeli litchis started at the beginning of July at EUR3.50 per kg. As on the other European markets, prices then fell and stabilised at around EUR3.00 per kg. They were still about EUR3.00-3.25 per kg in early August but fell to EUR2.00 per kg in the middle of the month. Lack of demand and more irregular fruit quality accounted for this trend. Prices recovered to EUR3.00-3.10 per kg at the end of the month.

The prices mentioned for sales of Israeli litchis on the various markets are for fruits of satisfactory quality. More marked variations were observed during the two-month period according to the quality of the batches. This year, the fine colour of some batches of Israeli litchis was noted—similar to that of Spanish produce.

Litchi — Import price on the Dutch market — Euros/kg											
Weeks 2008	27	28	29	30	31	32	33	34	35	July-Aug. 2008 average	July-Aug. 2007 average
<b>By sea</b>											
Thailand	2.20-2.50	2.20-2.30	-	2.10-2.20	-	-	-	-	-	2.15-2.30	2.00-2.50
Thailand*	2.80-3.00	2.70-3.00	2.50-2.75	2.50	2.50	2.20-3.00	-	-	-	2.50-3.25	nc
Israel	-	4.00	3.50-4.00	3.50-4.00	3.00-3.75	3.00-3.50	3.50-3.60	3.00-3.50	3.00-3.40	3.30-3.70	2.65-3.05

\* large fruit varieties



# Mango

© Christian Didier

Mango — Weekly arrivals — Estimates in tonnes										
weeks 2008	27	28	29	30	31	32	33	34	35	
<b>By air</b>										
Mali	60	40	-	-	-	-	-	-	-	-
Burkina	5	-	-	-	-	-	-	-	-	-
Mexico	-	-	20	40	20	20	15	-	-	-
Senegal	40	50	30	-	-	-	-	-	-	-
Israel	-	-	-	-	-	-	-	-	40	40
<b>By sea</b>										
Brazil	704	440	680	830	1 120	1 100	940	900	940	
Mali	440	550	330	220	170	-	-	-	-	
Senegal	550	1200	660	220	440	-	-	-	-	110

## JULY-AUGUST 2008

**D**emand for mango is limited in July and August. The season's fruits and the holidays strongly affected consumption of tropical fruits. The small demand was matched by fairly moderate supplies, helping to keep prices at a medium level. A number of sources that are generally strongly present at this time of year seemed to have reduced their shipments, thus responding to natural market demand without generating any marked over-supply.

In July, the market was supplied mainly by Brazil and Senegal. The last batches from Côte d'Ivoire sold with difficulty because of worsening quality. Mali continued its export season with small volumes. Finally, shipments from Mexico began but quantities were small from this source too. Arrivals from many sources that were beginning or ending their seasons, the range of varieties and uneven fruit quality led to a degree of confusion in transactions. As the month went by, a few arrivals were noted from the Dominican Republic and Puerto Rico, consisting mainly of 'Keitt'. These new sources made up for the decreasing volumes of sources whose seasons were ending, such as Côte d'Ivoire, but without causing real over-supply. The Israeli export season started in the second half of the month for fruits shipped by sea, with 'Tommy

Atkins' and then 'Lilly'. Prices remained stable during the period and at a coherent level for all the sources represented. The main reason for this seems to have been the moderate scale of deliveries, maintaining market balance while demand decreased.

The air mango market was also stable in July and arrivals were measured. Fruits from Mali sold at a slightly lower price than those of the fruits available from other sources as they were sometimes very ripe. Produce from Senegal soon ran into sales problems for reasons of erratic quality. The appearance of spreading spots obliged recipients to resort many batches. The irregular keeping quality of mangoes from Mexico made sales more complicated in a difficult market context. The Israeli export season started in mid-month with the varieties 'Maya', 'Aya', 'Shelly' and

'Kasturi'; these rapidly dominated supply at the expense of less abundant 'Kent'.

