June 2009 - No. 168

FRuiTROP

English version

CLOSE-UP: GRAPEFRUIT

Mediterranean citrus: HLB, a new threat

Sea freight: reefer market heads for the rocks

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FRuiTROP

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Printed by
Pure Impression
rue Charles Nungesser
Espace Com. Fréjorgues Ouest
34135 Mauguio cedex, France

Separate French and English editions

ISSN
French: 1256-544X
English: 1256-5458

CPPAP
French: 0711 E 88281
English: 0711 R 88282

Subscription rate
EUR 190 euros
11 issues per year

EURO - 23 June 2009

Currency	1 euro =
US dollar	1.3978
Japanese yen	133.49
Swiss franc	1.5031
Pound sterling	0.85735
Swedish krona	11.1025
Danish krone	7.4442
Norwegian krone	9.099
Canadian dollar	1.6101
Australian dollar	1.7744
New Zealand dollar	2.2046
Brazilian Real	2.8152
Czech koruna	26.207
Polish zloty	4.5462
Chinese yuan renminbi	9.5537
Estonian kroon	15.6466
Mexican Peso	18.5385
Turkish lira	2.1944
South African rand	11.4724
South Korean won	1 799.72

Source: Central European Bank

'Damn, fruit and vegetables don't grow directly in crates! *Hell, they need spraying because they are attacked by foul beasties and horrible illnesses! Dear, dear, they don't use teleportation yet and have to be transported by road or by sea!'*

'Hypocrisy is a tribute paid by vice to virtue'

La Rochefoucauld

When you read the consumer pages of major dailies and look at the sometimes very aesthetic and sometimes very scary green reports, you start dreaming of making it obligatory to teach children from a very early age a few basic principles of the production and distribution of foodstuffs. This is in no way a complaint that consumers or, more precisely, the media, are becoming aware of their environment and their food. It is just a pity that this awakening of consciences leads to eradicating the past, to repudiating technical progress, to forgetting that production-oriented farming has provided quantity and quality for generations obliged to made do with—rather than become accustomed to—very little variety and sometimes very little food. And not much notice is taken of the efforts and spectacular successes of sectors in reducing the negative impacts of the production and transport of agricultural produce. Please make a little effort dear journalists. The average housewife also has the right to full and accurate information.

Denis Loeillet

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Cover photo: Régis Domergue

A new threat to Mediterranean citrus

Huanglongbing (HLB) in 16 questions and answers

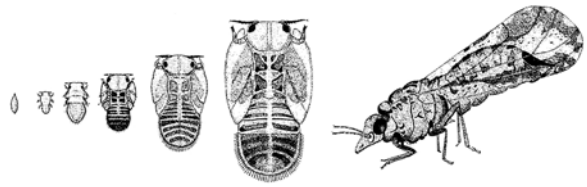
Translated into English by the author

Huanglongbing (HLB, meaning 'yellow shoot disease'), is one of the nine citrus diseases known to be spread by both grafting, and natural contamination through insect vectors. In the past decade, the disease has gained pandemic status as a result of man's activity, possibly combined with climatic change, thus allowing vector and pathogen alike to move long distances and threaten the major citrus producing areas of the world.

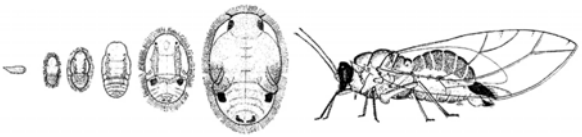
What is the origin of the disease?

Old descriptions in Assam and the Punjab are suggestive of HLB. However, the first true outbreaks in orchards were reported by the turn of the 1940s in the Chinese province of Guangdong—hence the official Chinese name of the disease. This was followed by separate outbreaks in the mid-1960s in the Maharashtra (India) and in the Transvaal (South Africa). The disease was doubtless already present in these regions but the possibility of it spreading by grafting and by leaf sucking insects was as yet unknown.

In addition to propagation by budwood in nurseries, the disease was found to be transmitted by two psyllids, one Asian (*Diaphorina citri*) and the other African (*Trioza erytreae*).



Asian citrus psyllid *Diaphorina citri* (egg, instar nymph, and adult)



African citrus psyllid *Trioza erytreae* (egg, instar nymph, and adult)

Is the same disease found in Asia and Africa?

Yes

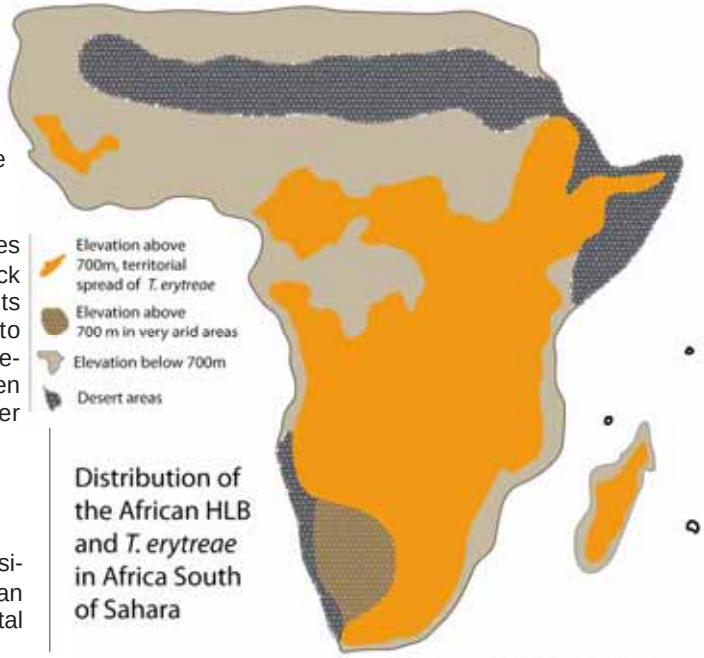
1) The symptoms are identical in both cases: asymmetrical blotchy mottle of leaves, with regard to the main leaf vein; the fruits are also lopsided, weakly coloured with a low juice or sugar contents and aborted seeds, they display typical inverted coloration with initial change around the peduncular end whereas on healthy fruits it starts at the stylar end.

2) In both cases, the canopy of infected trees exhibits yellow shoots followed by twig dieback and gradual decline of trees. Healthy plants established in open orchards submitted to psyllid invasions, develop twig sectorial dieback from top downwards. Infected fields often lose any profitability within five years after planting.

No

1) Because the African form of HLB is sensitive to high temperatures and in sub-Saharan Africa the symptoms disappear when the total of degree-hours greater than 30°C is 800 or more. Furthermore, the upsurges of African psyllid require cool and moist conditions. Eggs and first instar nymphs cannot stand hot, dry air (air saturation deficit of 30 millibars or more). As a result, the African HLB is generally found in orchards at elevations greater than 600-700 meters, although these are known to give high-quality fruits. Indeed, the oranges and mandarins grown on the high plateaux are better coloured and more tasty.

2) In contrast, the Asian citrus psyllid and the Asian form of HLB can withstand extreme temperatures ranging from freezing in the winter, to very arid and warmest summers in the world.



© Joseph Bové

Asymmetrical blotchy mottle of leaves, with regard to the main leaf vein

© Bernard Aubert

Calamondin fruits, left from an HLB affected twig (Philippines)

© JM. Bové

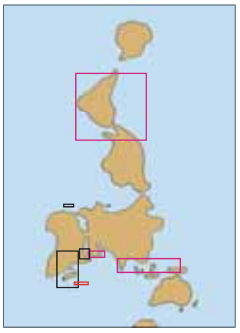
Orange sections, in the middle from an HLB contaminated twig

© Joseph Bové

Inverted coloration of orange fruits

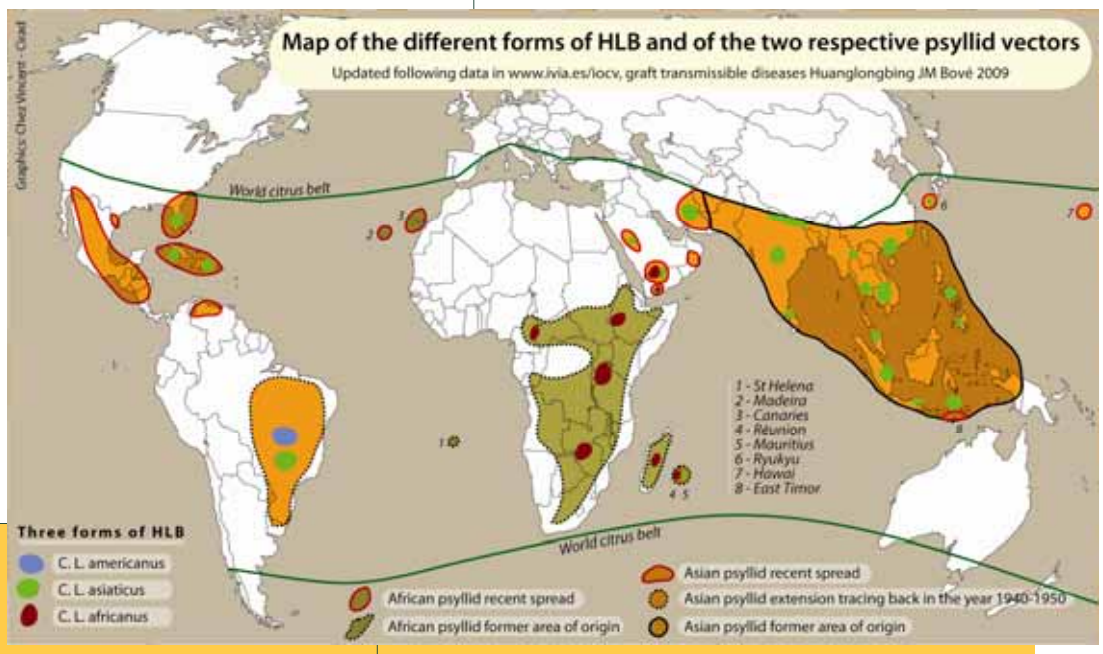
Why are there several forms of HLB?

Area where primitive rutaceous plants, psyllids and HLB bacteria originated



Recent spread of HLB and its insect vectors

Entomologists estimate that the psyllids appeared during the Gondwana period 150 million years ago, and that larval cycles of these insects adapted gradually to narrower niches on preferential host plants. Furthermore the age of HLB bacteria was evaluated by molecular biochronology, and estimated to the Gondwana period also. Contact between *T. erytreae* or *D. citri* and cultivated citrus is much more recent as the latter only appeared some 4 million years ago in Australasia and was subsequently disseminated by man. As an example, a 'relic area' like the Comoros islands harbours a very special *Diaphorina* that has adapted to the citrus 'newly' introduced there.



Citrus: a horticultural heritage

Citrus fruits form a priceless cultural and economic heritage. Well before they were the largest orchard crop, orange and lemon had pride of place in princely gardens, a tradition that goes back nearly three thousand years.

The true natural history of citrus begins with remote ancestors during the Gondwana period. A group of Rutaceae was isolated in Australasia by continental drift and developed the feature of producing scented flowers that attracted pollinating insects, and a remarkable berry (hesperidium). Its skin contains brightly coloured pigments and essential oils. The pulp is divided into segments with juicy vesicles containing sugars, organic acids, mineral salts and vitamins.

Caravan in the desert (Atlas Catalan)

From the earliest times, man devoted all his skill to obtaining and domesticating these fine jewels of nature. Via caravan traders and pilgrimages, the citron was the first species to be domesticated—in the sixth century BC. It became part of Buddhist traditions in Asia and reached the Babylonians. It spread in Asia Minor with banana and sugar cane, plants brought from the Indus by the Medes.

In the third and fourth centuries AD, the Nabateans of Petra recorded Hindu-Mesopotamian horticultural know-how in the 'book of nabatean agriculture' issued in Aramean and Syriac. Abd-Al-Rahman, the first Caliph Ommeyad of Cordoba, organized its translation into Arabic, with the view of laying out his famous Andalusian gardens. Thanks to him, citrus sowing, grafting and irrigation techniques reached the European Renaissance courts.

After a long journey, modern citrus has become the leading group of fruits. Today, citrus is grown on an estimated 7 million hectares in 130 countries and some 1.5 thousand million trees are in production. The annual harvest totals 110 million tonnes. Maintaining this production requires intense nursery activity for planting out some 120 million young trees every year. Orange is the leader in this vast production, followed by mandarins, limes, lemons and grapefruit.

In addition to large commercial plantations producing fresh fruits and juice, countless family orchards, village citrus groves and backyard trees play an important social role with regard to diet and vitamin intake and also to respond to culinary traditions. Average citrus consumption worldwide is 17 kg per person per year, but distribution by country is uneven.

In addition, citrus trees and some closely related Rutaceae, form part of the urban landscape in conurbations in southern countries, dotting parks, avenues and gardens and even being sold as mini-ornamentals.

Are there territories in which both forms of HLB and the two psyllids are present?

Yes

This is the case in the Mascarene archipelago (Réunion, Mauritius and Rodrigues) and the south-eastern part of the Arabian peninsula, where both citrus psyllids are present. Their ecological niches may occasionally overlap. Furthermore, the African psyllid can alternatively carry the Asian form of HLB and the Asian psyllid the African form. Not surprisingly both bacterial types have been found colonising a same tree in Reunion.


© Bernard Aubert

Punctured mummies of *D. citri* attacked by an ectoparasitic wasp

For territories not yet contaminated, can we figure out the expected distribution of epidemics?

Yes

A provisional mapping of expected vector spread may be obtained by computing temperature and relative humidity data. For example, *Trioza erytreae* would be able to colonize Mediterranean coastal areas, with egg laying and larval development periods in the spring time, and adults over-surviving the other seasons. The larvae of this psyllid are nesting in galls on the underside of leaves and their transport on long distances will occur on rooted planting material. Then adults, with fairly good flight capability, will spread the species in the newly contaminated territories.

As to *Diaphorina citri*, the larvae are mobile with possible survival on young twigs or fruit stems. The Asian citrus psyllid will therefore spread through the transfer of cut planting material, e.g. leaves or fruits.

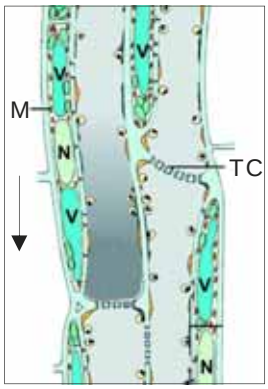
Yellow sticky cards in well-chosen places and observed regularly can be used as a warning network, since both psyllids are attracted by this colour especially the 'Saturn Yellow' type.


© Bernard Aubert

Vein yellowing non specific of HLB


© Monique Garnier

HLB bacteria in a sieve tube (transmission electron microscopy)



Sieve tubes are living cells connected by sieve pores, and bordered with companion cells showing a nucleus (N) a vacuole (V) and mitochondria (M). The HLB bacteria are thought to disturb the transport of fluid in the tubes.

Can HLB be confused with other disorders?

Yes

The first signs on leaves can be confused with mineral nutrient disorders especially zinc or manganese deficiencies. However, a true physiological deficiency will affect an entire orchard and the pattern of yellow shoot on canopy trees will tend to be evenly distributed. In contrast, symptoms of HLB are much more random and sectorial for both individual trees or contaminated orchards. Another possible confusion may result from *Phytophthora* attacks related to soil water logging. However, in this case the leaf symptoms begin with yellowing along the veins.

It is therefore important to back up field visual diagnostics by laboratory assay. Once such a confirmation has been made, visual detection is carried out by specially trained officers who inspect the canopy of the trees. Towed platforms giving a view of the canopy are used, and remote sensing techniques can be envisaged although not yet operational.

Temperature and relative humidity

Mapping potential *T. erytreae* spread is obtained by calculating peaks of daily saturation deficits, whence:

$$Ds = Pvtm \times (100-rh/100)$$

Ds = maximum daily saturation deficit

Pvtm = saturation vapour pressure at peak daily temperature

rh = relative humidity observed at 13.00

Pvtm is taken from psychrometric tables. The death rate of *T. erytreae* eggs and first instar nymphs is 90% from 40 millibars.

What kind of infection is it?

Both forms of HLB are associated with Gram-bacteria that proliferate in the vascular system conveying the elaborated sap (primary phloem and liber). This translocation occurs in elongated nucleus-free cells in the form of tubes, equipped with sieves pores. This vascular system feeds the biological active parts of the plant, especially buds, fruits and roots. On HLB affected tissues sieve pores plugging hinder sap transfer.

These bacteria were given the name Liberibacter because they are found in liber tissue. However, the isolation in pure culture of these organisms has not yet been achieved, although their 16S ribosomal DNA were recently identified. They are thus classified in the alpha-proteobacteria group and named provisionally *Candidatus* Liberibacter asiaticus and *Candidatus* Liberibacter africanus.

A French INRA-IFAC team played an important role for detecting the Asian and African

HLB organisms at the end of the 1960s. It identified for the first time the presence of bacteria on affected orange leaves from India, Reunion island and South Africa, using transmission electron microscopy.

Detection techniques with DNA probes and PCR primers are available today, making it possible to evaluate the bacterial load in both the tissues of contaminated citrus plants and the body of psyllid vectors. This applies to both the African and Asian strains of HLB.

Are all kinds of citrus susceptible to HLB?

Yes

But to different degrees. Oranges mandarins (together with tangelos, tangors or other easy peelers) and grapefruits, are among the most susceptible. Lemons, limes, kaffir limes, citrons and calamondins display less drastic symptoms in spite of hosting bacterial loads as high as in the former group. So far no rootstock was found to provide resistance to HLB. Acid citrus fruits (rough lemons, limes, calamondins, etc.), generally grown from seed, are common backyard trees in the villages of Africa and Asia. They form multiple spots for infectious agents and vectors. The same applies to certain ornamental rutaceous plants such as the species *Murraya paniculata*, a preferential host plant of *D. citri* and very commonly used in landscaping.

Why has HLB suddenly spread in America?

A territory may harbour citrus psyllid populations without necessarily the HLB bacterium being present. However, such a territory becomes extremely vulnerable as the importing of contaminated budwood or plants, can cause the rapid spread of the disease. This scenario was recently observed in Brazil where *D. citri* had been introduced accidentally by the mid-twentieth century, but without the HLB bacterium. Some fifty years later, the probable importing of contaminated budwood and other circumstances that have not yet been elucidated, caused a sudden outbreak of the disease in Sao Paolo state.

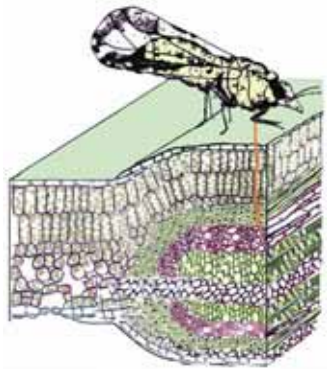
In northern America HLB arrived in Florida most probably by the mid-1990s with ornamental plants hosting both the disease and *D. citri* larvae. For some time the HLB spread unknowingly in peri-urban ornamental plant nurseries, before appearing suddenly in commercial orchards.

Epidemiologists agree that among citrus diseases, HLB develop the most dangerous epidemics, irrespective of smallholding orchards or large intensive plantations.

What is the relationship 'host-plant, HLB agent, psyllid vector'?

For the psyllid vectors, the HLB organism which is part of the symbiontic flora in the digestive tract, is conveyed through the haemolymph and the salivary glands. The leaf sucking mouthpart of the insect comprises a stylet which is used to pierce and suck the fluid from the leaf. The stylet has three fine threads sliding jerkily against each other for piercing the leaf tissue up to the phloem. Gustatory sensillas mediate acceptance or rejection of plant fluid thus playing a major role in locating tissue feeding.

To sum up, the spread of HLB by vector first involves feeding on a contaminated plant. The HLB bacteria then multiply in the tissues of the insect to the salivary glands for inoculation during subsequent feedings. Research is in progress to gain better knowledge of these mechanisms and especially the translocation-multiplication of the pathogen within the vector.



Adult of *D. citri* in feeding posture on a leave vein. Feeding stylet in orange colour.

© D. Guillaumin

Distal part of the feeding stylet (three threads), covered by a setal sheat of saliva (scanning electron microscopy)

What is the profile of the spread of HLB in a citrus orchard?

The spread of the disease from an initial outbreak depends on vector population density and the prevalence of HLB bacteria and hence the frequency of pathogen-vector contacts. As regards the 'pathogen' parameter and in the light of the explanations above, strict regulations for propagating healthy planting material in nurseries are of prime importance. This leads to setting up certification schemes in which the production of healthy budwood, and the production of young grafted plants are performed under insect-proof greenhouses.

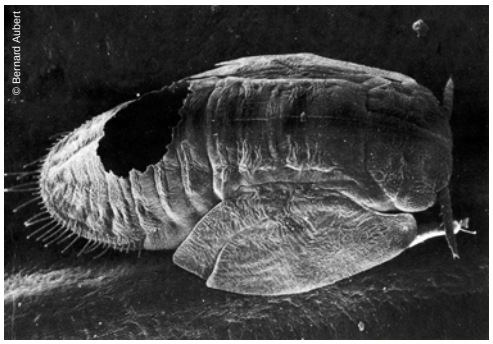
The rate of the spread of the disease in orchards depends on environmental conditions and cultural practices. For example, *D. citri* is omnipresent in Asia, where the eradication of HLB is socially diffi-

© Roux Cuveller

Production of citrus plants under insect-proof greenhouse (Reunion Island)

© R.B. Bassanezi

Removal of HLB contaminated orange trees, at the border of a commercial orchard (Brazil)



Exit hole of a *D. citri* 5th instar nymph parasite

Seven years old HLB affected orange orchard (Le Gol Reunion). Established originally with healthy planting material originated from SRA Corsica, this orchard was exposed to *D. citri* attacks. Groups of diseased trees were experimentally injected with antibiotic producing temporary remission of HLB symptoms.

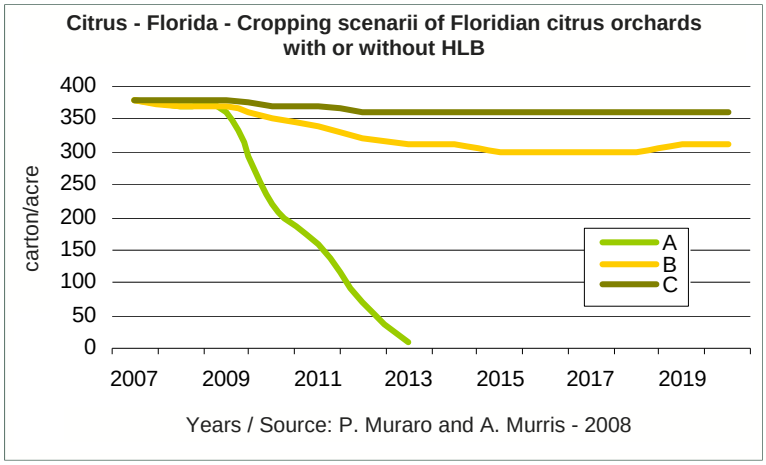
cult since millions of families own small private orchards or backyard trees. The lifetime of orange and mandarin plantations is hardly more than five years. Citrus growers compensate for this short production period by using extremely high density planting systems that require intensive labour.

HLB was first observed in Brazil in March 2004 and it spread rapidly to some 200 municipalities in the Sao Paolo state citrus belt. Vast orchard areas are planted there, with large orchards of 100 000 and even up to 3 million trees. The eradication of the first outbreaks involved the destruction of 5 million out of a total of 150 million trees following monthly inspection from mobile platforms. With continuous insecticide cover, it has been found that because of incubation time lag, the percentage of trees actually infected at a given moment is in fact twice as great as the number of trees displaying the very first symptoms of the disease.

Can biological control of the vectors be envisaged in certain territories?

This type of strategy has only one chance of success. The psyllid populations must be initially established without their natural enemies, and the introduction of primary ectoparasites must be introduced with previous careful elimination of secondary and tertiary parasites. This method proved its worth in Réunion in the 1970s thanks to the efforts of a IRFA-INRA-IRAT and SRA joint team. It resulted in the eradication of *T. erytreae*, and achieved a very strong decrease in *D. citri* populations. As healthy planting material was regularly secured, a gradual disappearance of HLB was obtained without the need for a massive and hazardous total eradication of affected citrus trees. Effective biological control of *D. citri* has just been repeated successfully ten years ago in Guadeloupe by a joint operation INRA and CIRAD.

A: affected orchards without HLB policy
B: affected orchards with stringent insecticide policy, plus removal/ replanting of trees showing early symptoms of HLB
C: healthy orchards



Florida is taking the initiative

Florida citrus growers and their Brazilian colleagues, with support from USDA and the University of Florida, held an international conference on research on HLB from 1 to 5 December 2008. The event was attended by 400 participants, with 85 oral communications and 48 posters. The proceedings are in press.

It was seen that all the segments of the 'citrus R & D' sector should be mobilised: agronomy, entomology, epidemiology, genetics/breeding and biotechnology. One of the aims of the conference was the launching of an international call for research proposals. Performed at the initiative of the FCPRAC (Florida Citrus Production Research Advisory Council), this led to the selection of 74 projects out of 236 proposals, including No 48 submitted by CIRAD (attempt to obtain the Asian HLB in pure culture with a view to performing Koch's postulates).

The website http://swfrec.ifas.ufl.edu/hlb/ database houses a full international bibliography on HLB. For a detailed information on HLB, see also www.ivia.es/ iocv.huanglongbing

How much do eradication campaigns cost?

Economic studies in Florida have shown a rapid production decrease due to HLB, in the absence of stringent control strategies. This includes early diagnostic and destruction of infected trees followed by eventual replanting with clean material. This prophylactic measures result in an increase of production cost of at least 35 to 50%. Such an extra cost results from the purchase of healthy plants, detection costs (five or six scouts per year), replanting, the increase in insecticide spraying, and the temporary loss of production in eradicated and replanted fields. Outdoor field-grown the nurseries are forbidden and must operate now under insect-proof greenhouses. In addition, care must be taken in the removal of contaminated trees to prevent contamination by regrowth of stolons infected by HLB. It is important to coat the trunk with herbicide just after felling and cover it with plastic sheeting.

Many growers have been discouraged by these constraints, especially near urban areas

exposed to landowning speculation. HLB and *D. citri* are beginning to reach dangerous levels even in the remote Everglades orchards.

Surveillance in islands?

Intertropical islands used often as natural quarantine facilities over the previous centuries were and still are critical step for the spread of vector-borne citrus diseases such as HLB. Many islands harbour germplasm repositories of citrus and/or ornamental Rutaceae. In addition to the famous case of the Mascarene archipelago hosting both psyllid species, *T. erytreae* appeared in Madeira and the Canary Islands about ten years ago. Fresh cut twigs of Murraya (carry plant) bearing *D. citri* larvae were exported recently from Hawaii to California. *D. citri* appeared also in the southern-most island group of Japan stretching towards Taiwan, and in Timor island near Australia.

All these places are served by daily flights, with all the associated risks.

What regions are still free of HLB?

The Mediterranean area, Japan and Australia are still free of HLB for the moment.

The Mediterranean basin, producing 17 million tonnes of citrus each year, is clearly most at risk, given the scale of tourist travel, the importance of ornamental plants and the intertwin situation of orchards with ornamental citrus. Citrus is grown in small family orchards often at the edge of urban and tourist zones for reasons of water competition. The threat comes both from the East with the presence of *D. citri* and Asian HLB in the Middle East on the one hand, and from the West with the arrival of *T. erytreae* in Madeira and the Canaries on the other.

Concerted preventive strategies run by regional multi-disciplinary teams are essential for launching relevant preventive scheme. Today, it does not seem that measures are being taken to match the threat.

A short list of the French research teams that have worked on HLB

- INRA (Institut National de la Recherche Agronomique) Laboratoire de Biochimie Centre de Versailles. This research unit was transferred in 1971 to INRA Centre of La Grande Ferrade (Bordeaux) and became Laboratoire de Biologie Cellulaire et Moléculaire (LBCM) operating presently under the entity of Institut de Biologie Végétale Moléculaire.
- IFAC (Institut des Fruits et Agrumes Coloniaux) created in 1942 with major activities on bananas and citrus in the Caribbean, America, Africa, Reunion and the Mediterranean Basin. In 1972 the name of this Institute became IRFA.
- IRAT (Institut de recherches agronomiques tropicales et de cultures vivrières).
- IRFA (Institut de Recherches sur les Fruits et Agrumes). In January 1985 IRFA was merged to the new French research centre CIRAD.
- SRA Station de Recherches Agronomiques de San Giuliano Corse, created by IFAC in 1958 and presently managed by a joint team INRA-CIRAD. This centre hosts the French Certification Scheme for Citrus.
- CIRAD (Centre de Coopération Internationale en Recherche Agronomique pour le Développement) Montpellier UPR Jaunissement mortel du cocotier et HLB des agrumes). This reseach Unit for the coconut hartrot and citrus HLB CHCHLB) deals with tropical phloem restricted plant pathogenic organisms.

What is the state of European research on HLB?

The research conducted by French teams is still a reference but should now be structured in a Euro-Mediterranean framework. CIRAD has newly resumed research work with a programme headed by the FCPRAC (Florida Citrus Production Research Advisory Council—see box).

The economic and social issues are considerable as the Mediterranean basin alone produces some 18 million tonnes of citrus, and trades nearly 6 million tonnes with a market value that probably amounts to between 5 and 10 thousand million euros ■

© Bernard Aubert

Removal of HLB affected citrus trees in China

© Bernard Aubert

Sticky yellow traps for scouting the presence of *D. citri* (China)

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Sea freight

Reefer market heads for the rocks

The specialised reefer business has endured a difficult start to 2009. Optimism that it would remain immune to the global economic downturn has proved to be misguided. The TCE charter market average for the first four months of the year was the lowest for a decade: the oil price rising ahead of a recovery heralds the end of a large number of the less fuel-efficient units. Could or should the reefer business have foreseen this set of circumstances? What's going to happen next? How has the global downturn affected expectations in the short, medium and long term? What, if anything, can the reefer business first learn and then do about its current predicament?

Historically the reefer business has always been resistant, if not immune, to recession. The reason for the weakness in the reefer charter market year-to-date is not directly attributable to the global economic crisis; volumes on the core reefer trades remain buoyant. The movement, for example, of seasonal southern hemisphere fruit has been similar to, if not greater than, previous years. Exports are forecast to dip during the citrus season, but not by much. There is more value for all stakeholders in the banana chain than there has been for a very long time.

There are exceptions: although the Russian and Black Sea markets have absorbed fewer bananas this is less because of weak demand and more because the Ruble and Ukrainian Hryvnia have depreciated markedly against the USD, the main trading currency for the banana trade. US poultry exports are lower, restricted by Russian trade quotas.

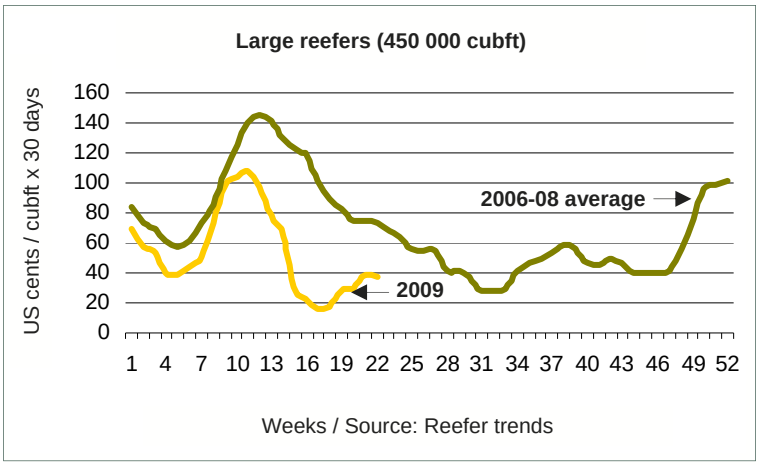
Arguably the most important factor in the decline in demand during the peak season was that the squid catch in the South Atlantic was markedly down from last season's record volume. The reduction from an estimated 450K MT in 2008 to a provisional 150-160K MT combined with a change in logistical arrangements – fewer high seas transhipments and more lower-cost containerised services from Montevideo – meant that less tonnage was absorbed and for a shorter time.

Another big difference this year has been the knock-on consequences of the collapse in the container market. The lines have not only been able to add vessels into schedules but also attack new reefer-specific trade lanes. Charterers such as CSAV and Fresh Del Monte with their own equipment have been able to fix reefer-slot-heavy boxships at a fraction of the cost of a reefer.

In short the delicate balance on the supply/demand mechanism for the Spot market has been disturbed. Despite extensive demolition last year, the supply of reefer vessels to the Spot market has increased. This has been exacerbated by a fall in demand – the relative shortage of banana supply in Central and South America has had a negative impact (from a reefer operator's perspective) on tradeable volumes out of Ecuador.

But the container business is in serious trouble – the industry is braced for some high profile casualties. Unfortunately for the specialised reefer business, diversified conglomerate Maersk will not be one of them. With its global reach and the resources (number of vessels and amount of reefer equipment) at its disposal Maersk is arguably the single greatest threat to the specialised reefer industry.

However the world's largest shipping line is also having its problems: two analysts predicted a USD1.4bn loss for the Maersk Line this year. Company CEO Nils Andersen said that Maersk would



have to reduce investments and improve cash management in order to adjust to the 'new global reality'. To this end he said that the company was targeting a USD1bn cost-cutting programme for 2009 on top of an existing and ongoing programme.

It will be fascinating to see from whence these savings will be delivered – given that corporate AP Moeller Maersk may not view reefer as part of its core business the company could quite easily knock off USD400m of this USD1bn target by cancelling or postponing investment in 20K reefer containers, for example. However given its commitment to the development of its reefer business this seems unlikely.

Forecast

Developments since the start of the year have taken the reefer business by surprise – it remains to be seen whether there are more shocks to come. Although the February to April 'peak' market did not meet expectations indications are encouraging for the principal off-season citrus and Pacific fish trades.

There is little doubt that a consequence of the container market catastrophe will be an acceleration in the phasing out process of the older units in the specialised reefer fleet – how quickly this happens to a large extent depends on what happens to the Spot market in the next quarter. If there is demand for capacity at sufficiently attractive rates the process will inevitably be delayed.

But with a rising price of oil likely to precede an economic recovery combined with a chronic oversupply of container capacity forecast for the next 2 to possibly 5 years, this year may be as good as it gets for some of the vintage tonnage! As long as the lines are prepared to continue buying business and as long as there are containerships going cheap, the pressure on the specialised reefer sector will not go away! ■

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Posorja development questions reefer role in banana trade

At the end of April the Ecuadorian Government announced that it had given the go-ahead for the development of its first privately-owned, deepsea container port at Posorja. Although the land has been flattened in preparation for the development, the project had been delayed for procedural, financial and political reasons. Maersk is one of the partners contracted to build the port and is likely to be interested in operating it once completed. The construction will cost in excess of USD300m and take an estimated three years to build.

There are to be two construction phases: the first will see the development of a 595m wharf with 263 729 sqm of patio, enabling the handling of an estimated 730K TEU per year. The second phase will see a doubling in size of the terminal and an ability to handle 1.1m TEU per year. There is also a possibility that the frontage could be extended further to 1 680m with a 1.56m TEU throughput capacity.

Why should this be of special relevance to the specialised reefer business?

In the logistics session at this year's AEBE-sponsored Banana Forum in Guayaquil Maersk's Kim Christensen was asked why the box giant was interested in the port development. Without hesitation he replied that the banana business was the largest, single motivating factor. What then are the chances of the Danish multi-national being able to containerise a percentage of Ecuador's banana trade?

One of the reasons why the lines have not been able to target the banana trades until now is linked to the logistics infrastructure at the ports of origin. Certainly the existing draught at the ports of Guayaquil and Moïn (Costa Rica) prevents even panamax vessels from making calls. The smaller, specialised reefer vessels however are more easily accommodated. The creation of a deepwater port in Ecuador and the dredging of Moïn will change the competitive landscape significantly by allowing in larger container vessels.

While Moïn is already a banana port Posorja is a greenfield site – and set the other side of current principal banana port Guayaquil to the country's banana production. The logistics in the new port's catchment area will first need to be radically upgraded to make it attractive to banana exporters for them to want to change: for example unless or until about 150-200kms of new roads are built to circumvent Guayaquil the incentive to switch would be lessened.

Once those particular hurdles have been cleared, by whom would an enhanced service be supported? Ecuador is the largest single supplier of bananas to the EU and Russia - without question it would be the UK, north continent and Baltic markets that would be the priority targets for the line. Reybanpac, which currently provides the backbone of fruit shipped on the newly-introduced Ecubex service direct to north continent would likely be first on the list, as would exporters wishing to ship to certain customers in smaller denominations.

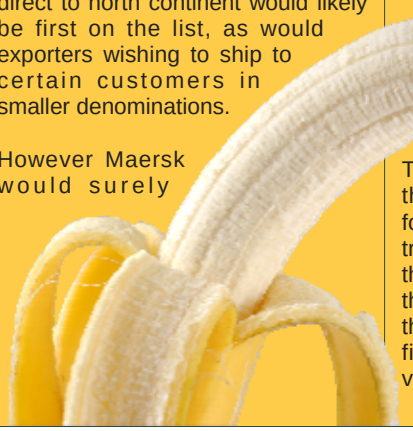
However Maersk would surely need a bigger fish to justify the scale of the investment. There was speculation circulating last year that Ecuador's second largest banana exporter Noboa was considering a modal switch for its north continent banana supply route. Noboa already uses Maersk for its USWC, Asian and New Zealand services. The rumours were denied at the time.

How much of the Russian banana market could Maersk capture? The disappearance of major players Sorus and Sunway to bankruptcy will theoretically encourage the Russian market to fragment – and a fragmented market is fertile ground for the development of containerisation. But were this to happen would the port of St Petersburg be able to manage such a step increase in throughput of reefer boxes? Perhaps not now, but in several years…?

While the Posorja project will initiate a battle for share of the banana business it will also be, to some extent, a battle for the soul of the specialised reefer business. Historically the specialised reefer has provided the optimum solution for the transportation of bananas – its role may be under threat because the competitive advantages that were once intrinsic will have become only circumstancial once these developments have been completed.

Then again, even if Maersk can demonstrate that a third party container line can service the banana trade as well as and/or more cost effectively than the specialised reefer there is no absolute guarantee that the major players will abdicate control of their supply chains to it, or indeed any other line.

The constant challenge for the specialised reefer business is to prove that the value it can add to charterers is greater than the cost saving that can be made by shipping in containers on third party lines. The more competition they face as the increasingly demand-led, cost-focussed and fragmented the reefer trades become on the one hand and the greater the investment made by the lines in slots and equipment on the other the harder it will become to first calculate and then justify that value.



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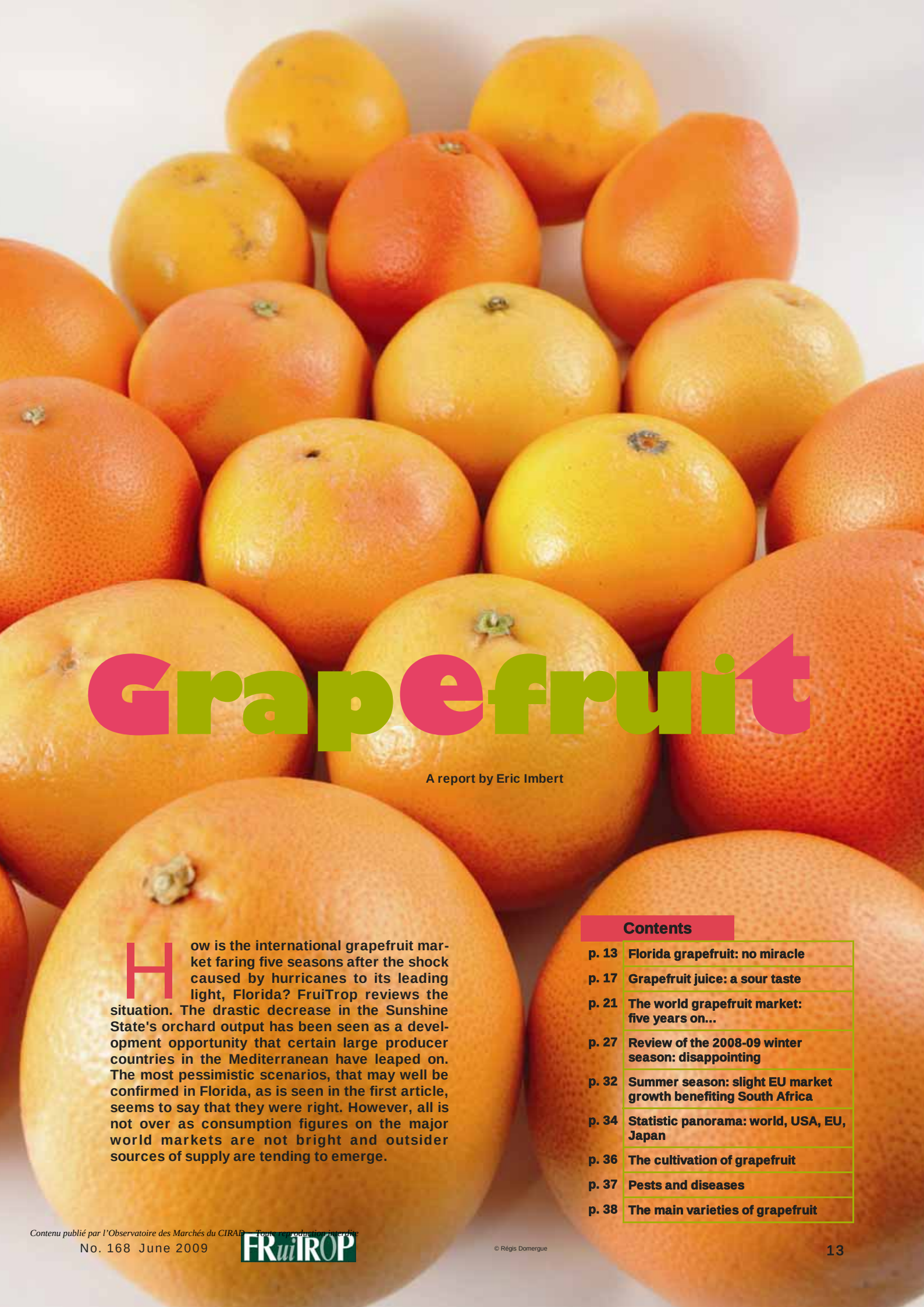

Grapefruit

A report by Eric Imbert

How is the international grapefruit market faring five seasons after the shock caused by hurricanes to its leading light, Florida? FruiTrop reviews the situation. The drastic decrease in the Sunshine State's orchard output has been seen as a development opportunity that certain large producer countries in the Mediterranean have leaped on. The most pessimistic scenarios, that may well be confirmed in Florida, as is seen in the first article, seems to say that they were right. However, all is not over as consumption figures on the major world markets are not bright and outsider sources of supply are tending to emerge.