In August, European supplies still arrived mainly from Brazil, with regular deliveries of 'Tommy Atkins'. Mali soon stopped shipping, being replaced by second flowering fruits from Senegal. Problems of quality continued for the latter origin and buyers were increasingly difficult to find. Logistic concerns also resulted in erratic arrivals—always detrimental for smooth marketing operations. The supply of fruits from Israel increased gradually and diversified during the month with shipments of 'Kent' and also of 'Lilly'. Nevertheless, Israeli mangoes were not as present as in recent years and so prices remained stable throughout the month. Supply was completed by fruits from Puerto Rico and the Dominican Republic.

Supply was fairly limited on the market for mangoes shipped by air and this kept prices stable. Some irregular quality in batches from Israel and Mexico (spotting or over-ripeness) led to occasional broadening of price ranges or clearance sales when quality was substandard. Second-flowering fruits from Senegal had a mixed reception because of considerable unevenness as regards quality and markedly limited keeping qualities. A few batches of 'Kent' and 'Keitt' from the Dominican Republic had difficulty in finding takers in a market with slow demand. In the second half of the month, supply by air was completed by a few batches of 'Kent' from Egypt whose appearance was unattractive but that had good taste qualities.

Mango — Import prices on the French market — Euros												
Weeks 2007		27	28	29	30	31	32	33	34	35	July-Aug. 08 average	July-Aug. 07 average
<b>By air (kg)</b>												
Mexico	Kent	4.00-4.50	4.00-4.50	4.00-4.50	4.00-4.50	4.00-4.50	4.00	4.00-4.50	-	-	4.00-4.40	4.00-4.35
Mali	Kent	2.80-3.50	2.80-3.50	3.00-3.50	-	-	-	-	-	-	2.85-3.50	2.90-3.35
Israel	Maya	-	-	3.50	3.00-3.50	2.80-3.50	3.00	2.40-3.00	2.80-3.00	-	2.90-3.25	3.25-3.75
Israel	Shelly/Kast	-	4.20-4.30	3.80-4.00	3.00-3.50	3.00-3.30	3.00	2.00-3.00	2.00-3.00	3.00-3.50	3.00-3.45	-
Israel	Kent	-	-	-	-	-	-	3.50-4.50	3.50-4.00	3.00-4.00	3.30-4.15	nc
Senegal		3.50-4.00	3.50	3.00-3.50	3.00-3.50	-	-	3.50	3.50-4.00	3.00-3.50	3.30-3.65	3.15-3.90
<b>By sea (box)</b>												
Brazil	Tommy At.	-	-	4.00-4.50	4.00	4.00-4.50	4.00-4.50	4.00-5.00	4.00-4.50	4.50-5.00	4.05-4.60	2.75-4.00
Mali	Kent/Keitt	4.00-4.50	4.00-5.00	4.00-5.00	4.00-4.50	3.00-4.00	4.00-5.00	4.50-5.00	3.50-4.00	-	3.90-4.60	3.75-4.75
Côte d'Iv.	Kent/Keitt	4.00-4.50	3.50-4.00	-	-	-	-	-	-	-	3.75-4.25	nc
Israel	Tommy At.	-	-	-	-	-	4.00	4.00-5.00	4.00-5.00	4.00-5.00	4.00-4.75	3.00-3.80
Israel	Kent	-	-	-	-	-	-	4.50-5.00	4.00-5.00	4.00-5.00	4.25-5.00	3.00-3.65
Senegal	Kent	4.00-5.00	4.00-4.50	4.00-5.00	4.00-4.50	4.00-4.50	4.00	3.50	5.30-5.50	4.50-5.50	4.15-4.65	3.75-4.70
Mexico	Kent	-	5.00-6.00	4.50	4.00-4.50	3.50-4.50	4.00-4.50	4.30-5.00	4.50-5.50	-	4.25-4.90	4.05-5.05
Puerto Rico	Keitt	-	-	-	-	-	3.25-4.50	4.50-5.00	4.75-5.00	4.00-5.00	4.10-4.85	3.35-3.85



# Pineapple

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Pineapple — Import price		
Euros	Min	Max
<b>By air (kg)</b>		
Smooth Cayenne	1.55	1.95
Victoria	2.50	3.60
<b>By sea (box)</b>		
Smooth Cayenne	4.00	9.00
Sweet	5.00	12.00

## JULY-AUGUST 2008

In July and August, demand was focused—as usual—on the season's fruits that were available at low prices. However, the decrease in volumes of 'Sweet' that began at the end of June continued throughout the summer. Its effects on prices were not felt until the end of July. The situation on the air pineapple market changed little throughout the summer. Supply and demand were very irregular but prices remained fairly stable nonetheless. At the end of August, Cameroon started levying a new airport tax, making the marketing of fruits from this source a little more difficult. It was difficult for sales of Victoria pineapple to pick up again as the season's fruits were available at very low prices.

The first three weeks of July were marked by uncertainty with regard to an expected decrease in the volumes shipped from Costa Rica. It is true that supplies were smaller than expected but demand had also decreased and it was difficult to shift the volumes received. In addition, fruits from Latin America were of very irregular quality, overripe or lacking in colour. Prices remained fairly low during the first two weeks and so stocks were cleared to a certain extent. The decrease in volumes arriving from Costa Rica was more significant and operators were sometimes unable to supply the goods promised. The increase in price that started in the last week in July continued throughout August. However, there was no spectacular increase in prices—which remained no more than high. Sales were fluid as supply was well short of demand. Although the increase in prices at the end of July was almost immediate on all European markets, it took a little time to take shape in France. Indeed, operators were reluctant to swallow a price increase of EUR2 per box in one week. The pattern was much the same on the 'Smooth Cayenne' market. Prices were very low at the end of June and, even though supply dwindled

steadily in July it was difficult to increase prices as there were problems of quality. Logistic problems came over and above this (container ships delayed), which considerably affected supply and the quality of the few fruits that did reach the market. The decrease in supplies of 'Sweet' favoured sales of 'Smooth Cayenne' and these were brisker and more fluid from the end of July onwards. Even if the supply of 'Smooth Cayenne' was very small and quality uneven at the beginning of the summer, some brands succeeded in clearing the famous psychological threshold of EUR10 per box at the beginning of August, thanks to the fine quality of the fruits in question. At the end of August, operators were beginning to anticipate a more tense situation in September for both 'Smooth Cayenne' and 'Sweet' as larger volumes from Latin America had been announced.

The situation for pineapple imported by air was good overall throughout the summer, as supply was very small. In early July, 'Smooth Cayenne' from Benin was fragile as the weather had been very wet, lacked colour and stored badly. Quality increased markedly from mid-month onwards and

held until the end of August. Prices of sugarloaf pineapple from Benin were at a good level, holding at between EUR1.90 and 2.00 per kg, in spite of a slight dip at the end of August (EUR1.90 to 1.95 per kg). Supply from Cameroon, with problems of quality, dwindled as the summer went by. Even though the prices held, it was difficult to return to a good quality level. The application in Cameroon of an airport tax of CFAF 25 per kg leads to fears of decreased competitiveness in comparison with Benin, Côte d'Ivoire and even Ghana.

Although sales of 'Smooth Cayenne' and sugarloaf pineapples were fairly fluid, the situation was much more complex for 'Victoria' pineapple. The availability of the season's fruits at very low prices resulted in serious problems for all the small exotics, which suffered from very poor sales. Although supply was limited in July, it remained diversified, with fruits from several sources. Demand fell sharply in August and operators found it increasingly difficult to sell 'Victoria'. Only fruits from Réunion were still available while demand continued to dwindle.