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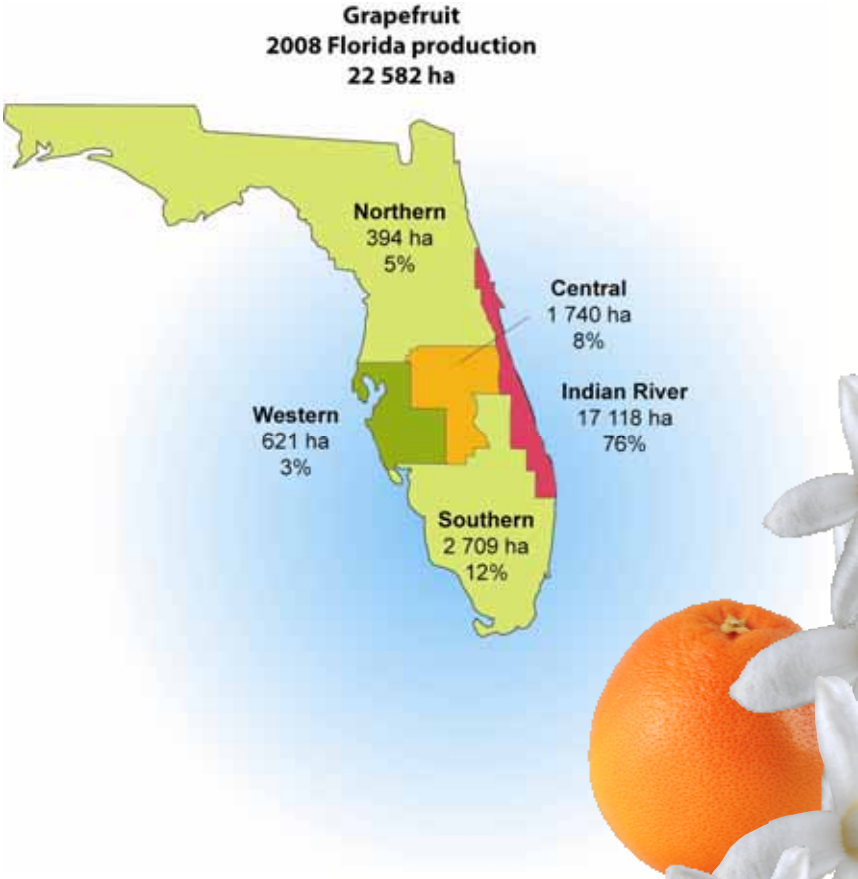
Florida grapefruit

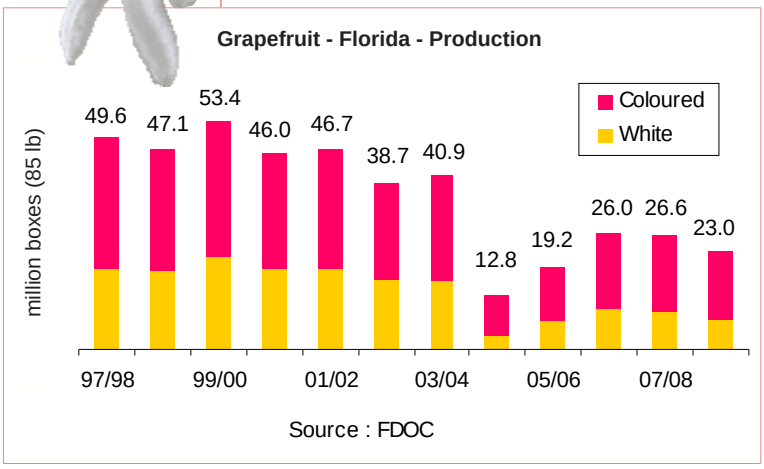
No miracle



It is clear that there has been no miracle and Florida production has only very partially recovered from the hurricanes of 2004 and 2005. Previously some 1.5 million tonnes, the harvest has been less than a million tonnes in recent seasons when there has been no hurricane damage. This is a fall from 40 million to 25 million field boxes measured in the units used by professionals. However, FDOC forecasts indicate that the worst is to come and some analysts say that the survival of the sector is at risk. Already weakened by decreasing profitability and citrus canker, the sector has a new, mortal, enemy with the appearance of greening (HLB), detected in 2005 in the south-east tip of Florida. This bacterial disease spreads very rapidly and is now present in all 38 counties of the state. It is an extremely serious threat as the symptoms are very serious for both trees and fruits. Loss of orchard profitability and then the death of the trees take place in a short, five-year period (see article below). In addition, monitoring of the disease is very difficult and its eradication even harder. The structure of Florida production does not help. Indeed, although plantations are of the commercial type, making monitoring easier, their closeness to or mingling with built-up areas expose the trees to contamination by domestic citrus plants and ornamental species (such as Murraya for example) that potentially harbour bacteria that are very difficult to control.

Dwindling profitability— not only for growers

In addition, the economic aspects of control of the disease worsen a technical situation that is already very bad. Controlling greening is expensive, very expensive. In a recent



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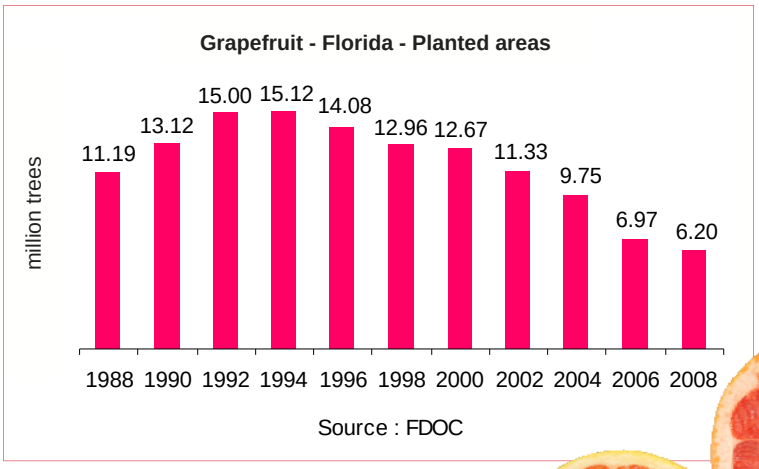
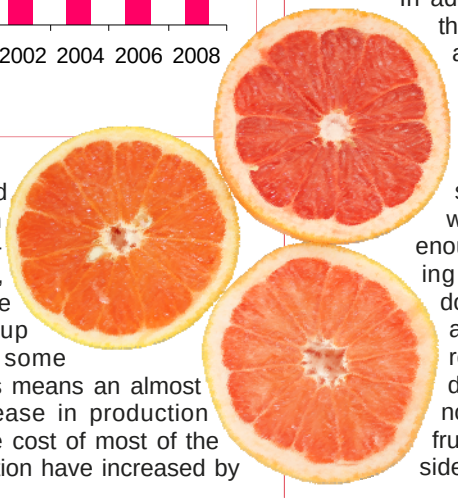


study, FDOC estimated extra costs involved in the bimonthly monitoring of plantations, chemical control of the vector and grubbing up and replanting to be some USD450 per acre. This means an almost unbearable 50% increase in production costs, especially as the cost of most of the other factors of production have increased by 30 to 50% and fertiliser prices have rocketed. According to a recent study, the prices of the four main fertilisers used in citrus growing have increased from USD 300-400 USD per tonne to USD550-650 and triple superphosphate costs more than USD1000. It is difficult for growers to believe in the future in a context of such a decrease in profitability while there is a risk of more hurricanes and real estate is still an interesting economic alternative.



In addition, profitability is dwindling in the downstream part of the sector, as passing the entire increase in cost prices further on down the line is increasingly difficult. This was demonstrated in the current season. Although the average selling price at the import stage was excellent, it was often not high enough to cover increased purchasing prices, especially as the euro-dollar exchange rate is less favourable than in preceding years. As a result, a number of importers wonder more than ever about the economic interest of trading in Florida fruits, especially as the risk is considerable as firm prices are paid. A

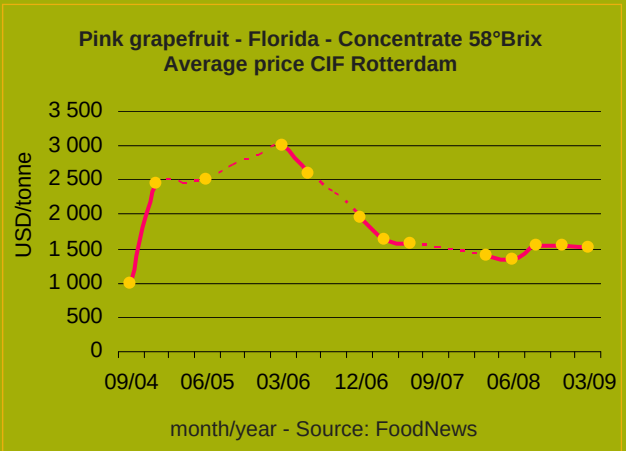
Grapefruit juice: a sour taste

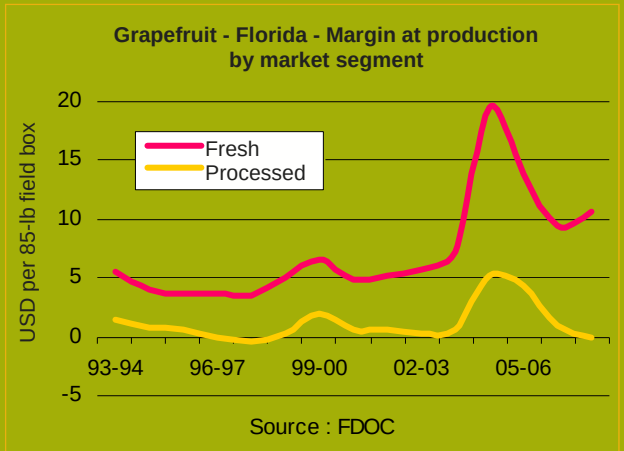
Growers do not have a true, profitable alternative to the fresh fruit market. In spite of a slight movement in early 2008, the price of Florida 587° Brix juice, the Rolls Royce of concentrated juices, reputed for its taste qualities and high soluble solids content, peaks at about USD1 500, far from the USD3 000 reached in early 2006 when the Florida deficit was at its worst. Prices are becoming dangerously close to the low USD1 000 seen before the 2004 hurricanes. Why such stagnation when Florida is still very weak, even if it is the leading stakeholder on this market?

First of all, demand has continued to decrease (see box). The demonstration of potentially harmful interactions between grapefruit and certain medical treatments spread doubt among consumers, especially older larger consumers in the USA. In addition, the price recovery observed in 2005-06 encouraged the beverage sector to replace this juice by cheaper ones in the formulation of certain blends. For example, consumption on the US market halved between the beginning of the decade and the 2007-08 season, falling from over 125 million gallons of SSE (Single Strength Equivalent) to less than 65 million. The emergence of a market in eastern Europe does not compensate the decrease in longstanding consumer countries.

On the supply side, processed volumes have increased considerably after the dizzy plunge in 2004-05 and 2005-06. They are even approaching those of the last average seasons before 2004-05. Larger volumes processed in South Africa, Argentina and Mexico partially make up for the Florida deficit.

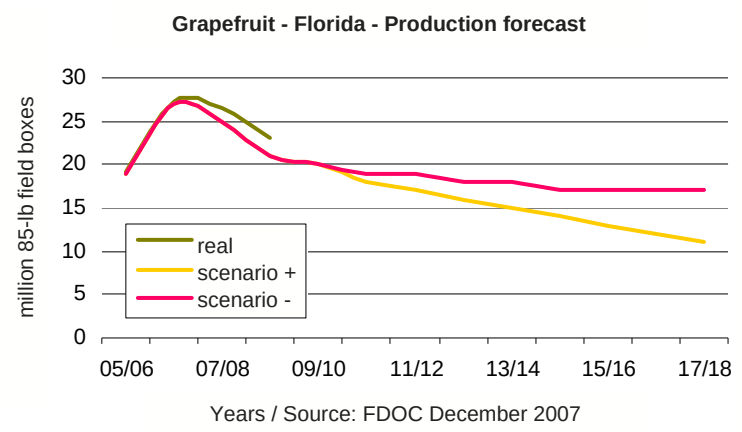
In this context, profitability has shrunk to practically nothing and was even negative in 2007-08 in countries with high labour costs. The single juice market is the only healthy segment. European market demand is still fairly good and allows fairly decent prices: approximately USD600 shipped to Rotterdam (tax unpaid).

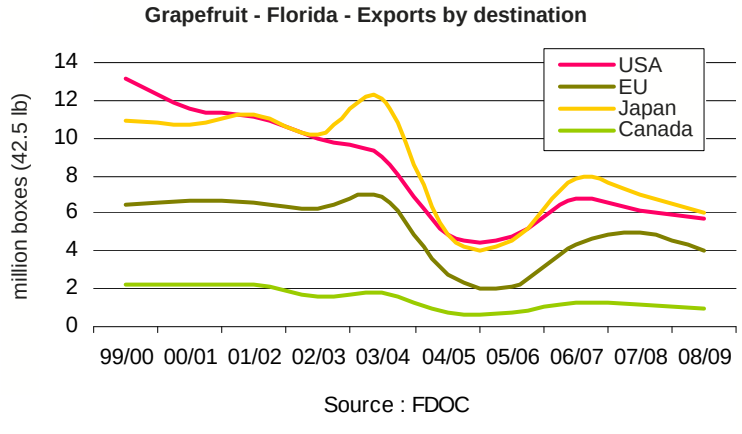




Grapefruit — World — Estimate of quantities processed						
000 tonnes	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Total	**2 066**	**1 827**	**1 186**	**1 585**	**1 800**	**1 742**
Total Northern Hemisphere	**1 753**	**1 576**	**869**	**1 206**	**1 448**	**1 401**
United States	1 098	1 144	392	629	859	809
Mediterranean	207	182	185	195	202	192
Israel	171	143	157	151	157	144
Turkey	19	24	10	19	15	18
Cyprus	9	8	10	16	15	16
Spain	3	2	2	3	7	6
Mexico	39	69	112	112	80	100
Cuba*	207	4	1	80	112	116
Total Southern Hemisphere	**313**	**251**	**316**	**379**	**352**	**341**
Argentina	106	73	127	130	126	91
Brazil	59	59	59	60	60	60
South Africa	148	119	130	189	166	190

* estimate: 80% of production in 2007 and 2008 / Sources: FAO, CIRAD, professionals

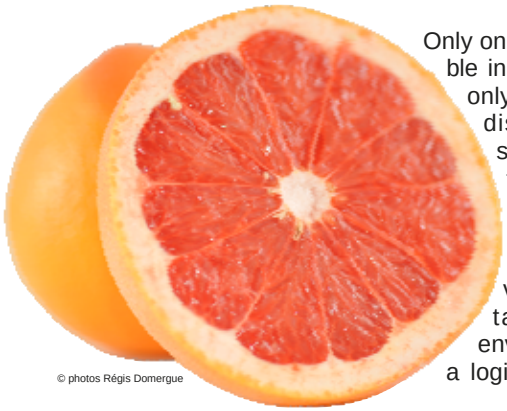




trend for the concentration of a small number of specialist importers working on this source should become confirmed.

All out against greening

Nevertheless, the Florida citrus sector is still fighting and the FDOC is mobilising all its financial resources to fund research. Numerous approaches are being examined: work on disease-resistant plants and work on the vector to limit its ability to reproduce or spread the disease. However, all these methods have the common feature of being fairly long to develop to reach a reliable technical solution.



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Only one solution seems possible in the short term but has only been mentioned very discreetly by some researchers as it calls the technical and financial foundations of the crop into question. It consists of establishing very high density plantations in a confined environment. The idea is a logical one in fact as it is inspired partly by cropping systems developed by Chinese farmers who have had to face endemic greening for decades.

In any case, FDOC production forecasts do not indicate any recovery. All the scenarios in the latest forecasts show harvests dwindling in the coming seasons and reaching 14 to 17 million boxes in the middle of the next decade. This is another significant decrease but will not call into question the Sunshine State's status of the world's leading producer of high-quality tropical grapefruit ■

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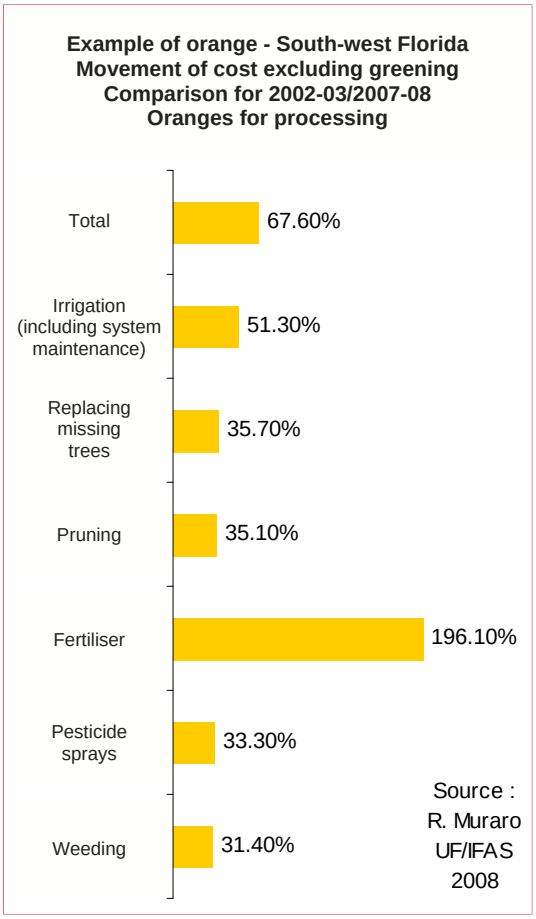

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The world grapefruit market

Five years on...

How have the large international markets Europe, Japan and the United States fared after the collapse of production capacity of the world's leading grapefruit supplier? Has consumption followed the decrease in production in Florida or, as one man's joy is another man's sorrow, has the situation benefited the other suppliers that ship during the winter season? FruiTrop has already pointed out in a another article that the top-of-the-range position of Florida would make it difficult for other supplier countries to gain market shares. This has been demonstrated on several markets in recent seasons.


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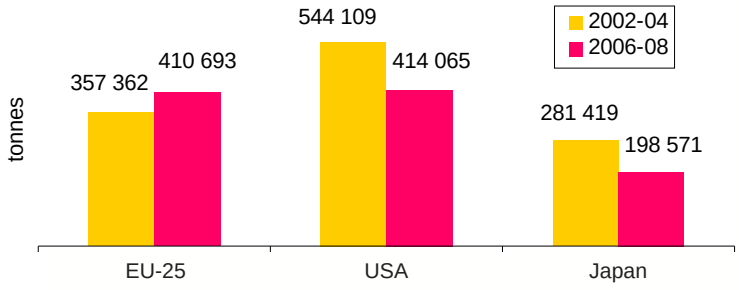
In Japan and the United States, the decrease in production in Florida does not benefit the other sources

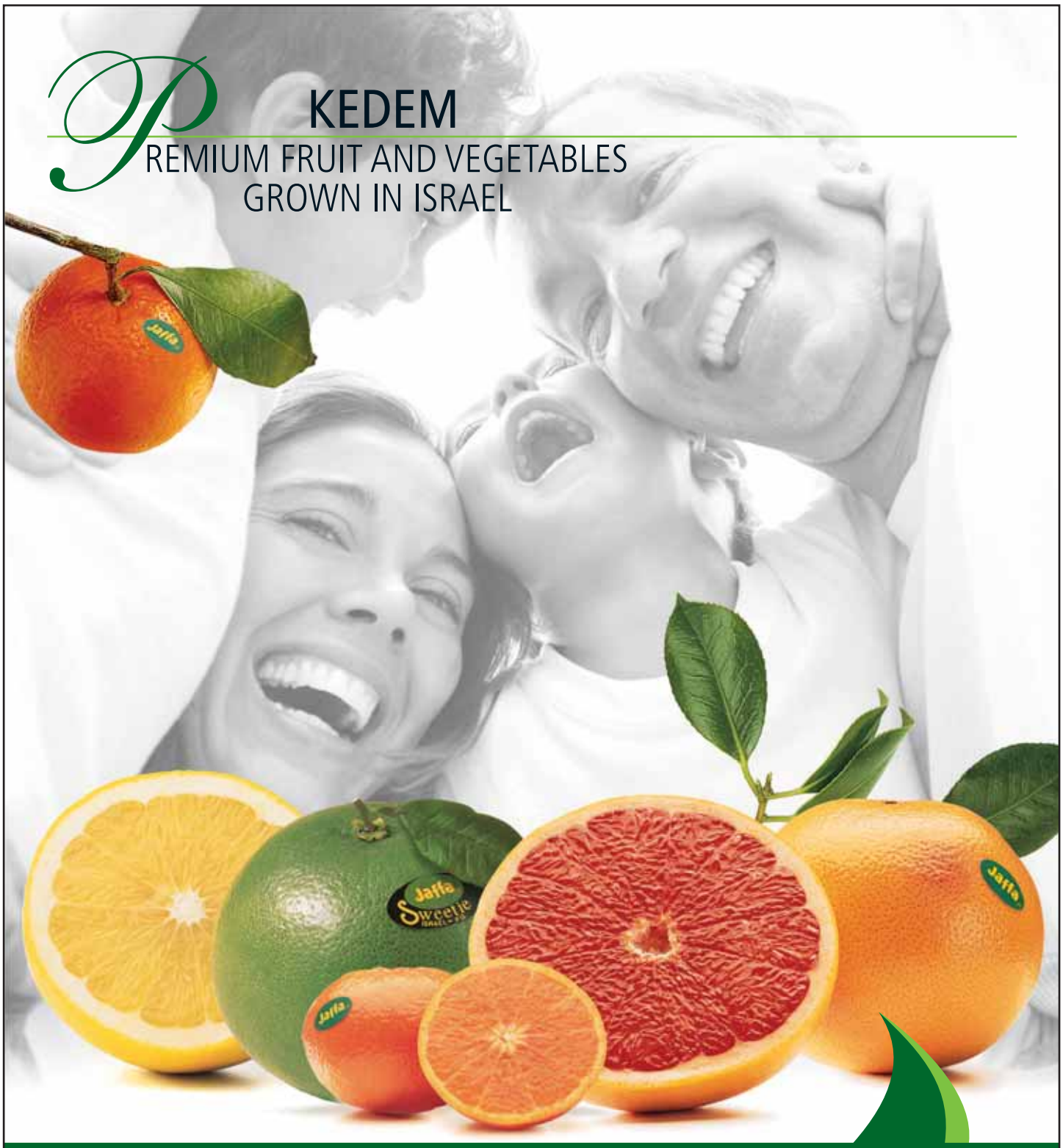
Is Florida an irreplaceable supplier for Japan, the second largest market in the world after the EU? Consumption oscillated between 280 000 and 290 000 t before Florida production slumped and has only been 170 000 to 210 000 t in recent seasons. It is true that the Japanese market is closed to a fair number of potential supplier countries for reasons of drastic sanitary and phytosanitary measures. However, it is interesting to see that Israeli exporters, who possess the authorisations to export 'Sunrise' grapefruit to Japan, have not gained market shares even though the prices are more attractive than those of Florida grapefruit. Shipments of 'Star Ruby' stagnated at an insignificant level. Another more disturbing factor is that the volumes of grapefruit sold during the summer have also decreased whereas an increase related to the early end of the Florida season might have been expected. The volumes exported from South Africa, practically the sole source during this period, have not recovered to the 65 000 to 70 000 t observed before the hurricanes, and this is not justified by any decrease in production. This would tend to prove the theory held by many importers that 'Florida grapefruit stimulates grapefruit sales'.

The situation is similar in the United States. Florida grapefruit sales volumes have decreased by a third from about 170 000 t to 120 000 t (from 9 million to 6 million export boxes) and no other player on the market has really profited from the situation. First of all, it should be stressed that consumption dynamics was clearly weakening before the problem of smaller Florida supplies occurred. In this context, no producer states increased their market shares or even sought to do so. Although Texan citrus growers were those most capable of profiting from Florida's weakness, they preferred to invest in less risky crops that give

Grapefruit and shaddock - Evolution of the market releases in the three main world markets



Sources: Eurostat, USDA, US and Japanese customs



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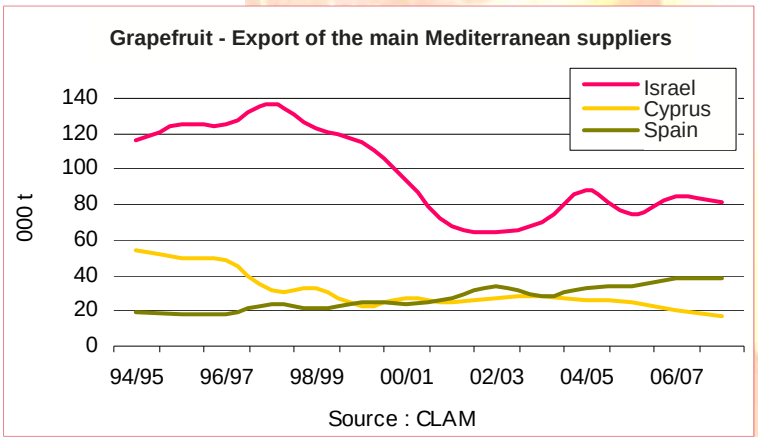
more immediate returns than grapefruit, especially as a fair number of growers are old and have difficulty finding farmers to replace them. In addition, urbanisation and scarce irrigation water limit scope for increasing the orchard area. Thus, production has not increased significantly and the area concerned is stagnant at 18 500 acres, that is to say about 7 500 ha. Planted areas have even continued to shrink in California and Arizona, where the production calendar is different to that of Florida. And imports from third countries have remained practically nonexistent.

A fairly dynamic European market in the midst of total structural change

In contrast with the two large markets mentioned above, sales volumes are continuing to increase in Europe thanks to growing consumption in the east. Russia is still a driving force, probably importing more than 90 000 t in 2007-08 in contrast with 45 000 t in 2004-05. Ukraine and Romania, which joined the EU in 2007, have also remained very dynamic markets with imports of about 12 000 t and 35 000 t respectively in 2007-08. As for EU-25, the increase of imports exceeding 400 000 t in 2006-07 and 2007-08 is to be applauded when compared to the strong decrease in trade on the other large markets. First, EU-15 volumes in the winter have returned to some 250 000 t, which is comparable to the figure observed before Florida production slumped. And then imports by the eastern European countries that joined the EU in 2004 have displayed average growth of around 10 000 t in the last three years, narrowly exceeding 100 000 t in 2008.



Although the volumes sold have moved little, the trade landscape has changed completely. A detailed review and forecasts by source is necessary.

Israeli exporters ready to further increase their market shares in western Europe

Israel is one of the main countries to have gambled on the possibility of gaining market shares. This has been only a partial success as whereas shipments to the EU have increased well, reaching some 60 000 t (+ 15 000 to 20 000 t in comparison with the period preceding the problems in Florida), prices returned to pre- 2004-05 levels after a short-lived increase. Thanks to larger water resources provided by recycled urban water and given the gap left by Florida in the EU, the main market for Israeli grapefruit, a large amount of planting was carried out from 2004 to 2008; this especially concerned the 'Star Ruby' variety. With an estimated 2 800 ha of coloured varieties in 2009, the Israeli grapefruit sector thus possesses production potential of about 140 000 t, 40% more than the present level.

Might the return of the problem of scarcer water resources after several seasons lead to a new decrease in planted area, as was the case in the 1990s, a dark period for Israeli citrus growing? USDA considers that there is a shortage of some 100 million cubic metres to cover the country's total requirements estimated at 1.8 billion cubic metres. The government has therefore applied once again a strong reduction to the quotas allocated to farming, held responsible by certain politicians for the mobilisation of a more than substantial proportion of this rare resource to contribute less than 5% of the GDP. In this context, it would seem that further massive grubbing up of citrus plantations is inevitable (USDA puts the figure at about 1 000 ha). However, this should mainly affect the least profitable species. The victims of this reduction in area should be white grapefruit, more than 80% of which are sold to the juice industry at less than cost price, 'Sweetie', suffering from lack of consumer interest, and 'Shamouti' orange for the same reason. The economic performance of 'Star Ruby' is still satisfactory. Profitability is generally excellent at the beginning of the season, benefiting growers in Upper Galilee where the crop is early. But should a fresh increase in area be expected in the coming seasons after a period of stoppage of planting in 2008 for religious reasons? There are doubts about this. In addition to the water problem, recent seasons have been less profitable than 2004 and 2005 when the Florida deficit was at its worst, and the somewhat disappointing results of the 2008-09 should not change the situation.

An easier crop than lemon in Spain

Spanish growers are also counting on increasing their presence on the EU market. The figures for recent seasons confirm an increase of some 5 000 to 10 000 t in Spanish exports to EU destinations and these have exceeded 35 000 t in recent years. Planted areas have increased in the Murcia region, the main Spanish production centre, and to a lesser extent in Andalusia (Huelva/Seville zone). The increase is beginning to have an impact on production which, according to professional sources, increased from some 50 000 t in preceding seasons to 60 000 t in 2008-09. Profitability is also satisfactory, even though performance in the last season was not as good as in preceding years. However, it is still distinctly better than that of the other citrus species, and some growers have thus top-grafted their orchards—especially lemon, the speciality of the Murcia region and for which the market is suffering from chronic over-supply. The markets have responded to the increase in supplies from Spain. Interest in eastern Europe decreased this season. However, Spanish operators strengthened their positions in western Europe, in particular on the French market thanks to successful sales to certain supermarket chains. However, the enlargement of the planted area seems fairly moderate, even if figures to confirm this are lacking. Grapefruit is not part of the tradition of most growers and the domestic market is more than limited. In addition, using of sorting rejects, forming more than 20% of the crop this season (a windy one), is a problem. Juice processors in the region are not interested and there is no other cash-paying alternative.

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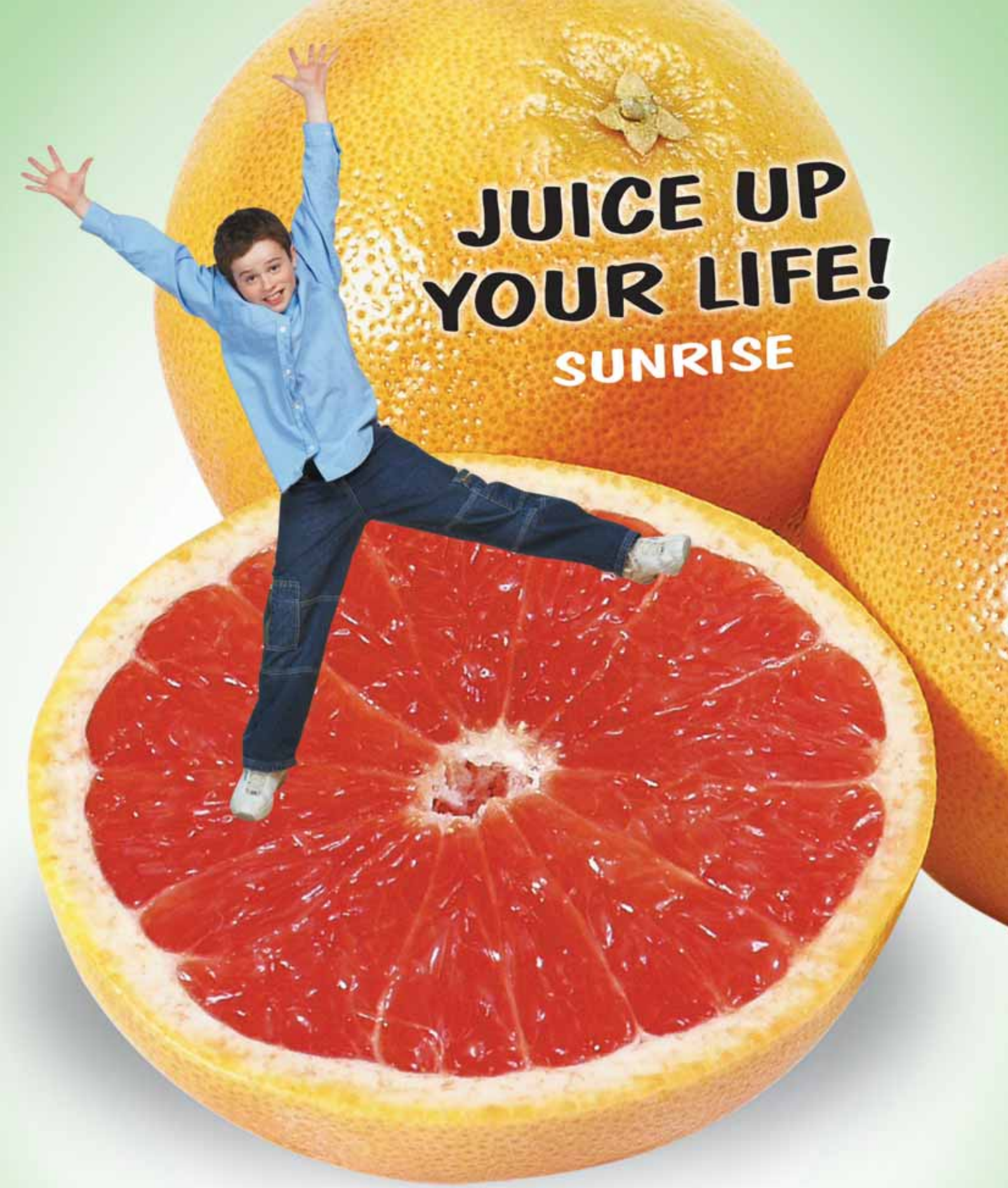
Turkey: the future is in the east

With strongly developing production and comparative advantages in terms of production cost, Turkey was well-placed in 2004 to claim a large slice of the cake left by Florida. Exporters in Cukurova, the main production area south of Adana, revealed their ambitions clearly in the 2005-06 season when they more than doubled their shipments to western Europe. However, three seasons later, the shipments have decreased or rather changed target. Shipments to eastern Europe, both within and outside the EU, have rocketed at the expense of those to the western part of Europe which have returned to their initial level. What are the reasons for the change? The main one is economic as analysis of customs values shows that the prices fetched in Russia, the main eastern European market for Turkish grapefruit, and in the west are very similar. In addition, payment is on a firm basis, often via an on-the-spot representative of the exporter, a further guarantee of payment. Finally, transport costs are smaller and requirements less strict, especially as regards certification. It is true that increasingly severe MRL standards on the Russian market caused a scare among exporters. However, the authorities in both countries reached a bilateral agreement allowing the resumption of trade and making the future less worrying. In addition, even if Russia is still a prime destination taking 25 to 30% of exports, other eastern European countries have strong import levels and good growth (see table). Stress is also laid on neighbouring countries in Central Asia (Georgia already imports about 1 000 t) and the Middle East (Iran, and especially Iraq which could become once again the large market that it used to be before the wars of the 1990s and 2000s). A switch in the situation and a massive return of Turkish exports to western Europe thus seem unlikely, especially as the strong increase in production seems to be over. The harvest of some 60 000 t in the mid-1990s seems to have stabilised at close to 180 000-200 000 t (approximately 160 000 t last season because of frost). The varietal range is changing in favour of red varieties ('Star

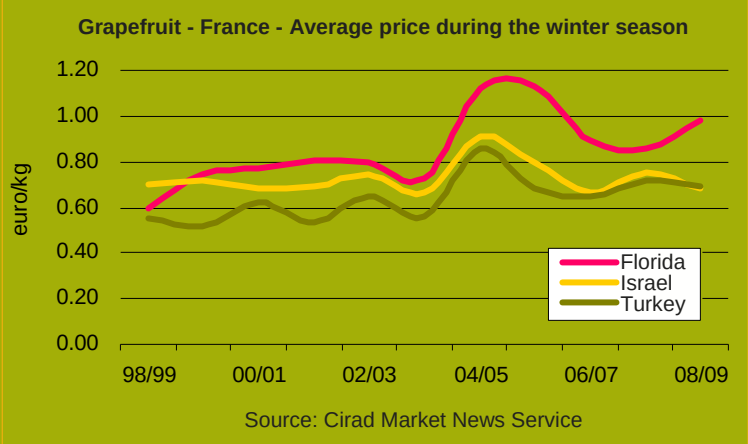
Grapefruit - Turkey Main importing countries (tonnes)	
Russia	34 973
Romania	17 452
Poland	10 739
Ukraine	8 979
Bulgaria	8 259
Germany	5 059
Czech Rep.	4 040
Netherlands	3 364
Saudi Arabia	3 284
Belgium	2 998
Serbia	2 437
Hungary	2 417
Iraq	2 007
Iran	1 891

Source: AKIB - from October 08 to April 09



Grapefruit — EU-25 — Estimated marketed volumes by the main suppliers			
Tonnes	**2008-09**	**2007-08**	**%**
Florida*	62 000	77 000	- 19
Israel**	65 000	61 000	+ 7
Spain	31 200	31 550	- 1
Turkey	40 000	42 600	- 6
Total grapefruit	**198 200**	**212 150**	**- 7**
China	60 000	49 400	+ 21
Total grapefruit + shaddock	**258 200**	**261 550**	**- 1**

* Estimate based on 4 million boxes instead of 5 (17kg) / ** Estimate : 4.8 million boxes exported world-wide against 4.3 / EU = 85% of world volumes / Sources: professionals, CIRAD, Eurostat



Source: Cirad Market News Service

Review of the 2008-09 winter season: disappointing from every point of view

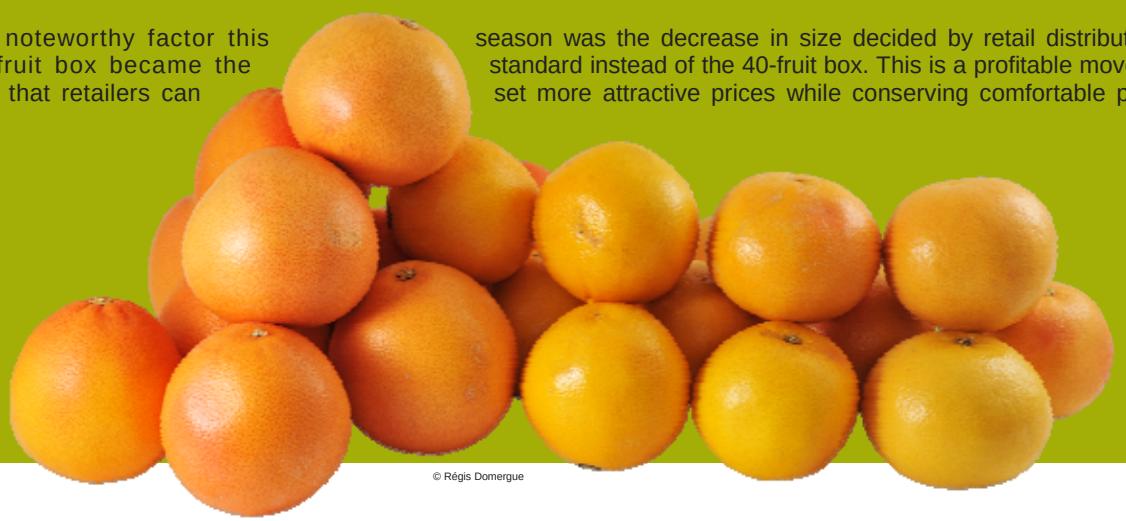
It is still too soon to obtain the final EU import statistics. However, our estimates based on professional sources indicate that the volumes of grapefruit released on the market were down by some 5 to 10% (the cumulated figure for Florida, Israel, Spain and Turkey was some 200 000 t). However, the total is similar to the previous year if imports of shaddock from China are included. The movement of market shares by source is a clear illustration of the major trends described in this article.

The results for Florida are not positive. First, the volumes sold were distinctly smaller than in the two preceding years. However, the return to a normal start of season date (early October) made the sales calendar longer than last year. But production dipped and poor packing yields at the end of the season limited scope for prolonging sales. In addition, a strong increase in cost price and a less favourable euro:dollar exchange rate than in other years made some importers very cautious. Second, even though the very good level of quay prices gives the impression of a season that was positive in economic terms, this was not the case as the cost price had risen strongly.

However, this situation did not benefit most of the other Mediterranean sources and these display fairly poor balances. The twin features of the ground lost by Turkey, concentrated more than ever on the eastern European markets, and the structural decline of Cyprus gave an extra opportunity to Israel and Spain. However, although these two sources performed satisfactorily in terms of volume, price conditions were distinctly less favourable than in 2007-08.

What factors explain this blanket general performance? The first is probably consumption. Although the volumes released were very similar to those released until April last year in France (the data for May are not yet available), consumption seems to have displayed a record decrease in certain countries like Germany (with a dip of more than 10% according to consumer panel sources). The economic downturn does not seem to be the only reason. The market was strongly supplied with competing fruits and probably played a role too. A large European apple crop, large orange and easy peeler crops in the Mediterranean followed by stone fruits slowed grapefruit sales strongly from May onwards. The continued increase in volumes of Chinese shaddock also had an effect. Arrivals reached record-breaking levels, probably exceeding 65 000 t in EU-27.

Another noteworthy factor this season was the decrease in size decided by retail distributors. The 48-fruit box became the standard instead of the 40-fruit box. This is a profitable move as it means that retailers can set more attractive prices while conserving comfortable profit margins!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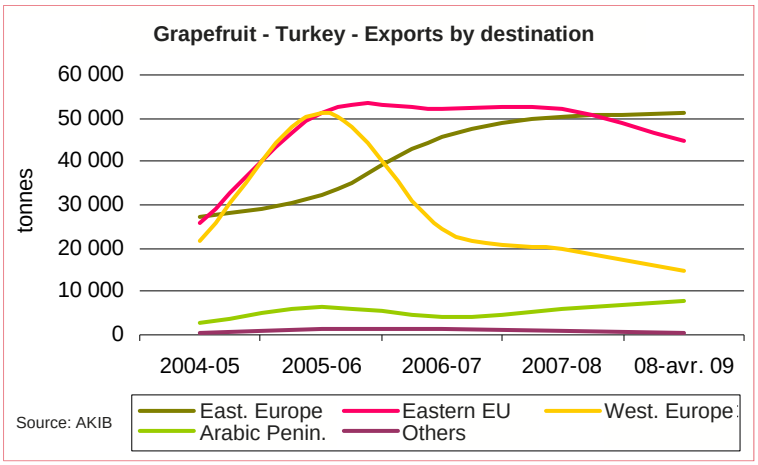
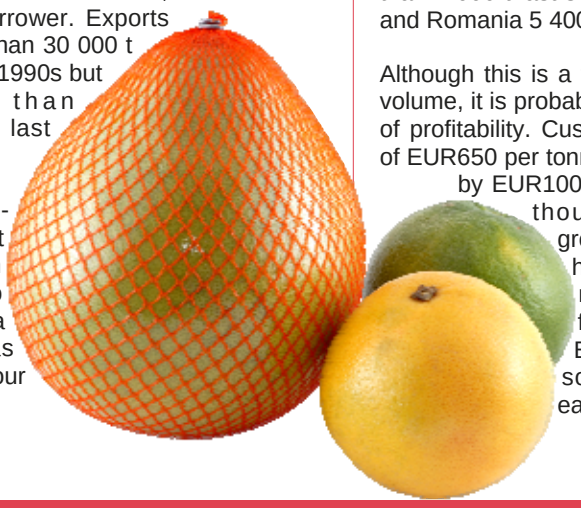


Ruby and also 'Rio Red') at the expense of pink varieties and above all white varieties that are not very profitable as the price paid to the grower was a third of that for red fruits this season. Thus, only a limited number of specialised importers working with brands forming references for this source should continue to ship to western Europe.

Cyprus is running dry!

The present approach of Cypriot growers does not seem to consist of joining the race for EU market shares but rather of saving what is left of the citrus sector in Cyprus. It is not very profitable as labour is increasingly expensive and the crop is now declining, a feature aggravated by worsening drought in recent seasons. The grapefruit sector is particularly hard-hit as the varietal range is anachronistic and still too broadly based on 'White Marsh', for which outlets are ever narrower. Exports were still larger than 30 000 t at the end of the 1990s but hardly more than 15 000 t in the last two seasons.

Even the authorities consider that citrus production might well fail to recover from a drought that has now lasted for four decades.