## Pineapple — Import prices on the French market — Main origins — Euros

Weeks 2008	27	28	29	30	31	32	33	34	35
<b>By air (kg)</b>									
<b>Smooth Cayenne</b> Benin	1.80-1.90	1.80-1.90	1.80-1.90	-	1.85-1.90	1.80-1.90	1.85-1.95	1.85-1.95	1.80-1.90
Cameroon	1.55-1.90	1.55-1.90	1.70-1.90	1.65-1.85	1.80-1.90	1.80-1.90	1.80-1.90	1.80-1.90	1.80-1.90
Ghana	1.55-1.70	1.65-1.80	1.65-1.75	1.60-1.70	1.70-1.80	1.70-1.80	1.70-1.80	1.70-1.80	1.55-1.80
Côte d'Ivoire	1.70-1.80	1.80-1.90	1.80-1.90	1.80-1.85	1.80-1.90	1.80-1.90	1.85-1.90	1.85-1.90	1.85-1.90
Guinea	1.80-1.90	-	-	-	-	-	-	-	-
<b>Victoria</b> Côte d'Ivoire	2.50	2.50-3.00	-	2.50-2.60	-	-	-	-	2.50
Réunion	3.40-3.60	3.40-3.50	3.00-3.50	3.20-3.50	3.50	3.50	3.50	3.40-3.60	3.30-3.60
Mauritius	-	2.80-3.00	2.80-3.00	2.80-3.00	-	-	-	-	-
South Africa	2.50	2.50	2.50-3.00	2.80-3.00	-	-	-	-	-
<b>By sea (box)</b>									
<b>Smooth Cayenne</b> Côte d'Ivoire	4.00-6.00	4.50-6.00	4.00-7.00	5.00-7.00	4.00-7.50	6.00-9.00	6.00-9.00	6.00-9.00	7.00-8.00
<b>Sweet</b> Côte d'Ivoire	6.00-8.00	6.50-8.00	6.00-8.00	6.00-8.00	7.50-8.50	7.00-9.00	8.00-10.00	8.50-10.50	9.00-11.50
Cameroon	6.00-8.00	6.50-8.00	6.00-8.00	6.00-8.00	7.50-8.50	7.00-9.00	8.00-10.00	8.50-10.50	9.00-11.50
Ghana	6.00-8.00	6.50-8.00	6.00-8.00	6.00-8.00	7.50-8.50	7.00-9.00	8.00-10.00	8.50-10.50	9.00-11.50
Costa Rica	5.00-7.00	5.00-7.00	5.50-7.50	6.00-8.00	7.50-8.50	8.00-9.00	10.00-11.00	11.00-12.00	11.00-12.00



# Sea freight

## JULY-AUGUST 2008

The hopes, perhaps expectations, which operators harboured at the end of June, that the charter market would remain strong over the summer months were brutally dashed at the start of July with a dramatic downturn in Spot activity. After a steady but diminishing stream of fixtures, a sudden accumulation of vessels at the Canal coincided with a not unexpected loss of interest in chartering from the banana traders.

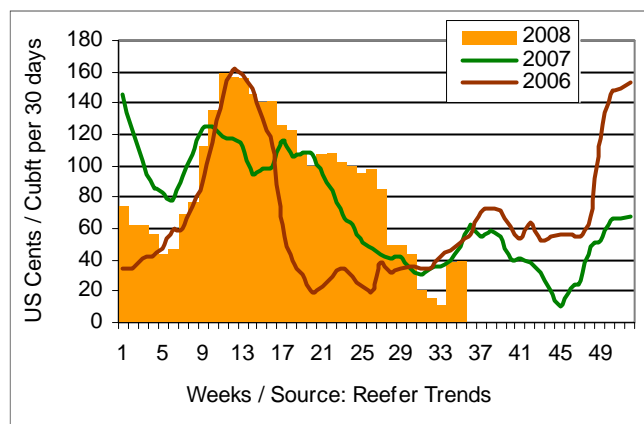
Although the poultry and fish trades continued to absorb tonnage this did not prevent lay-by for some of the fleet's choice units. It is instructive to note that despite operating the largest fleet, Seatrade had few vessels uncovered over the period, indicative of the structural change in its focus away from the Spot market and towards an 'industrial', liner strategy. Indeed despite a fall in Spot enquiries, all liner operations (specialised reefer and container line) from South Africa, Argentina and Central and South America continued to operate at full capacity. While the Spot market remained in the seasonal doldrums there were significant developments in the Period market, while ever more vessels were fixed into the Indian sub-continent for demolition. While the benchmark market health indicator Canary Island seasonal tomato contract was fixed at only a marginal increase on last season, Russian charterers JFC and Sunway had little choice but to pay top dollar for larger units on

longer deals. With so much more of the Baltic fleet likely to be scrapped this year or next on the one hand and the Russian ports and terminals still unable to handle large numbers of reefer containers on the other it will be fascinating to see how the vertically integrated distributors choose to manage their supply chains once these units are demolished. It may not be long before the knock-on impact of any such move is felt by southern hemisphere fruit exporters, with CSAV in particular left exposed by the change. However with the container charter market continuing to weaken, the Chilean charterer might instead seek solace in the box alternative. The monthly averages were once again complicated by the enormous variance in yields on fixtures of older vessels fixed on bargain box rates into the Med on the one hand and modern units fixed on TC to the majors on the other. As long as the oil price stays high the calculation difficulties will remain.