Corsica: determined to be different

These have been profitable times for Corsican professionals. It is true that production has been stable and limited at about 3 500 to 4 000 tonnes, but the rehabilitation of old orchards should allow a slight increase in volumes in the medium term. However, professionals have strengthened their position as regards French retail chains. First, sales have been rationalised and centred on GIE Corsica Comptoir which handles about 80% of supply. In addition, the original quality approach set up to match the climatic constraints of the island has received recognition. One of the key points of the specifications is the late start of the season in April as the production cycle is comparatively long because of the cool winters. This differentiation should soon be consolidated by a PGI (application to be made this year).

China: playing on novelty

China is number 1 among the big winners, taking advantage of both the shortage of fruits from Florida and an innovative fruit, a variety of shaddock going by the commercial name of 'Honey Pomelo'. Launched in 2002-03 by the Carrefour group in France, volumes rocketed to 50 000 t in 2007-08 and exceeded 65 000 t in 2008-09, making China probably the leading supplier of the European market! Another interesting point is that the fruit is no longer reserved for the western European markets but is beginning to gain ground rapidly in eastern Europe, with the Baltic countries importing more than 2 000 t last season, Poland nearly 1 000 t and Romania 5 400 t!

Although this is a fine performance as regards volume, it is probably not quite as good in terms of profitability. Customs value was an average of EUR650 per tonne until 2006-07 and then fell by EUR100 in two seasons. Thus, even though the 2 million tonnes grown forms a practically inexhaustible source, imports might not grow at the same frantic rate in western Europe in the coming seasons. But then there is still eastern Europe...

Grapefruit — China — EU-15, EU-25 and EU-27 imports

tonnes	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
China	36	40	62	376	3 061	7 231	20 599	49 400	65 000*

*estimate / Source: Eurostat

Grapefruit - Estimate of apparent consumption				
	Net supply (tonnes)	Consumption (kg/capita/year)	Population (million inhabitants)	GDP/PPS
EU-15	**314 141**	**0.8**	**396**	
Netherlands*	43 961	2.7	16	132
France	81 289	1.3	63	113
Belgium	11 068	1.0	11	123
Ireland	4 115	1.0	4	143
Germany	67 035	0.8	82	114
Scandinavia	16 500	0.7	25	134
Sweden	7 866	0.9	9	120
Denmark	4 941	0.9	5	127
Norway	1 476	0.3	5	187
Finland	2 217	0.4	5	116
United Kingdom	42 370	0.7	61	119
Austria	3 835	0.5	8	129
Italy	26 622	0.5	59	104
Spain**	15 000	0.3	45	102
Greece	1 253	0.1	11	97
Portugal	1 093	0.1	11	74
NMS	**106 651**	**1.0**	**102**	
Baltic States	11 602	1.7	7	60
Romania	33 762	1.5	22	38
Slovakia	5 096	1.0	5	64
Czech Rep.	10 154	1.0	10	79
Bulgaria	8 020	1.0	8	37
Poland	33 323	0.9	38	53
Hungary	4 260	0.4	10	65
Slovenia	434	0.2	2	89

*overestimated figures for the Netherlands (entry point) / **estimation / GDP: Gross Domestic Product / PPS: Purchasing Power Standard
Source: Eurostat

Mexico: Yucatán and Michoacán

Is Mexico, known as an inter-season supplier of the European market, gaining weight? After Yucatán, Michoacán, another production region, entered the European market in 2006, strengthening Mexican presence on the European market. The figures for the 2008 season confirm this: volumes of Mexican grapefruit exceeded 12 000 t for the first time, while Yucatán, suffering from drought, shipped only limited volumes.

© Eric Imbert

The sales period for fruits from this region is currently centred on its usual August-October period. However, the climate and altitude make it possible to run the production calendar from April to October, in contrast with that of the other main regions of Mexico. It could continue to expand. Available production is concentrated in the 'Nueva Italia', totals some 55 000 t and is continuing to grow. Is this a strategic position in case of a more marked shortfall in Florida?

What will be the size of the market to be shared?

Although there seems to be no lack of takers for greater market share, what will there to be shared in the coming years?

We have noted above that consumption is clearly decreasing in Japan and the United States. The good performance of the western European market is only apparent. The increase in volumes mentioned above is caused by shaddock, the volumes of grapefruit sold are decreasing. The economic downturn does not seem to be doing much to help: although the consumption level seems to be holding in France, an unprecedented 15% fall seems to have taken place in Germany, according to panel sources. Eastern Europe is the only market in the world of significant size that still displays growth.

The situation is thus alarming, especially as the monthly penetration rate (the percentage of households making a purchase during a one-month period) is particularly low. It is less than 20% in France, the EU's leading market! And the average consumer profile is nothing to rejoice about either. Using the example of the French market again, grapefruit is markedly under-consumed by persons under 50 (and especially those under 35) and over-consumed by the oldest section of the population, especially the over-65s.

What are the strategic lines to be used to re-launch demand and how can they be exploited?

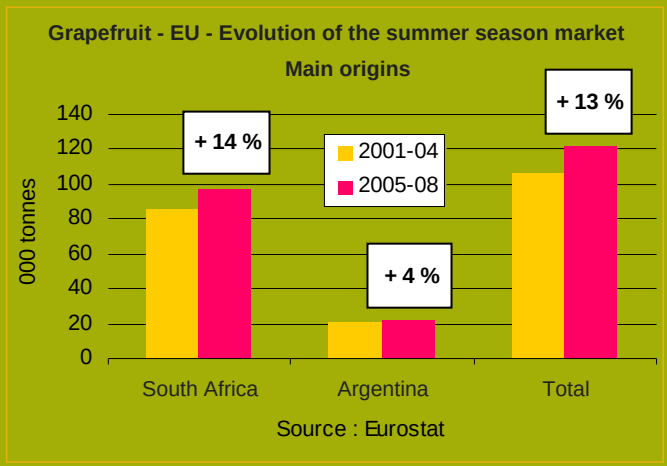
How can consumption be restored? Varietal innovation is probably one of the best strategic approaches. The Israeli industry may hold a winning card, according to a recent article in the Haaretz: 'Aliza', a sweet grapefruit that is easy to peel, seedless and a characteristic orange colour both inside and outside is being developed at the Volcani Center. However, it is still too soon to make a judgement on the true potential of the variety as tests have not yet been completed.

Another more obvious answer would be to resume promotion. However, times are not right for a single source to mobilise the large budgets necessary. Florida, by far the most active region in the promotion of grapefruit, is devoting its budgets to research on citrus greening (HLB). In addition, in contrast with oranges and easy peelers, no European budget has been allocated to grapefruit as it is little grown in the EU.

What can be done in this situation? Let's imagine. What if professionals upstream and downstream organised the re-launch of grapefruit themselves? This dream has

Summer season: slight EU market growth benefiting South Africa

Has the decrease in the volumes exported from Florida benefited stakeholders supplying the summer season? The reply varies according to the market. Although we have seen that the answer is very clearly 'no' in the case of Japan, European imports have increased slightly. The volumes delivered during the summer increased from about 100 000 -115 000 t before the problems in Florida to 110 000-130 000 t in recent seasons, that is to say an increase of about 10 000-15 000 t. The EU has thus confirmed its position as the world's leading market for southern hemisphere grapefruit, ahead of Japan. However, it should be emphasised that the enlargement of the EU to 25 member-countries in 2004 and then to 27 in 2007 doubtless contributed to this growth. The balance also reveals differences when the situation is analysed source by source. The increase has little benefited Argentina. Suffering from recurrent drought and the spread of citrus canker—detected in the province of Salta in 2002—Argentinian exporters have lost part of their export potential and have switched shipments more massively to eastern Europe and especially Russia. Likewise, and in contrast with the winter market, no secondary source has developed and no outsiders have appeared. Arrivals from Uruguay have remained marginal and Chile, that seemed to wish to increase shipments to the EU, is more and more discreet. Exports had approached 4 000 t in 2006 and totalled only 1 500 t in 2007 and 2008, being sent mainly to neighbouring countries including Argentina. Frost during the 2006 southern hemisphere winter probably accounts for the decrease, that might possibly continue for other reasons. Chilean production potential is only about 10 000 t and the opening of the United States market in May 2009 may well create a strong suction effect, even if customs tariffs will not be fully liberalised until 2012.

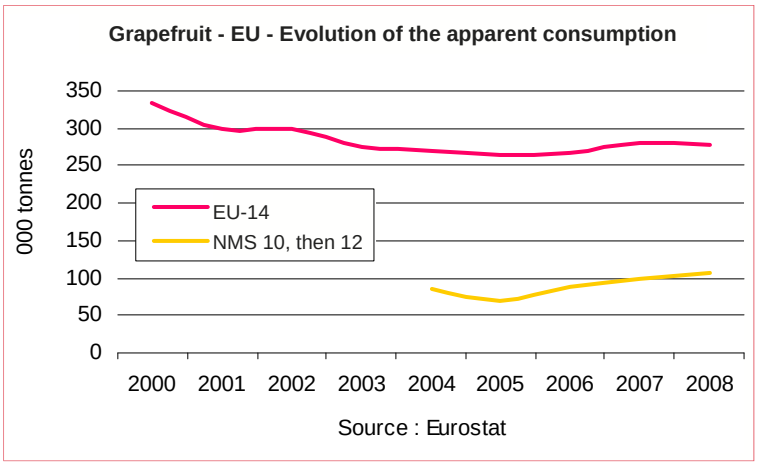


As a result, the source that gained most on the EU market was South Africa, the leading supplier, with an increase in imports of about 15% between before and after 2004. Another cause for satisfaction is that South African exporters have also managed to gain footholds on other large markets. Russia imported less

Grapefruit — Southern Hemisphere

Tonnes	1997	1998	1999	2000	2001
Austral Africa	68 097	110 423	87 897	108 231	76 752
Argentina	27 453	24 863	19 943	14 456	19 084
Uruguay	1 784	1 580	539	300	1 325
Chile	-	-	-	-	-
Total	**97 333**	**136 866**	**108 378**	**122 987**	**97 160**

Overestimated figure for Austral Africa in 2004 / Source: Eurostat - EU 15, EU 25 from 2004, EU 27



become reality for other produce. In the United States, the California avocado growers' organisation and those of Chilean and Mexican exporters combined to increase consumption three-fold. Closer to the EU, the Banana Group formed by the main banana marketers in the United Kingdom, succeeded in increasing consumption by more than 250 000 t over a period of about 15 years. The grapefruit sector has assets for success in the first essential stage in such an operation, that is to say that a critical mass of interested operators can be assembled. The export sector is fairly concentrated (Israel and Spain) and has representative organisations capable of managing this type of operation: the Plant Production and Marketing Board in Israel, AILIMPO in Spain, FDOC in Florida and the brand-new Citrus Board in Turkey. A budget can then be assembled by a levy of a few cents on each box sold. In fact, the example of avocado also gives good ideas for overcoming the reluctance of some supplier countries to form an alliance with competitors. Not all the budget is devoted to generic promotion; some is re-allocated for 'source' promotion operations.

Tried and tested solutions are readily available and it is a good thing to make a reminder that an alliance for promotion purposes in no way stops every company having its own marketing and sales policy ■

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than 500 000 boxes in 2006 but took over a million in 2008. Furthermore, financial returns for growers have been comparatively satisfactory in recent seasons, as can be seen in the firming of the average season price at the import stage. As a result, the areas under grapefruit have increased noticeably. Planting was running at the rate of some 150 000 trees per year at the beginning of the decade and has exceeded 300 000 trees per year since 2004. The total area concerned was about 7 800 ha in 2004 and approached 8 500 ha in 2007. In recent seasons, production has oscillated between 350 000 and 400 000 t in comparison with approximately 300 000 t at the beginning of the decade.

In addition, the export potential forecast by South African operators for the 2009 season is in the high average bracket: approximately 14 million 15-kg boxes. This is more than the 12.5 million in 2008 but fairly similar to the 2007 figure. So what will be available on the EU market this season? Allocations by destination will obviously be decisive in the current context of strong economic uncertainty and may be different from those of other seasons. South African exports to Russia are down at the beginning of the season but shipments to the very important Japanese market that has taken an average of 6 million boxes in recent seasons are at a fairly good level. The weakness of Argentinian production should result in smaller shipments to the EU than last year in spite of the practically total (and abnormal) concentration of shipments to Europe at the expense of the Russian market. The drought in the Salta region has had an extremely negative effect on fruit sizes and considerably reduced the quantities available for export. In fact, exports seem to have decreased since the beginning of June and this is very early. However, it should be underlined that although the Russian and Japanese markets are uncertain as regards receptiveness, this applies to the EU as well. Competition from the season's fruits with good crops after several meagre years, may add to the real or supposed effects of the economic downturn on fruit and vegetable consumption.

European imports

2002	2003	2004	2005	2006	2007	2008
96 653	85 355	84 062	110 288	82 482	105 286	93 868
18 882	24 504	19 583	26 869	17 627	23 513	17 078
483	665	401	576	2 063	775	298
-	-	200	474	2 513	959	719
116 018	**110 523**	**104 245**	**138 207**	**104 685**	**130 533**	**111 963**

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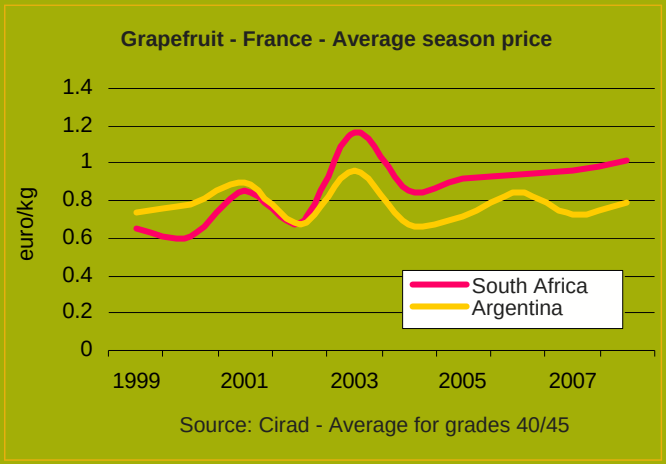
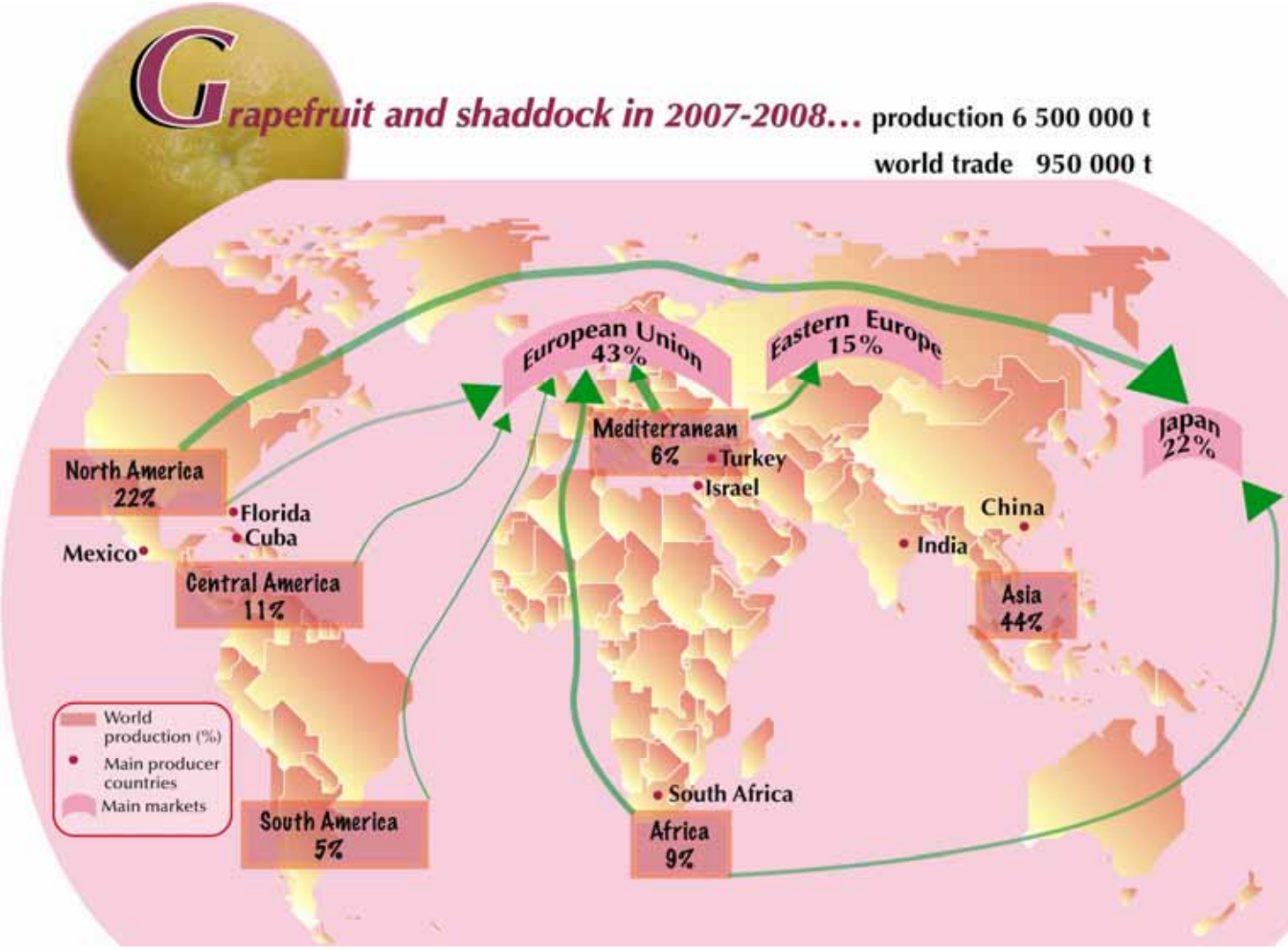


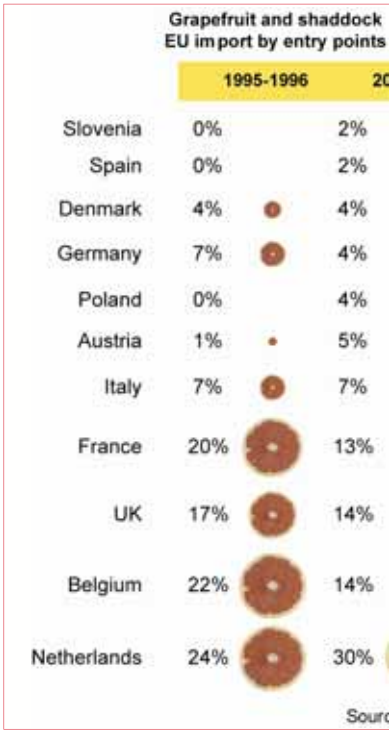


Grapefruit and shaddock — United States imports											
tonnes	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total, of which	**9 730**	**8 738**	**10 040**	**25 221**	**23 246**	**20 710**	**14 316**	**14 348**	**18 951**	**19 797**	**14 257**
Bahamas	9 422	8 224	9 749	23 821	23 016	20 459	12 676	13 812	16 216	14 420	10 362
Mexico	0	0	1	0	33	115	1 567	506	2 687	5 056	2 741
Others	7	73	119	1 259	0	56	17	3	5	101	1 050
Israel	301	441	171	142	197	79	56	27	43	220	104

Source: US customs, code 080540

Grapefruit and shaddock — Japanese imports											
tonnes	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total, of which	**229 905**	**262 416**	**272 278**	**268 650**	**284 687**	**274 328**	**288 510**	**205 961**	**170 881**	**212 883**	**184 279**
United States	194 038	206 975	216 652	202 286	219 457	194 262	202 663	93 335	109 341	138 777	126 097
South Africa	12 906	30 147	32 193	48 431	52 564	65 775	69 408	96 707	48 562	64 335	49 611
Israel	5 462	7 344	5 710	6 143	5 009	4 904	5 443	4 572	2 316	4 283	4 498
Swaziland	17 067	17 498	17 607	11 673	7 503	8 568	8 354	10 418	9 335	5 396	3 589
Cuba	-	430	38	75	19	609	1 381	151	671	-	-
Chile	0	0	0	41	134	188	1 173	757	599	-	-
Others	10	22	78	0	1	23	89	21	56	46	242

Source: Japanese customs, code 080540000



Grapefruit and shaddock
EU import by entry points

	1995-1996	20
Slovenia	0%	2%
Spain	0%	2%
Denmark	4%	4%
Germany	7%	4%
Poland	0%	4%
Austria	1%	5%
Italy	7%	7%
France	20%	13%
UK	17%	14%
Belgium	22%	14%
Netherlands	24%	30%

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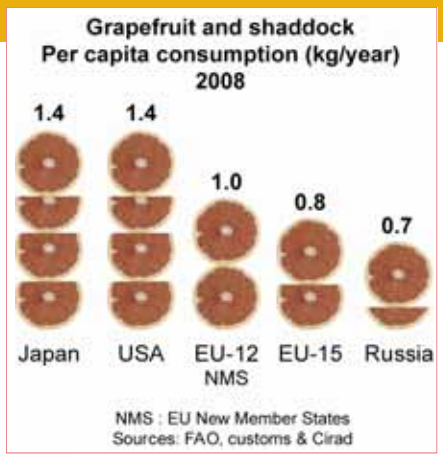


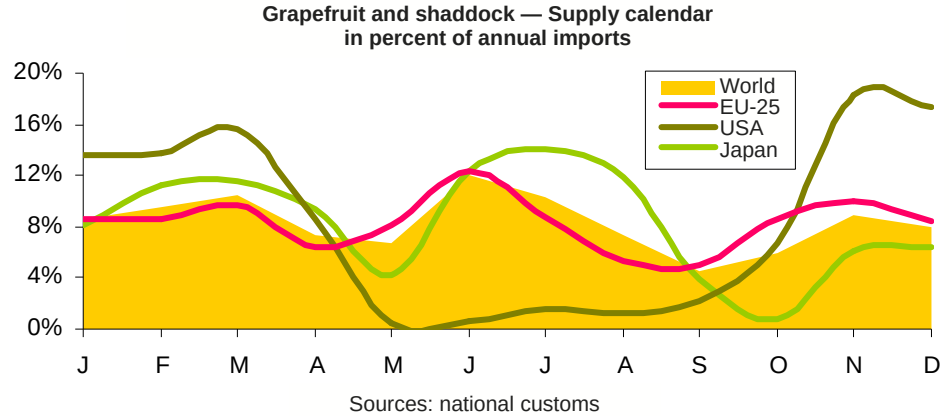
Grapefruit and shaddock World production	
2007-2008	tonnes
World	**6 449 700**
China	2 500 000
United States	1 423 000
South Africa	386 000
Mexico	324 000
Israel	235 000
Argentina	220 000
Turkey	200 000
India	178 000
Cuba	175 000
Brazil	72 000
Sudan	68 000
Belize	57 000
Iran	54 000
Spain	47 600
Jamaica	43 500

Grapefruit and shaddock World exports	
2007-2008	tonnes
World	**950 000**
United States	270 000
South Africa	186 000
Turkey	131 100
Israel	81 100
Spain	38 100
China	101 000
Cyprus	17 100
Argentina	29 000
Bahamas	15 000
Honduras	13 000
Swaziland	9 500
Mexico	13 000
Egypt	1 200
Thailand	9 400
Cuba	6 000

Grapefruit and shaddock World imports	
2007-2008	tonnes
World	**950 000**
EU-25	405 000
Japan	213 000
Russia	93 000
Canada	45 000
Romania	30 000
United States	19 800
Ukraine	12 000
Saudi Arabia	10 000
Switzerland	7 600
Bulgaria	6 600
Mexico	5 000
Singapore	4 000
South Africa	3 900
China	3 400
Serbia	3 100

Sources: FAO, national customs, USDA, CLAM, CGA

Sources: professional sources, FAO, EU customs, Japan, IFAS



Grapefruit and shaddock — European Union imports											
tonnes	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Total	**441 909**	**423 679**	**424 263**	**363 063**	**385 153**	**357 414**	**357 310**	**378 809**	**364 578**	**416 533**	**404 852**
Total N. hemisphere*	**304 523**	**315 241**	**301 498**	**265 710**	**269 065**	**246 627**	**273 634**	**240 518**	**259 807**	**286 967**	**294 456**
United States	144 570	133 521	110 896	108 330	109 033	101 119	114 010	53 077	42 911	66 275	77 089
Israel	88 136	83 708	77 837	54 474	43 369	42 878	44 536	62 612	54 453	60 849	60 898
China	12	17	24	36	40	62	376	3 061	7 231	22 253	45 342
Turkey	18 078	36 149	45 268	45 107	49 066	38 918	43 017	42 709	80 893	52 761	42 767
Spain	17 975	16 806	17 978	16 453	20 463	23 848	20 936	29 927	33 406	36 241	34 796
Cyprus	0	15 065	13 351	14 932	14 275	15 070	16 425	16 967	14 832	12 332	10 329
Mexico	1 429	2 351	2 845	1 715	5 929	3 939	5 728	7 594	4 527	9 834	9 304
Honduras	15 177	11 835	15 287	10 643	8 912	9 862	13 547	13 169	12 340	12 385	8 820
Others	4 562	6 459	4 505	5 099	6 703	5 204	5 237	7 987	8 514	8 603	5 111
Cuba	14 585	9 332	13 508	8 923	11 275	5 727	9 823	3 415	700	5 434	0
Total S. hemisphere	**137 386**	**108 437**	**122 765**	**97 353**	**116 088**	**110 787**	**83 676**	**138 291**	**104 771**	**129 566**	**110 397**
South Africa	90 776	72 788	92 183	64 330	84 392	76 658	55 833	97 170	72 924	90 825	82 386
Argentina	24 863	19 943	14 456	19 084	18 882	24 504	19 583	26 869	17 627	23 186	16 453
Swaziland	16 567	11 241	10 928	8 604	9 144	6 111	5 369	7 197	7 210	10 085	9 239
Zimbabwe	2 519	2 859	4 148	3 534	3 117	2 586	1 436	5 001	2 227	3 556	1 319
Chile	5	5	0	0	0	0	200	474	2 513	959	699
Uruguay	1 643	349	58	1 325	483	665	401	576	2 063	775	236
Others	451	244	21	193	70	175	75	85	87	180	65
Mozambique	561	1 009	972	283	0	88	780	919	120	0	0

*Extra-community imports and entries from the main European producer countries (Spain, Cyprus) / Source: Eurostat

Cultivation of grapefruit

The plant

The grapefruit tree has broad, evergreen leaves and is one of the most vigorous of the genus Citrus. It requires the lowest planting density. When adult and fruiting, the fruit-bearing branches acquire a falling habit enhancing the growth of new shots on the curves. This means that the species can reach fairly naturally an equilibrium in branch renewal without drastic mechanical intervention.

Climatic requirements and effect of the environment

The climatic requirements of grapefruit are fairly similar to those of other citrus but with a high temperature requirement. Low temperatures limit the cultivation area. Fruits sustain damage when the temperature falls below -1 or -2°C and the aerial parts of the tree are damaged from -3 or -4°C. Among environmental factors, temperature certainly has the greatest influence on fruit characteristics: shape, pulp and peel colour and organoleptic characteristics.

When production zone extremes are considered, it is easy to distinguish between 'tropical' quality and 'Mediterranean' quality. Tropical grapefruit have specific features because temperatures are at a steady high and day/night temperature amplitude is small. These conditions favour more intense internal and external fruit colour. Steadily high tropical temperatures enhance the development of lycopene, the red pigment found in the pulp and peel of coloured varieties. Chromatic potential is fully expressed in tropical grapefruit, with colours ranging from white to red via pink, depending on the case. These conditions also reduce bitterness and acidity and increase juice and sugar contents. The peel is often thinner and the fruit pear-shaped.

In a Mediterranean climate, except during the summer, day/night temperature amplitude is very marked and spring and autumn are cool to very cool. Here, grapefruit requires a warm exposition and plenty of sunshine. However, only the varieties with a very high lycopene content can become coloured. This is the case of comparatively recent cultivars bred in the last 25 years such as 'Star Ruby', 'Rio Red', 'Flame', etc. The production of pigmented fruits has become classic in a Mediterranean climate thanks to these varieties. Other varieties that are potentially coloured in the tropics, such as 'Thomson' (pink), 'Ruby', 'Red Blush' and 'Henderson' (red) acquire little or no colour.

The gentle, sweet taste characteristics of grapefruit were long closely associated with coloured varieties because of their exclusively tropical origin. We still have the habit of associating, a priori, sweetness and absence of bitterness with colour when this is not at all the case.

Cumulated heat in northern zones is not sufficient for the fruits to ripen fully before the winter. The production cycle may then last for 12 months or even more. The fruits must remain on the trees before completing their development in the following spring. They are exposed to rain and low temperatures and this can cause physiological damage to peel or internal damage in case of frost.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Grapefruit diseases	Tristeza **Virus: Citrus Tristeza Closterovirus**	Canker **Bacterium: *Xanthomonas axonopodis* pv. *citri***	Huanglongbing **(Greening)** **Phloem bacteria: Liberibacter africanum, L. asiaticum**
Symptoms	Decline of varieties budded on sour orange, paling of leaf veins, stem-pitting	Corky pustules on leaves, fruits and shoots	Yellowing shoots, leaf marbling, small poorly coloured fruits, decline
Part attacked	Young, growing organs (shoots, flowers)	Aerial parts: young organs, wounded organs	Aerial parts
Cause	Presence of infected plants in the field or nearby	Bacteria released from lesions, infection enhanced by mechanical or weather (hurricanes) wounds or the citrus leaf miner (*Phyllocnistis citrella*)	Presence of infected plants in the field or nearby
Transmission	Aphids: *Aphis gossypii* and *Toxoptera citricida*, budding	Via air and water	Psyllids: *Diaphorina citri* and *Tryoza erytreae*, budding
Measures to be taken	Control of vectors (chemical, biological control, etc.)	Application of products containing copper or Kasugamycin, removal of infected trees in case of light attack, watering at soil level	Control of vectors using chemical, biological methods, etc.
Prevention	Use of healthy plant material, cross-protection (measure subject to discussion)	Use of healthy plant material, tolerant varieties, protection of young organs	Use of healthy plant material
Economic impact	Loss of trees and decreased production, EU quarantine organism (control of movements)	Harvest loss by fruit fall, EU quarantine organism (control of movements)	Decline of trees, shorter orchard life, EU quarantine organism (control of movements)
Distribution	All regions except for certain countries in the Mediterranean area	Asia (including the Middle East), South America, Florida, small presence in Africa	Asia, tropical and subtropical Africa, the Middle East, Brazil, Florida

* A region harbouring an EU quarantine organism (listed in Council Directive 2000/29EC) may only export fresh produce to the EU under strict conditions.


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Grapefruit pests	Fruit flies **Diptera Tephritidae, various species of the genera *Ceratitis*, *Anastrepha*, *Dacus*, *Bactrocera*, etc.**	Citrus leafborer **Lepidoptera: *Gracillariidae*, *Phyllocnistis citrella***	Aphids **Hemiptera: *Aphididae*, *Toxoptera* spp., *Aphis gossypii*, etc.**
Symptoms	Pricking caused by females laying eggs in the fruits. The larvae develop in the pulp and cause fruit fall	Characteristic meandering larval mines beneath leaf epidermis	Colonies on young shoots. Wilt caused by viruses (tristeza)
Part attacked	Fruit	Leaves, fruits in very rare cases	Young shoots
Measures	Monitoring of populations. Patch treatments, Male Annihilation Technique (MAT), mass trapping	Monitoring of populations. Biological control by acclimatisation of exotic parasitoids	Monitoring of populations (visual inspection). Conservation of beneficials. Spraying on a threshold basis
Prevention	Destruction of fallen fruits		
Economic impact	Harvest losses	The larval mines limit photosynthesis	Growth flushes limited. Weakening or wilting caused by viruses
Distribution	American continent: *Anastrepha*. Africa: *Ceratitis*, *Dacus*. Asia-Pacific: *Bactrocera*	Cosmopolitan	Variable according to species. *Toxoptera citricida* in tropical zones; *T. aurantii* in the Mediterranean area

Varieties

Grapefruit and shaddock—frequently confused cousins. Grapefruit and shaddock are frequently confused in common or trade usage. But the two fruits have different characteristics as the grapefruit (*Citrus paradisi* Macfad.), pomelo in French, is not the same botanical species as the shaddock *(Citrus maxima)*. Shaddock, called pamplemousse in French and chadèque in the French West Indies, may be called Chinese grapefruit on European market. But it should not be called grapefruit and vice versa.

Fruit characteristics	Grapefruit	Shaddock
Size (diameter)	8 – 15 cm	10 – 30 cm
Weight	250 to 500 g	400 g to 2 kg
Shape	flattened to pear-shaped	flattened to pear-shaped
Peel	fine to medium thickness	thick to very thick
Central axis	open, little or medium-developed	open or closed, well developed
Seeds	few or none	from none to numerous
Pulp colour	pale, yellow, pink or strong red	pale yellow, pink or strong red
Pulp texture	juicy	firm or even crunchy
Bitterness	weak to strong	none to weak

Guangximi you

This variety originated in Fujian Province ('Guangxi' in Chinese), where it is still widely grown in the Pinghe region. It forms a large proportion of Chinese production. The fruit is medium-sized to large (from 1 to 2.5 kg) with a typical oboval shape. The yellow skin is of medium thickness (about 0.8 cm). The flesh is white and pale with some green lights, soft and medium to fairly juicy. The flavour is sweet and slightly acidulous. The fruits have excellent keeping qualities. The variety is usually sold commercially under the name 'Honey Pomelo'.

Marsh

'Marsh' was bred from a sowing of 'Duncan' seeds in about 1860 near Lakeland, Florida. The variety was the first to be practically seedless (two or three seeds per fruit) and it developed very strongly. 'Marsh' is still the most commonly planted cultivar and the most widespread in the world, even though a general trend towards coloured varieties is observed. Furthermore, it is extremely suitable for canning. Its taste qualities are satisfactory although acid and sugar contents are lower than those of 'Duncan'. However, a few problems are noted at the beginning (high acidity) and the very end of the season (loss of aroma). The fruits are medium-sized to small—not as large as 'Duncan'—and are pale yellow in colour. The skin is medium thick, regular and very smooth. The flesh is soft and very juicy.

Flame

A natural mutation of 'Ruby Red', 'Flame' was discovered by H.K. Wutsher in 1973. The fruits are attractive. They are spherical and larger than those of 'Star Ruby' and of a similar size to those of 'Ruby Red'. Suitability for keeping on the tree is good. The skin is particularly fine and smooth. The basic colour is a light bronze similar to that of 'Star Ruby', differing from the pale yellow of 'Ray Ruby' and 'Ruby Red'. Large areas pigmented with as intense a red as that of 'Ray Ruby' can be observed but this colouring is nevertheless not as marked as that of 'Star Ruby'. The flesh is a uniform red similar to that of 'Rio Red'. The fruit is juicy and firm. The variety is planted in significant quantities in Florida and Argentina. It is marginal elsewhere.


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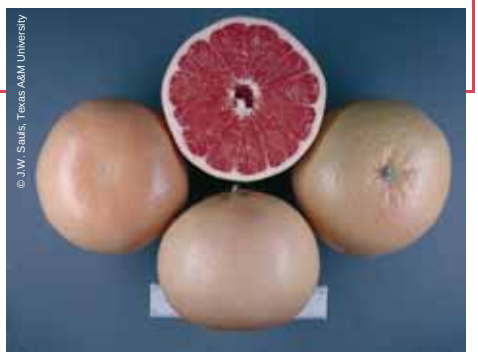
Ruby

(Redblush, Ruby Red, Henninger)

'Ruby', a bud mutation of 'Thompson', was discovered in Texas by A.E. Henninger in 1926. It differs from the parent by the stronger pigmentation of skin and flesh. Its other characteristics are very similar to those of 'Thompson'. However, the sugar and acid contents are sometimes slightly lower. 'Ruby' is still the most widely planted coloured variety in the world and forms a large proportion of new plantings in Florida. In contrast, it is losing momentum in Israel and South Africa.

Star Ruby

This recently developed variety (released in 1970) was obtained by irradiating 'Hudson' seeds. It has numerous good features. The flesh is the most strongly coloured of all the varieties currently grown. The skin is fine and smooth with strongly red faces. The fruits are practically completely seedless and finally the flesh is firm and juicy with high acid and sugar contents. The juice is intensely coloured. However, irradiation has reduced plant resistance to diseases and to excessive sunshine. Management is more delicate, especially because of its susceptibility to certain herbicides. Yields are generally smaller. The variety is therefore tending to lose ground in some countries to the benefit of hardier cultivars ('Rio Red' and 'Flame').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Coloured varieties

A marked switch to coloured varieties has been observed in consumer expectations in the last 20 to 25 years. The change is almost total in Europe. Even Japan, the world's leading market and traditionally a consumer of white grapefruit, has been affected by the change.

Grapefruit — Intensity of the pigmentation of the skin and flesh of various varieties
(after James Saunt in Citrus Varieties of the World, Sinclair Publishing)

Varieties	Skin	Flesh
Burgundy	-	★★★★
Thompson (Pink Marsh)	-	★
Ruby (Ruby Red, Redblush)	★★	★★
Henderson	★★★★	★★★
Ray Ruby	★★★★	★★★
Rio Red	★★★★	★★★★
Flame	★★★★	★★★★
Star Ruby	★★★★★	★★★★★

★ = weak ★★★★★ = very strong

Indicators

The main fruits

In shares by total volume and expenditure on fruits for the month in France		
%	Volumes	Expenditure
Strawberry	11	21
Apple	26	21
Orange	17	12

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.

Pages

Avocado 41
Banana 43
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Strawberry

The market has been relatively satisfactory. There were large volumes of Spanish strawberries as the season was late and the crop was concentrated in April. However, the Easter period was good for promotion operations and sales were brisk. Prices were low at the beginning of the moth and then soon returned to an average level. The first French fruits reached the market in the second half of April.

April 09 / April 08			
Pirce	↘	Vol.	↗

Apple

The market for bicolour apples benefited from a sudden unexpected improvement. The late crops in the southern hemisphere led to more steady and rapid sales of 'Royal Gala' and, to a lesser degree, of 'Braeburn'. In contrast, the situation was still very difficult for the other varieties. 'Golden Delicious' continued to suffer from Italian competition. The situation remained very difficult for 'Granny Smith' for lack of a Russian export outlet.

April 09 / April 08			
Price	↘	Vol.	=↘

Orange

The situation remained very difficult. Sales were affected by warm weather and the limited size of Spanish fruits. In addition, the large volumes of 'Navelate' to be sold kept the market under pressure. Prices remained very low.

April 09 / April 08			
Price	↘	Vol.	↘

Sea freight

After a disappointing first quarter of 2009 the charter market returned the worst April TCE average in a decade and possibly ever. All the market conditions that were running in its favour last year turned against it this year: fewer bananas were shipped, more fruit from South America was containerised, the Russian market absorbed less and less poultry was shipped from the US.

April 09 / April 08			
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

Monthly and annual comparisons	
Volumes	**Price**
April 2009 / March 2009	
= ↗ + 2%	↗ + 16%
April 2009 / April 2008	
↗ + 16%	↘↘ – 21%

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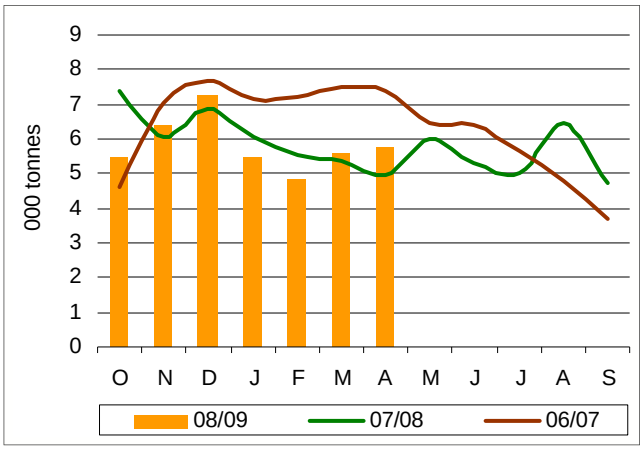
The market was fairly satisfactory during this busy month for avocado. Supply of 'Hass' was particularly limited. The northern hemisphere seasons came to an early end, with the last shipments from Mexico and Israel arriving in mid-month. Spanish supply was moderate. Shipments from the southern hemisphere remained modest in spite of the early start of the season in South Africa and above all Peru, where numerous problems of inadequate ripeness were noted. As a result, the prices of the variety increased continuously, reaching a very high level at the end of the month.

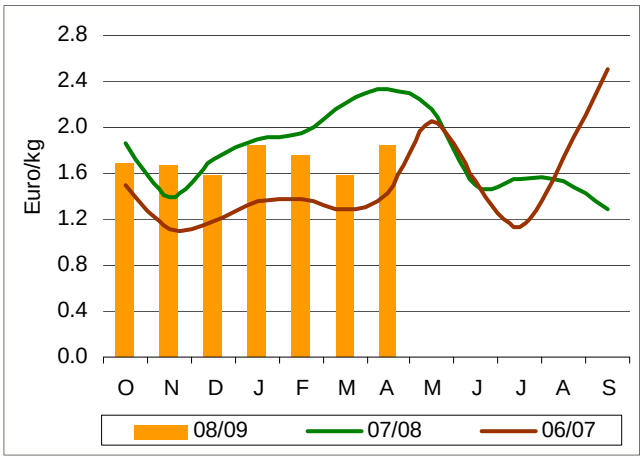
As supplies of 'Hass' were short, demand was focused on green varieties. Supply was large. Arrivals of 'Fuerte' from Peru were larger than average while those from South Africa got under way early and were very large. Larger than average volumes from Kenya completed supplies. However, demand was very brisk at the beginning of the month for supplying the seasonal Easter promotion operations. Prices therefore held at a good level for fruits of all sources. Small fruits were particularly sought after.