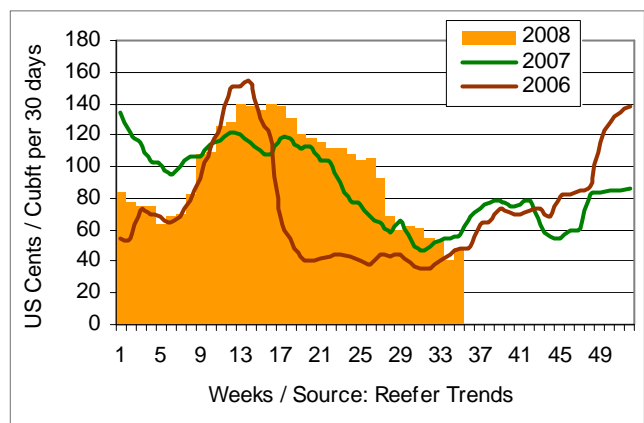
Monthly spot average US\$cents/cubic foot x 30 days				
Year	Large reefers		Small reefers	
	July	August	July	August
2008	45	27	68	51
2007	38	39	55	56
2006	35	43	43	42

## Weekly market movement

### Large reefers (450 000 cuft)



### Small reefers (330 000 cuft)



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# reefer trends

The independent news and information service for the reefer and reefer logistics businesses

# Wholesale market prices in Europe

## July-August 2008

					EUROPEAN UNION — IN EUROS				
					Germany	Belgium	France	Holland	UK
AVOCADO	Air	TROPICAL	BRAZIL	Box			12.10		
	Sea	FUERTE	PERU	Box	8.25				6.40
		HASS	SOUTH AFRICA	Box	7.25	8.50		7.25	
			ISRAEL	Box					6.21
		NOT DETERMINED	KENYA	Box			4.83		
			PERU	Box	7.13	7.00	6.24	6.69	
			SOUTH AFRICA	Box			6.11	6.63	
			ISRAEL	Box					8.39
		PINKERTON NABAL	PERU	Box			5.00		7.30
			SOUTH AFRICA	Box			5.63		7.53
			CHILE	Box					7.46
		RYAN	SOUTH AFRICA	Box	7.00	8.06		8.00	
			PERU	Box				5.25	
			SOUTH AFRICA	Box				7.00	
		SOUTH AFRICA	Box	6.63	7.88		7.38		
BANANA	Air	RED SMALL	KENYA	kg				5.38	
			COLOMBIA	kg		6.90	5.90		
	Sea	SMALL	ECUADOR	kg				4.66	
			ECUADOR	kg			1.82	2.13	
CARAMBOLA	Air		MALAYSIA	kg	4.14	4.49	4.75	4.21	4.35
			THAILAND	kg					3.73
	Sea		MALAYSIA	kg	2.86			2.78	2.66
COCONUT	Sea		COTE D'IVOIRE	Bag		13.75	6.59	8.08	11.35
			DOMINICAN REP.	Bag		6.00	7.50	9.50	10.05
			SRI LANKA	Bag	16.25	8.88		13.25	
DATE	Sea	MEDJOOL	ISRAEL	kg		7.91	8.50	7.27	5.93
			SOUTH AFRICA	kg				7.48	
		BAHRI	ISRAEL	kg		2.80	3.50	2.72	
		DEGLET	ISRAEL	kg		3.40		2.53	
GINGER	Sea		BRAZIL	kg	1.73			1.53	
			THAILAND	kg	1.19		1.45	1.10	1.53
			CHINA	kg		1.33	1.55	0.98	1.19
GUAVA	Air		BRAZIL	kg		5.33	4.30	4.67	
			THAILAND	kg		5.41			
KUMQUAT	Air		BRAZIL	kg					3.39
			SOUTH AFRICA	kg	4.00	4.50	4.50		5.02
			ARGENTINA	kg		4.13	3.40	4.25	4.35
LIME	Air		MEXICO	kg			3.67		
	Sea		BRAZIL	kg	1.48	1.63	1.88	1.69	1.58
			MEXICO	kg	1.16	1.64	2.50	1.69	1.53
LITCHI	Air		ISRAEL	kg	3.38		3.50	3.75	4.13
			THAILAND	kg		4.00			
	Sea		ISRAEL	kg		3.67		3.25	3.42
			THAILAND	kg				2.98	2.67
			CHINA	kg					2.22
	Truck		SPAIN	kg					3.11
MANGO	Air	HADEN	ISRAEL	kg				3.20	
		KEITT	DOMINICAN REP.	kg		2.45			
		KENT	ISRAEL	kg		3.25			
			SENEGAL	kg				1.19	
		MAYA	ISRAEL	kg	2.91	3.50	3.75	3.42	
		SHELLY	ISRAEL	kg		2.95		3.80	
	Sea	NAM DOK MAI	THAILAND	kg	7.50				
		ATKINS	BRAZIL	kg	1.25	1.19		1.19	1.40
			DOMINICAN REP.	kg	1.25				
			ISRAEL	kg	1.13			1.07	
		KEITT	DOMINICAN REP.	kg		2.50			
			ISRAEL	kg		1.30		1.38	