Estimated market releases in France

Volumes



Price at import stage



Estimated market releases in France by origin

Tonnes	April 2009	Comparisons (%)		Total season	Season comparisons (%)	
		2009/2008	2009/2007	2008/2009	08-09/07-08	08-09/06-07
Peru	1 367	+ 93	+ 1 903	2 181	+ 74	+ 3 097
Mexico	425	+ 137	+ 50	8 192	+ 3	0
Spain	1 507	- 38	- 42	10 435	- 33	- 16
Israel	203	+ 154	- 94	11 984	+ 27	- 44
Kenya	990	+ 31	+ 2	2 156	+ 53	+ 3
South Africa	1 262	+ 51	- 100	1 262	+ 51	+ 375
Total	**5 754**	**+ 5**	**- 22**	**36 210**	**- 1**	**- 23**

© Denis Loeillet

Banana

Monthly and annual comparisons	
Volumes*	**EU reference price****
April 2009 / March 2009	
↗↗ + 26%	↘↘ – 18%
April 2009 / April 2008	
↘ – 5%	↘ – 10%

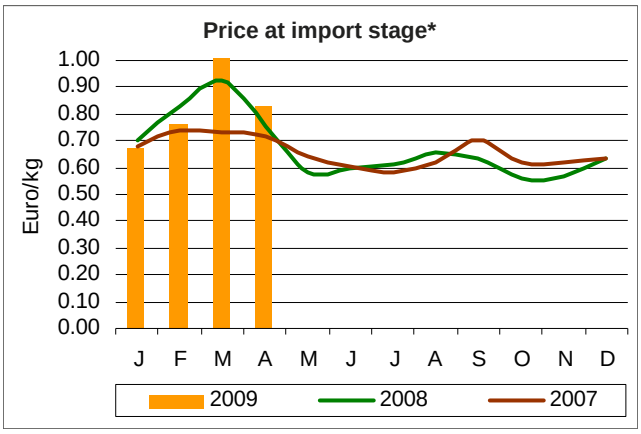
* Arrivals from Africa/West Indies ** Green price in Germany (GlobalGap)

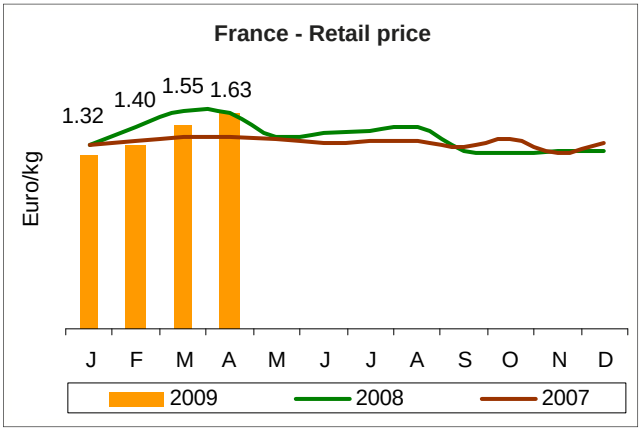
APRIL 2009

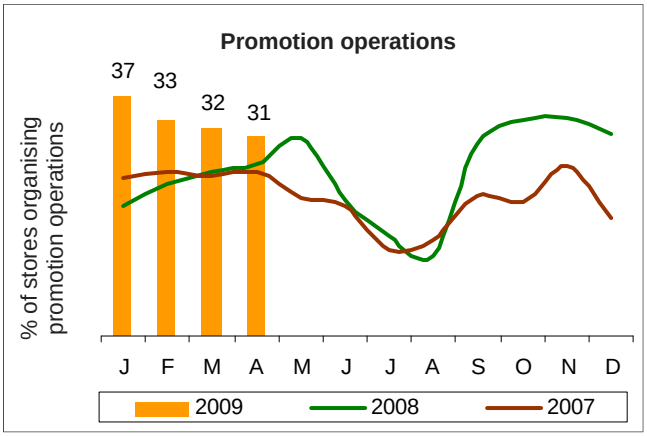
The market displayed its seasonal downward movement. First, the overall supply of the European market recovered distinctly, returning to what was probably a slightly larger total than average. Dollar banana volumes were fairly large. The Costa Rican deficit remained very significant but lessened. Deliveries from Colombia gained ground, returning to an average level whereas those from Ecuador remained very large. In parallel, the deficit in arrivals from the French West Indies lessened and African volumes remained large. The seasonal slowing of demand resulting from school holidays in particular was very marked, especially in northern Europe. Retail sales in Germany were 10 to 15% smaller than average. Retail prices were high as a result of the level attained at the quay stage and probably had a negative impact on sales in the context of a market better supplied with competing fruits (especially Spanish strawberries). In addition, the unusually warm weather for most of the month seem to have affected consumption.

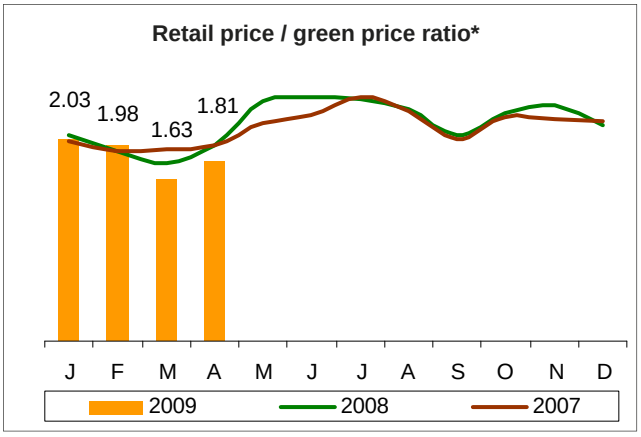
The average monthly price thus fall by about 20% in comparison with March but was still distinctly higher than average.

French banana market — Indicators









* African origin

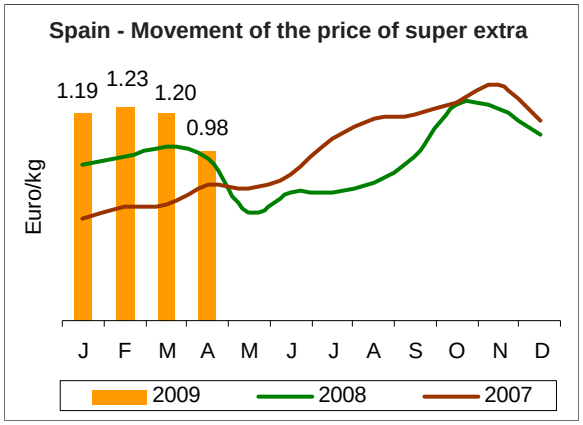
European banana market — Indicators

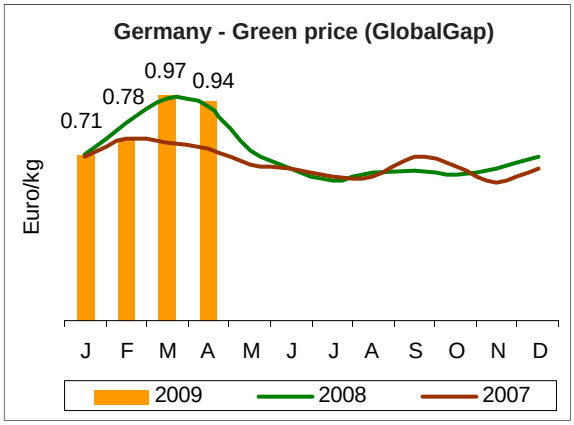
Main origins in Europe

Tonnes	April 2009	Monthly comparisons (%)		Total season	Season comparisons (%)	
		2009/2008	2009/2007	2009	2009/2008	2009/2007
Martinique	14 804	- 29	- 15	48 498	+ 11 274	- 26
Guadeloupe	3 007	+ 4	- 23	14 433	+ 36	- 8
Canaries	33 504	+ 19	- 1	114 779	+ 2	- 13
Côte d'Ivoire*	16 610	+ 38	+ 18	48 579	+ 9	- 16
Cameroon	21 888	- 1	+ 37	80 137	- 16	+ 1
Ghana	2 673	- 33	+ 61	10 112	- 38	+ 8

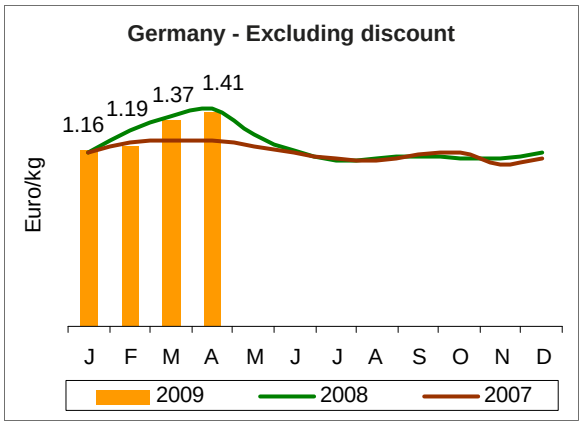
* Containers excepted

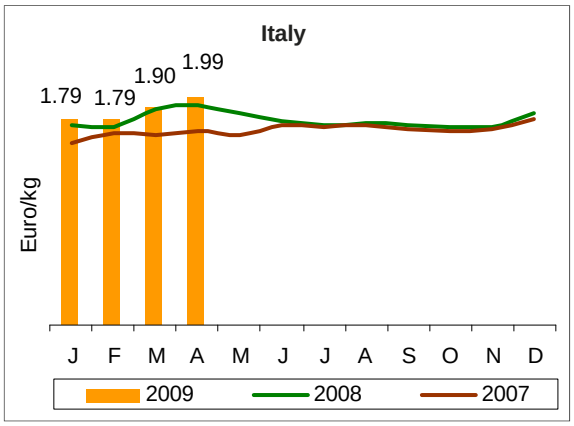
Green price in Europe

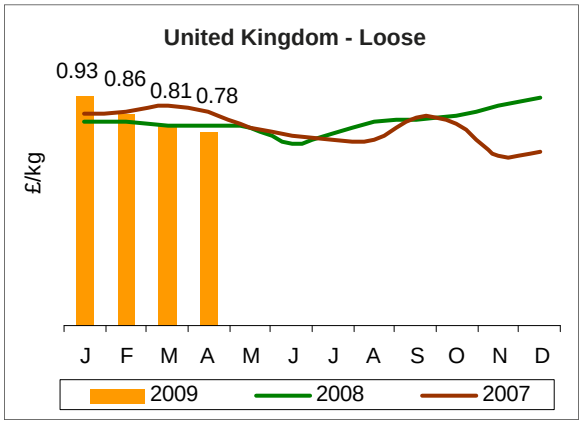


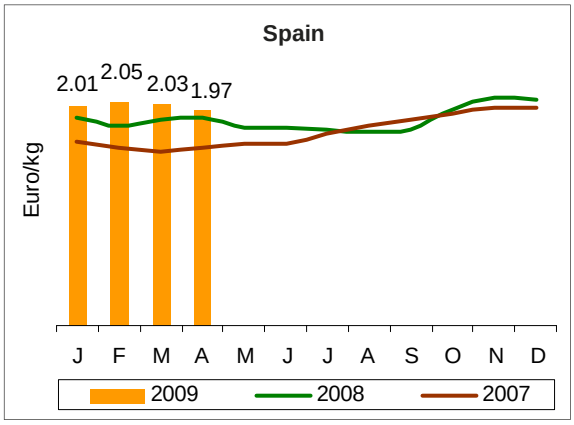


Retail price in Europe









Sources: CIRAD, SNM, TW Marketing Consulting

Orange

Monthly and annual comparisons	
Volumes	**Price**
April 2009 / March 2009	
↘↘ – 25%	↗ + 4%
April 2009 / April 2008	
↘ – 10%	↘ – 14%

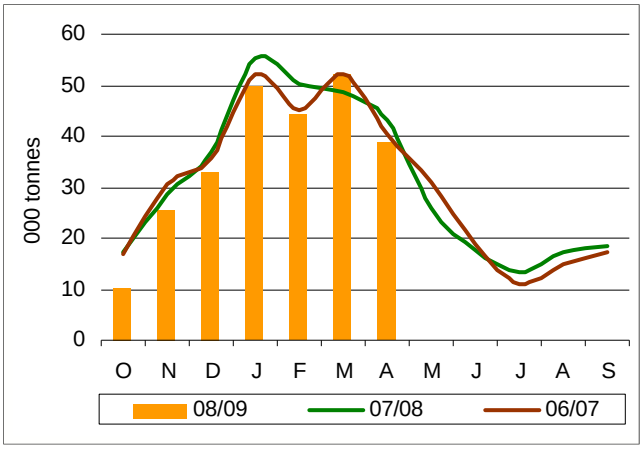
APRIL 2009

Market physiognomy was unchanged and the situation was still very difficult. The relatively slow demand, especially during the second part of the month, resulted from warmer weather than usual and the strong, attractive presence of red fruits. In addition, large volumes of 'Navelate' from Spain remained to be cleared, keeping the market under pressure, especially as regards small fruits. Prices of the latter variety remained very low indeed. In this context, Spanish exporters delayed the start of their 'Valencia' season. Arrivals remained marginal until the middle of the month. Prices soon reached rock bottom, especially for the very small fruits (7-8-9) that form the major part of supply this season.

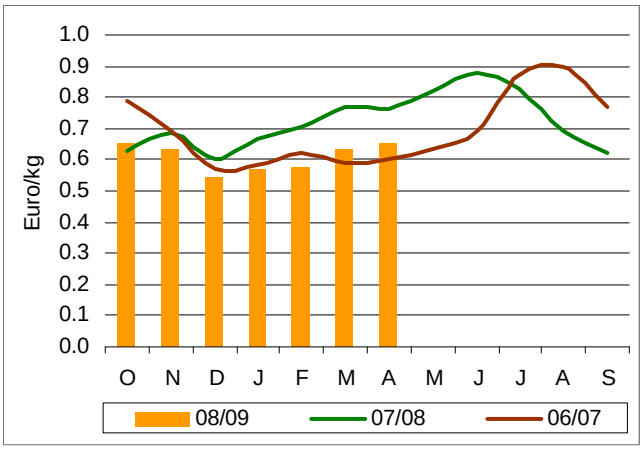
Similarly, Moroccan operators avoided the export market and continued to sell a large proportion of their 'Maroc Late' on the domestic market, especially as fruit quality was sometimes uneven. Finally, Tunisian exporters did not prolong their 'Maltese' season as they had in 2008 and the last batches were received in the middle of the month.

Estimated market releases in France

Volumes

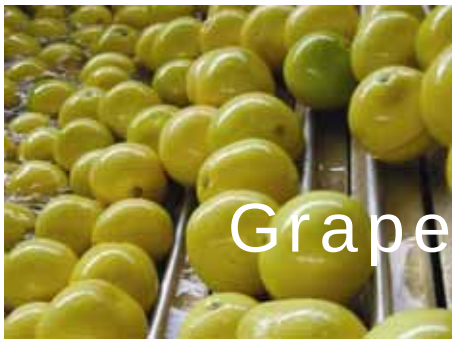


Price at import stage



Estimated market releases in France by origin

Tonnes	April 2009	Comparisons (%)		Total season	Season comparisons (%)	
		2009/2008	2009/2007	2008/2009	08-09/07-08	08-09/06-07
Spain	36 324	+ 4	- 2	223 117	- 4	- 8
Morocco	2 410	- 40	+ 106	6 318	- 23	+ 68
Tunisia	158	- 96	- 92	18 373	- 26	+ 12
Total	**38 892**	**- 10**	**- 4**	**247 808**	**- 7**	**- 6**


© Eric Imbert

Grapefruit

Monthly and annual comparisons	
Volumes	**Price**
April 2009 / March 2009	
↘↘ – 48%	↘ – 5%
April 2009 / April 2008	
↘↘ – 56%	↗ + 5%

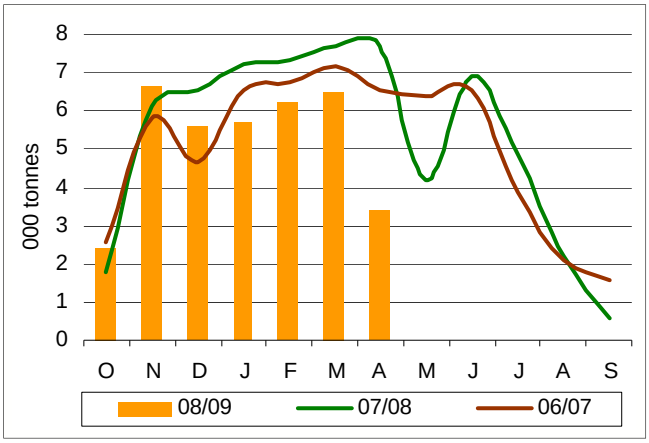
APRIL 2009

Given the very limited volumes available, the market was disappointing. Mediterranean supply was fairly large, in spite of practically nonexistent arrivals from Turkey. Fairly substantial volumes arrived from Spain and especially from Israel. However, these volumes did not make up for the very limited level of supply from Florida. Arrivals from the latter source had already dwindled in March and were very small—the equivalent of about a third of the average volumes received in the two previous seasons. A few batches from Corsica completed French market supply.

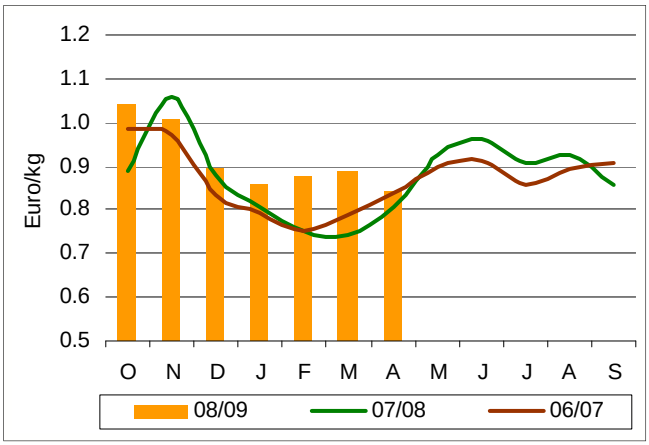
However, demand was particularly slow on most European markets as a result of competition from red fruits, school holidays, and warm weather that is not favourable for the consumption of citrus fruits. Under these conditions, prices firmed slightly, remained low for Israel and were very close to cost price for Florida fruits.

Estimated market releases in France

Volumes



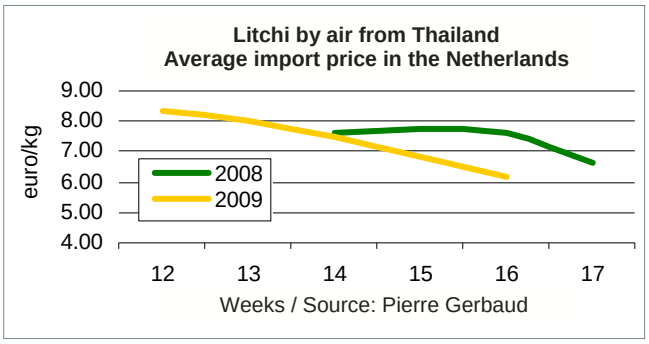
Price at import stage



Estimated market releases in France by origin

Tonnes	April 2009	Comparisons (%)		Total season	Season comparisons (%)	
		2009/2008	2009/2007	2008/2009	08-09/07-08	08-09/06-07
Florida	1 893	- 73	- 65	27 579	- 22	- 7
Israel	1 244	+ 118	+ 34	6 615	+ 21	+ 7
Turkey	246	+ 49	+ 143	2 159	- 33	- 44
Total	**3 383**	**- 16**	**- 48**	**36 353**	**- 18**	**- 8**

Litchi



APRIL 2009

Litchi was almost totally absent from the European markets from the beginning of February to the end of March. The short Australian season that generally follows that of the Indian Ocean sources did not happen this year for lack of export quality production. In March, only a few late batches from South Africa reached the market from time to time during the first half of the month. The Thai export season started in mid-month, two weeks earlier than in preceding years.

A few remaining batches of South African litchis were sold on the French market during the first fortnight in March. They consisted of the 'Red McLean' variety and sold slowly for lack of customer interest. Small volumes changed hands from time to time at between EUR 1.50 and 1.80 per kg.

In the absence of the Australian fruits traditionally available at this time of year, the first litchis from Thailand were finally the only ones available from mid-March onwards. Shipped to the Dutch market, the first batches were available at about EUR10.00 per kg. This high price slowed sales considerably—even for small volumes. Operators then lowered prices to between EUR8.00 and 8.75 per kg to speed up the movement of fruits whose quality varied according to the shipper. Indeed, the first deliveries consisted of small fruits that often lacked the characteristic colour of litchi.

Supply from Thailand became more regular and larger in April. But the little interest shown by purchasers and the often small fruit size resulted in falling prices until the arrival of the first fruits shipped in sea containers in the second half of the month. A few containers arrived each week and this was more than enough to meet demand at a time when exotic fruit consumption generally dips.

In Belgium, supply of Thai litchi seems to have been much more irregular in April and even limited, as a result of the weak demand for the fruit. From time to time, poor sales even led to strong price decreases to EUR4.00 per kg for fruits shipped by air.

In France, Thai litchis did not appear until the second half of April. They sold steadily at around EUR4.50 per kg. The fruits were considered small, with fairly mediocre taste qualities.

Litchi — Import price on the French market — Euros

Weeks 2008	12	13	14	15	16	17	18
By air (kg)							
Thailand	8.00-8.75	8.00	7.00-8.00	6.75-7.00	6.00-6.40	-	-
By sea (kg)							
Thailand	-	-	-	-	-	4.50-4.75	4.25-4.75

© Christian Didier

Mango

Mango — Weekly arrivals — Estimates in tonnes					
weeks 2009	**14**	**15**	**16**	**17**	**18**
By air					
Brazil	10	10	10	15	-
Peru	50	30	20	10	-
Mali	30	50	30	100	100
Burkina Faso	20	20	20	30	30
Côte d'Ivoire	15	20	10	30	80
By sea					
Brazil	1 890	1 560	1 340	1 430	1 100
Peru	440	330	220	220	170
Côte d'Ivoire	220	220	220	220	1 100

APRIL 2009

Moderate supply and increased demand for Easter resulted in strong mango prices in the first half of April. The decrease in demand in the second half of the month and the gradual increase in arrivals caused prices to fall. The dominance of small fruits, the multiplication of supply sources and uneven quality made market conditions much more complex in the second fortnight of the month.

April was a long transition period between supply from Peru and from West Africa. As the volumes from Peru were distinctly short for the Easter period and the West Africa season was late, operators used other sources. This resulted in a gradual increase in arrivals of fruits of mixed quality that were often not suited to demand. Brazil was the main supplier of the European market for a good part of the month, shipping poor quality 'Tommy Atkins', most of which were small. These were followed progressively by small, medium quality fruits from Costa Rica ('Keitt') and Guatemala ('Tommy Atkins') and a few small batches from other minor sources in Central America. This broad range was an important factor in the sales observed, not because of the accumulation of tonnage but because of uneven quality and fruit size that did not match demand. The West Africa season started in this context. Production of 'Amélie' was more normal and shipments to the European market started at the end of March/beginning of April. These green mangoes were small, with only just enough physiological maturity. Sales were satisfactory during the first half of the month but only for lack of other varieties. The price fell markedly as alternatives became available. The arrival of the first 'Kent' from Côte d'Ivoire in Week 17 ruled out any possibility of selling the remaining 'Amélie', which were shifted at open prices in subsequent weeks. Prices of 'Kent' from Côte d'Ivoire weakened at the end of the month for reasons of slowing demand. Although the deliveries from the various sources were smaller than those during the same period of 2008, sales were much more difficult. One of the main reasons seems to have been the small Peruvian crop that resulted in lasting lack of interest from supermarket chain buyers throughout the first quarter of 2009.