					EUROPEAN UNION — IN EUROS					
					Germany	Belgium	France	Holland	UK	
MANGO	Sea	KEITT	PORTO RICO	kg				1.32	1.34	
			MALI	kg		1.13				
		KENT	COTE D'IVOIRE	kg			1.25			
			ISRAEL	kg		1.30	1.50			
			MEXICO	kg		1.50		1.19		
		NOT DETERMINED	MALI	kg				1.19		
	SENEGAL		kg			1.25				
	DOMINICAN REP.		kg						1.28	
	LILY	SHELLY	HONDURAS	kg					1.90	
			ISRAEL	kg					0.97	
			SENEGAL	kg					1.12	
	Truck	NOT DETERMINED	SPAIN	kg		1.38	1.00	1.38	1.37	
MANGOSTEEN	Air		INDONESIA	kg				6.13		
			THAILAND	kg			9.25			
MANIOC	Sea		COSTA RICA	kg		1.55	1.35	1.17		
PAPAYA	Air	NOT DETERMINED	BRAZIL	kg			2.95	2.84		
			COTE D'IVOIRE	kg					2.83	
			GHANA	kg		2.85				
	Sea	FORMOSA NOT DETERMINED	BRAZIL	kg				2.89		
			BRAZIL	kg	1.26	1.71	1.71	1.73	1.08	
			COTE D'IVOIRE	kg				1.71		
			ECUADOR	kg		1.86			1.08	
		MALAYSIA	kg					1.57		
PASSION FRUIT	Air	PURPLE	COLOMBIA	kg		3.66	5.25	4.32		
			ISRAEL	kg	3.50		6.00		4.32	
			KENYA	kg	4.50	4.50		4.03		
			SOUTH AFRICA	kg	5.50	4.00	5.80	4.25		
			ZIMBABWE	kg		5.13		4.25		
			COLOMBIA	kg	7.00	7.50	7.95	6.54		
		YELLOW								
PERSIMMON	Air		ISRAEL	kg					2.49	
			NEW ZEALAND	kg	3.50	4.00		3.77		
PHYSALIS	Air	PREPACKED	COLOMBIA	kg		5.63	8.03	6.14	6.28	
	Sea		COLOMBIA	kg	4.37	4.17		4.85		
PINEAPPLE	Air	SMOOTH CAYENNE	CAMEROON	kg			1.96			
			GHANA	kg		1.60	1.80			
			COTE D'IVOIRE	kg			3.00			
		VICTORIA	MAURITIUS	Box		13.00		11.00		
			REUNION	kg			3.75			
	Sea	MD-2	SOUTH AFRICA	Box	11.00	12.00		10.50		
			COSTA RICA	Box	8.50	12.25	8.13	12.25	9.38	
			COTE D'IVOIRE	Box					8.92	
			PANAMA	Box	13.38				11.18	
PITAHAYA	Air	RED	ECUADOR	kg				5.67		
			THAILAND	kg	5.67			5.08		
			VIET NAM	kg	3.33	5.63		5.96		
		YELLOW	COLOMBIA	kg		7.60		8.90		
			ECUADOR	kg				7.60		
PLANTAIN	Sea		COLOMBIA	kg			0.90	0.93		
			ECUADOR	kg			0.92			
RAMBUTAN	Air		THAILAND	kg		7.50	9.50	5.88		
			VIET NAM	kg	6.50	6.82				
SWEET POTATO	Sea		HONDURAS	kg					1.14	
			ISRAEL	kg	1.35	1.19	1.43		1.28	
			SOUTH AFRICA	kg			1.30	1.19	0.86	
TAMARILLO	Air		COLOMBIA	kg		6.00	8.40	5.60		
YAM	Air		BRAZIL	kg			1.84			
	Sea		GHANA	kg			1.20	1.33		