Likewise, the air mango market was complicated in April. Deliveries were quite moderate at the beginning of the month and then demand became more dynamic for Easter. This resulted in lastingly strong prices in the first fortnight even though supply was very varied as regards sources and varieties. In addition, West African mangoes were poorly coloured and not ripe enough to be eaten quickly. Supply quality was identical in the second half of the month but volumes were larger, resulting in falling prices. Inadequate volumes on the eve of Easter led operators to search for other sources of supply. This explains the sale of little-seen varieties such as 'Haden' and 'Irwin' and then 'Mora' and 'Cavallini' from Costa Rica. Batches of 'Ataulfo' from Mexico and the Dominican Republic, 'Palmer' from Brazil and 'Nam dok mai' from Thailand were also sold during this period. The varieties 'Smith', 'Palmer', 'Haden', 'Valencia' and 'Irwin' were shipped from Mali, with irregular sales results as buyers did not know them.

Mango — Import prices on the French market — Euros								
Weeks 2009		**14**	**15**	**16**	**17**	**18**	**April 2009 average**	**April 2008 average**
By air (kg)								
Brazil		3.50-4.00	3.50	3.50	-	-	3.50-3.65	-
Peru	Kent	4.00-4.50	4.50-5.00	4.50	4.00-4.50	4.00-4.50	4.20-4.60	3.50-4.50
Mali	Amélie	2.50-2.80	2.50-2.60	2.40-2.50	2.50-2.70	2.40-2.70	2.45-2.65	2.40-2.80
Mali	Valencia	3.20-3.50	2.70-3.00	2.80-3.00	2.50-3.00	2.50-3.20	2.75-3.15	3.00-3.40
Mali	Kent	4.00	4.00	4.00	3.50-4.00	3.50-4.00	3.80-4.00	3.00-3.80
Burkina Faso	Amélie	2.50-2.70	2.20-2.30	2.20-2.30	2.20-2.30	2.00-2.20	2.20-2.35	2.40-2.80
Burkina Faso	Kent	3.00	3.00-3.50	3.20-3.50	3.20-3.50	3.00-3.50	3.10-3.40	3.20-3.80
Côte d'Ivoire	Kent	4.00	3.50	4.00-4.50	4.00-4.50	4.00-5.00	3.90-4.30	4.15-4.75
By sea (box)								
Brazil	Tommy Atkins	4.50-5.50	4.00-5.50	4.00-5.50	3.50-4.50	3.00-5.00	3.80-5.20	5.60-6.40
Peru	Kent	5.00-6.00	5.00-6.00	4.50-5.50	4.50-5.00	5.00	4.80-5.50	5.90-6.80
Côte d'Ivoire	Amélie	4.00-5.00	4.00-5.00	3.00-5.00	3.00-4.50	3.00-4.00	3.40-4.70	5.00-5.90
Côte d'Ivoire	Kent	-	-	-	5.00-7.00	4.50-6.50	4.75-6.75	6.00-7.00

Pineapple

Pineapple — Import price		
Euros	**Min**	**Max**
By air (kg)		
Smooth Cayenne	1.65	1.90
Victoria	2.30	4.00
By sea (box)		
Smooth Cayenne	4.00	8.00
Sweet	6.00	9.00

APRIL 2009

Operators expected to receive much larger volumes of pineapple in April for the Easter period. However, supply of 'Sweet' only increased a little in the second week after Easter. Sales remained fluid. In contrast, demand for 'Smooth Cayenne' was very small and this strongly affected sales. The air pineapple market performed fairly well as supply was quite irregular. Sales of 'Victoria' were more difficult and the quality of these fruits was uneven throughout the month.

Sales of 'Sweet' were good for the first half of the month. The North American market was more profitable and this considerably affected supply to Europe. The fruits available were still uneven and many were small. However, various promotion operations made sales of the fruits available fairly smooth. Demand decreased after Easter and re-export sales to southern European markets were more difficult. In this situation, a stronger increase in volumes of 'Sweet' in Week 17 led operators to fear the worst. However, the fears were for nothing as the increase in volumes slowed and some markets were even slightly under-supplied. Sales were brisk at the end of the month but prices did not rise. In contrast, sales of 'Smooth Cayenne' were very difficult. Supply was steady but not large but, unfortunately, demand was never dynamic. The eastern European markets that operators had counted on did not want the fruit. Only a few promotion operations in France made it possible to achieve sales. And sales of 'Smooth Cayenne' were not made any easier by the availability of small 'Sweet' fruits at low prices. However, a slight improvement was felt in the last week of the month; this was explained by the considerable decrease in the supply of 'Sweet' and the running of various pineapple promotion operations in supermarkets.

Supply of air pineapple increased somewhat before Easter. The quality of fruits from Cameroon and Guinea was more regular and they sold better. After Easter, supply decreased for the rest of the month. The market gained briskness and sales were easier as supply shrank. It is also reported that fruits from Benin displayed a certain unevenness in quality at the beginning of the month and operators regained confidence with difficulty. In contrast, batches of sugarloaf pineapples from Benin were also available in smaller quantities and continued to sell very well with a higher price range of between EUR1.95 and 2.00.

Sales of 'Victoria' pineapples were difficult throughout the month and particularly difficult for fruits from Réunion of irregular quality, often dull in appearance and little representative of pineapple shipped by air. In contrast, those from Mauritius were of more even quality and continued to sell well. Fruits shipped by sea from Côte d'Ivoire were fairly uneven in quality but available in larger volumes and were also difficult to sell.

Pineapple — Import prices on the French market — Main origins — Euros						
Weeks 2009		**14**	**15**	**16**	**17**	**18**
By air (kg)						
Smooth Cayenne	Benin	1.80-1.85	1.80	1.75-1.80	1.75-1.80	1.80-1.90
	Cameroon	1.70-1.90	1.85	1.80-1.85	1.80-1.85	1.70-1.90
	Ghana	1.65-1.80	1.65-1.75	1.70-1.75	1.70-1.75	1.70-1.80
	Côte d'Ivoire	1.70-1.75	1.80	1.75-1.80	1.75-1.80	1.75-1.80
	Guinea	1.85-1.90	1.85-1.90	1.85-1.90	1.85-1.90	1.85-1.90
Victoria	Côte d'Ivoire	2.50	2.30-2.50	2.30-2.50	2.30-2.50	2.50
	Réunion	3.50-4.00	3.50-3.60	3.30-3.50	3.00-3.40	3.20-3.50
	Mauritius	3.00-3.30	3.00-3.30	3.00-3.30	3.00-3.30	3.00-3.30
By sea (box)						
Smooth Cayenne	Côte d'Ivoire	5.50-7.50	5.00-8.00	4.50-7.50	4.00-7.00	5.50-7.50
Sweet	Côte d'Ivoire	7.50-9.00	6.50-9.00	6.50-9.00	6.50-8.50	6.50-8.50
	Cameroon	7.50-9.00	6.50-9.00	6.50-9.00	6.50-8.50	6.50-9.00
	Ghana	7.50-9.00	6.50-9.00	6.50-9.00	6.50-8.50	6.50-9.00
	Costa Rica	7.00-8.50	7.50-8.50	6.50-8.00	6.00-8.00	6.00-8.00

Sea freight

Monthly spot average		
US$cents/cubic foot x 30 days	**Large reefers**	**Small reefers**
April 2009	30	44
April 2008	133	139
April 2007	103	114

APRIL 2009

After a disappointing first quarter of 2009 the charter market returned the worst April TCE average in a decade and possibly ever. All the market conditions that were running in its favour last year turned against it this year: fewer bananas were shipped, more fruit from South America was containerised, the Russian market absorbed less and less poultry was shipped from the US.

Arguably the most important factor in the decline was that the squid catch in the South Atlantic was markedly down from last season's record volume. The reduction from an estimated 450K MT in 2008 to a provisional 150-160K MT combined with a change in logistical arrangements – fewer high seas transhipments and more lower-cost containerised services from Montevideo – meant that less tonnage was absorbed and for a shorter time. In short, the perfect storm forecast for the reefer market last year was delayed by 12 months.

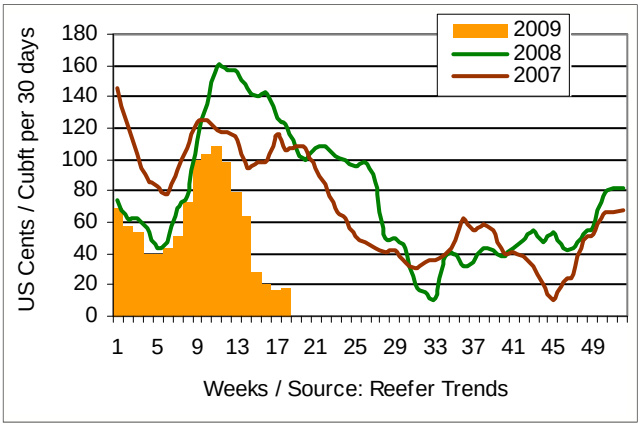
Will there be a repeat performance next year between February and May? Theoretically no – on the one hand banana, fruit, poultry and squid volumes should recover while a large chunk of specialised reefer capacity must surely be demolished over the course of this year on the other. Demand and supply should be in closer equilibrium, even if the container lines throw a greater number of competitive services into the mix.

Certainly this is what owners and operators of top end tonnage must be hoping: if not and if the market shows few signs of change then rates for the most desirable units will inevitably come under pressure. The lower average box rate values for Ecuadorian bananas this year will have hurt those charterers such as CoMaCo, which extended modern vessels on high-value Time Charters. It would be no surprise to see some reaction to this scenario.

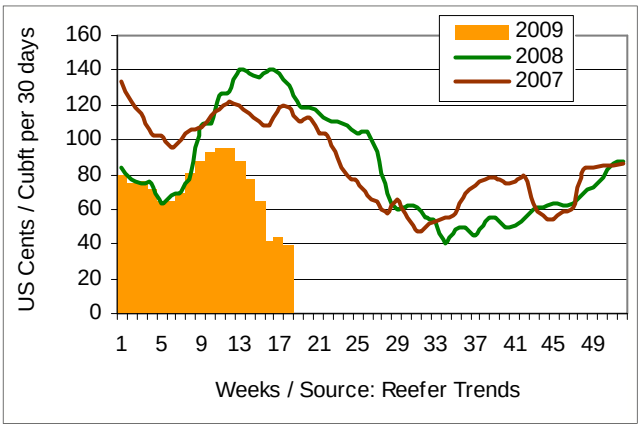
It will also be interesting to see how Del Monte plans to replace the five Winter Class vessels that will be demolished this summer. Although it chose not to renew the charter on the two container ships it picked up cheaply earlier this year the weak container market gives it a compelling rationale to switch modes if it can find a critical mass of spare reefer boxes to hire.

Weekly market movement

Large reefers (450 000 cuft)



Small reefers (330 000 cuft)



Wholesale market prices in Europe

April 2009

					EUROPEAN UNION — IN EUROS				
					Germany	Belgium	France	Holland	UK
AVOCADO	Air	TROPICAL	BRAZIL	Box			11.90		
	Sea	ETTINGER	PERU	Box	7.13				
		FUERTE	ISRAEL	Box			6.30		
			KENYA	Box	5.50		4.63	4.50	
			PERU	Box	6.75		5.50	5.75	
			SOUTH AFRICA	Bag			5.83		
			SOUTH AFRICA	Box	7.50	7.00	6.25	5.75	
		HASS	PERU	Box			9.19	9.75	
			SOUTH AFRICA	Box			8.33	9.00	
		NOT DETERMINED	ISRAEL	Box					7.25
			PERU	Box					7.25
			SOUTH AFRICA	Box					8.37
		REED	ISRAEL	Box		6.50		6.50	
	Truck	HASS	SPAIN	Box			10.50		
BANANA	Air	SMALL	COLOMBIA	kg		6.08	6.61		
			ECUADOR	kg				5.00	
	Sea	RED	ECUADOR	kg				4.88	
		SMALL	ECUADOR	kg			1.70		
CARAMBOLA	Air		MALAYSIA	kg		4.39	4.71	4.07	4.08
	Sea		MALAYSIA	kg				2.57	
COCONUT	Sea		COTE D'IVOIRE	Bag		13.70	10.44	8.25	8.93
			DOMINICAN REP.	Bag			8.50		8.37
			SRI LANKA	Bag		9.00		13.50	
DATE	Sea	NOT DETERMINED	ISRAEL	kg		7.05			
			TUNISIA	kg				1.72	
		MEDJOOL	ISRAEL	kg	7.60	8.33	8.00	7.37	
GINGER	Sea		THAILAND	kg	1.12		1.74	0.90	1.17
			CHINA	kg		0.96	0.73	1.23	0.83
GUAVA	Air		BRAZIL	kg		5.00	4.50	4.50	
KUMQUAT	Air		ISRAEL	kg					3.91
			SOUTH AFRICA	kg				4.88	
LIME	Air		MEXICO	kg			3.75		
	Sea		BRAZIL	kg	0.73	1.10	1.09	0.94	1.13
			MEXICO	kg	1.06		1.50	1.22	1.36
LITCHI	Air		THAILAND	kg	5.75	7.50		4.75	
LONGAN	Air		THAILAND	kg		8.33		7.75	
MANGO	Air	KENT	BRAZIL	kg				3.25	
			COTE D'IVOIRE	kg		5.00	5.13	4.00	
			PERU	kg		5.00			
			MALI	kg			3.90	4.00	
		AMELIE	COTE D'IVOIRE	kg			4.00		
			MALI	kg			2.50	2.29	
			BURKINA FASO	kg			2.50		
		PALMER	BRAZIL	kg	3.75		3.05	3.17	
		NAM DOK MAI	THAILAND	kg				6.70	
		VALENCIA	MALI	kg			3.10		
	Sea	ATKINS	BRAZIL	kg	1.00		1.25	1.19	
			GUATEMALA	kg				1.13	
		KEITT	BRAZIL	kg				1.25	
		KENT	BRAZIL	kg				1.25	
			COTE D'IVOIRE	kg		1.50			

					EUROPEAN UNION — IN EUROS				
					Germany	Belgium	France	Holland	UK
MANGO	Sea	NOT DETERMINED	BRAZIL	kg					1.18
			PERU	kg					1.51
			VENEZUELA	kg					1.20
		AMELIE	COTE D'IVOIRE	kg		1.03			
MANGOSTEEN	Air		THAILAND	kg			8.40	7.13	
MANIOC	Sea		COSTA RICA	kg		1.57	1.07	1.08	
PAPAYA	Air	NOT DETERMINED	BRAZIL	kg				2.92	2.87
		FORMOSA	BRAZIL	kg		4.31		3.11	
	Sea	NOT DETERMINED	BRAZIL	kg	1.85	2.39	1.57	1.79	
			COLOMBIA	kg					1.91
			COTE D'IVOIRE	kg				1.57	
			THAILAND	kg					2.06
PASSION FRUIT	Air	NOT DETERMINED	COLOMBIA	kg			5.00	4.00	
		PURPLE	ISRAEL	kg			5.50		3.63
			KENYA	kg		4.63		4.00	4.03
			SOUTH AFRICA	kg	5.50			4.25	
			ZIMBABWE	kg		5.86		4.00	
		YELLOW	COLOMBIA	kg	7.00	6.68	7.60	6.88	
PERSIMMON	Air		BRAZIL	kg		2.45	3.80	2.85	
			ISRAEL	kg					2.14
	Sea		BRAZIL	kg	2.90				
PHYSALIS	Air	PREPACKED	COLOMBIA	kg		5.86	8.38	6.42	6.78
			THAILAND	kg					6.51
	Sea		COLOMBIA	kg	4.80			5.31	
PINEAPPLE	Air	MD-2	COSTA RICA	Box				8.00	
		SMOOTH CAYENNE	CAMEROON	kg			1.97		
			GHANA	kg		1.50			
		VICTORIA	COTE D'IVOIRE	kg			2.50		
			MAURITIUS	Box				11.88	
			REUNION	kg			4.50		
			SOUTH AFRICA	Box	11.00			9.50	
	Sea	MD-2	BRAZIL	Box				8.00	
			COSTA RICA	Box	9.50	8.50	7.38		9.49
			COTE D'IVOIRE	Box					8.93
			PANAMA	Box					8.54
		SMOOTH CAYENNE	COTE D'IVOIRE	kg			0.95		
PITAHAYA	Air	RED	ECUADOR	kg				7.80	
			THAILAND	kg	5.67				
			VIET NAM	kg		5.43	6.50	6.09	
		YELLOW	COLOMBIA	kg				8.40	
PLANTAIN	Sea		COLOMBIA	kg				0.82	
RAMBUTAN	Air		THAILAND	kg	7.50		8.40	6.00	
			VIET NAM	kg		6.75		6.38	
SWEET POTATO	Sea		BRAZIL	kg				1.35	
			EGYPT	kg			0.85		
			ISRAEL	kg	1.25				1.23
			SOUTH AFRICA	kg			1.38		
TAMARILLO	Air		COLOMBIA	kg		7.07	8.40	5.60	
YAM	Sea		BRAZIL	kg			1.73		
			GHANA	kg			1.10	1.04	

Note: according to grade

These prices are based on monthly information from the Market News Service, International Trade Centre UNCTAD/WTO (ITC), Geneva.
MNS - International Trade Centre, UNCTAD/WTO (ITC), Palais des Nations, 1211 Geneva 10, Switzerland
T. 41 (22) 730 01 11 / F. 41 (22) 730 09 06

AVIS DE MARCHÉ DE FOURNITURES

Fourniture du matériel pour l'équipement de la station d'emballage de Pungo à la CDC – ATF 2002

La Cameroon Development Corporation (CDC) envisage d'attribuer un marché de fournitures pour l'équipement de la station d'emballage de Pungo, sur un financement de l'Union européenne – Ligne Budgétaire B7 – 8710, dans le cadre du programme d'Assistance Technique et Financière au secteur bananier Convention N° B-8710/856/31.

Le dossier d'appel d'offres peut être obtenu à l'adresse suivante :

Direction Générale
Cameroon Development Corporation (CDC)
PMB Limbe
République du CAMEROUN

Tél : (00237) 33 33 22 51
Fax : (00237) 33 43 17 46

Et également à l'adresse Internet suivante :
tibap@yahoo.com

La date limite de remise des offres est fixée au :
08 septembre 2009.

Fourniture du matériel d'irrigation à la CDC – ATF 2002

La Cameroon Development Corporation (CDC) envisage d'attribuer un marché de fournitures, pour la livraison du matériel d'irrigation servant à l'approvisionnement en eau des bananiers. L'action sera mise en oeuvre dans les plantations de Mondoni, Moquo et Ekona sur un financement de l'Union européenne – Ligne Budgétaire B7 – 8710, dans le cadre du programme d'Assistance Technique et Financière au secteur bananier Convention N° B-8710/856/31.

Le dossier d'appel d'offres peut être obtenu à l'adresse suivante :

Direction Générale
Cameroon Development Corporation (CDC)
PMB Limbe
République du CAMEROUN

Tél : (00237) 33 33 22 51
Fax : (00237) 33 43 17 46

Et également à l'adresse Internet suivante :
tibap@yahoo.com

La date limite de remise des offres est fixée au :
08 septembre 2009.

Fourniture du matériel d'irrigation à la CDC – ATF 2004

La Cameroon Development Corporation (CDC) envisage d'attribuer un marché de fournitures, pour la livraison et l'installation d'un système d'irrigation pour l'approvisionnement en eau des bananiers. L'action sera mise en oeuvre dans les plantations de Mondoni 1 et Mafanja 1, sur un financement de l'Union européenne – Ligne Budgétaire B7 – 21.03.18 (ex B7 – 8710) Contrat de subvention BAN/2007/147-173, dans le cadre du programme d'Assistance Technique et Financière au secteur bananier Convention N° B-21.03.18/856/61

Le dossier d'appel d'offres peut être obtenu à l'adresse suivante :

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Tél : (00237) 33 33 22 51
Fax : (00237) 33 43 17 46

Et également à l'adresse Internet suivante :
tibap@yahoo.com

La date limite de remise des offres est fixée au : **08 septembre 2009.**

Fourniture des vitro plants à la CDC – ATF 2004

La Cameroon Development Corporation (CDC) envisage d'attribuer un marché de fournitures, pour la livraison de vitro plants dans ses plantations de Mondoni 1 et Mafanja 1, sur un financement de l'Union européenne – Ligne Budgétaire B7 – 21.03.18 (ex B7 – 8710) Contrat de subvention BAN/2007/147-173, dans le cadre du programme d'Assistance Technique et Financière au secteur bananier Convention N° B-21.03.18/856/61

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Et également à l'adresse Internet suivante :
tibap@yahoo.com

La date limite de remise des offres est fixée au : **08 septembre 2009.**

Fourniture de cable way à la CDC – ATF 2004

La Cameroon Development Corporation (CDC) envisage d'attribuer un marché de fournitures, pour la livraison et l'installation d'un système de cable way servant au transport des bananes. L'action sera mise en oeuvre dans les plantations de Mondoni 1 et Mafanja 1, sur un financement de l'Union européenne – Ligne Budgétaire B7 – 21.03.18 (ex B7 – 8710) Contrat de subvention BAN/2007/147-173, dans le cadre du programme d'Assistance Technique et Financière au secteur bananier Convention N° B-21.03.18/856/61

Le dossier d'appel d'offres peut être obtenu à l'adresse suivante :

Direction Générale
Cameroon Development Corporation (CDC)
PMB Limbe
République du CAMEROUN

Tél : (00237) 33 33 22 51
Fax : (00237) 33 43 17 46

Et également à l'adresse Internet suivante :
tibap@yahoo.com

La date limite de remise des offres est fixée au : **08 septembre 2009.**

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