Note: according to grade

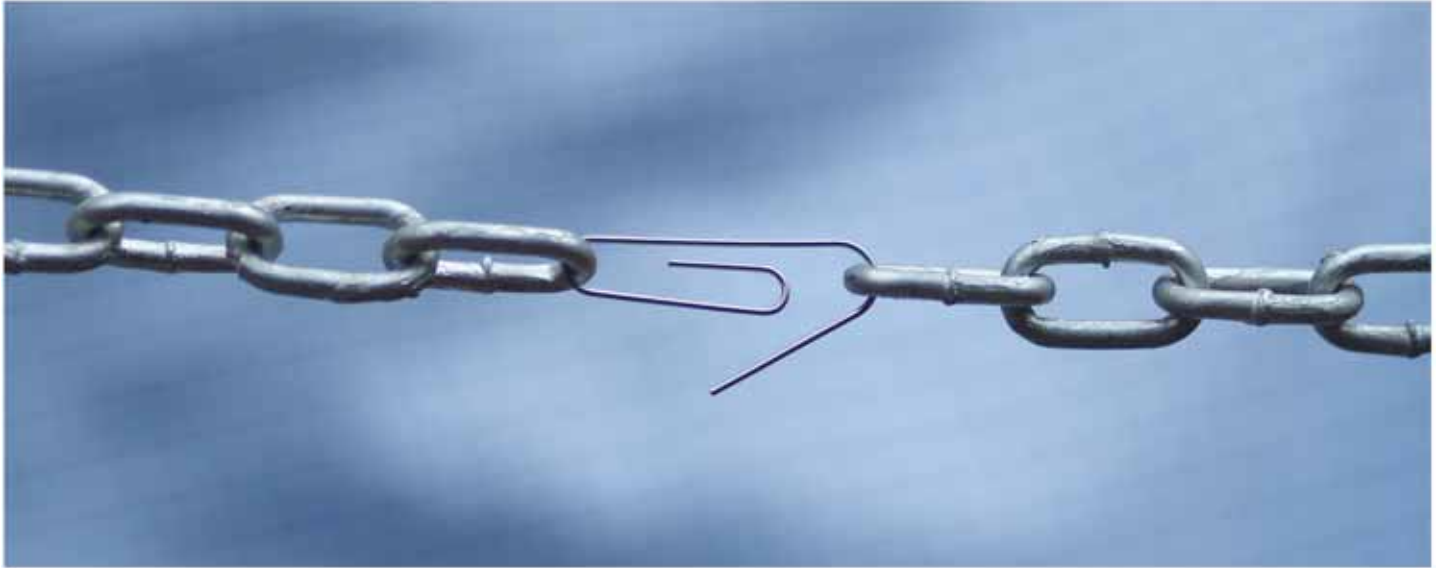
These prices are based on monthly information from the Market News Service, International Trade Centre UNCTAD/WTO (ITC), Geneva.

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