

PINEAPPLE JUICE AND CONCENTRATE – A VERSATILE AND COMPLEX TROPICAL SUBMARKET

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0. INTRODUCTION

The pineapple is recognized as among the most popular fruits and flavours around the world. In Europe, the market for canned pineapple as well as for NFC pineapple juice and concentrate is undoubtedly the largest tropical submarket.

According to Mr Josep Lay from Great Giant Pineapple Co., the EU imported some 122.400 MT and the US about 70.770 MT of pineapple juice concentrate on basis 60° Brix. The forecast for 2004 is 140.000 MT and 70.000 MT, respectively. Global uptake was 240.000 MT in 2003 and it is expected to get as high as 258.500 MT this year.

Although these figures are impressive, the present growth of the pineapple market is mainly driven by the sale of NFC juice which is moving faster than the one of concentrate. Looking, for example, at the German pineapple juice concentrate imports we notice that they fell markedly because of the rapid growth of NFC pineapple juice. At 7.560 MT in 2003, German imports of pineapple juice concentrate were 18 % lower than the 9.240 MT seen in 2002. However, when imports of NFC pineapple juice are added to those of concentrate, growth is maintained. German uptake of NFC

pineapple juice in first-half 2003 grew by more than a quarter to 10.120 MT from 7.950 MT in first-half 2002 and now surpass concentrate imports.

Other markets look different, though. In Spain, the most important European pineapple market, nectars made from pineapple juice concentrate are very popular.

0.1. VARIETIES

Pineapple is practically monovarietal with "Smooth Cayenne" – this variety has been setting the standards in the fruit juice industry for many years. However, a Thai

Smooth Cayenne differs from its Costa Rican, Kenyan, Mexican, South African, Indonesian or Vietnamese counterpart. Climatic circumstances and the quality of soil lead to a wide range of acidity. Taste and flavour vary from origin to origin, too.

The light yellow "Perola" from Brazil and Ecuador is a premium quality with some desirable organoleptic properties, like nice colour and delicate aroma. It is mainly used for juice production and mostly blended with "Smooth Cayenne" and/or darker varieties as e.g. "Queen's".

Seen from a global perspective, the market is presently confronted with a deterioration in quality,



especially with regard to flat aroma/flavour. Monoculture and excessive use of fertilizers as well as other substances have a negative effect on the soil and, subsequently, on the quality of fruit. If awkward weather conditions, like heavy rainfalls or extreme droughts, come in addition to that both acidity and nitrate levels will be likely to play up. During the past 13 years we had at least 4 disastrous pineapple years of which two had been attributed to "El Niño", this global weather phenomenon with its own cyclical peculiarities.

No wonder, the industry has been demanding more aromatic NFC pineapple juices and concentrates for many years already. I notice an increasing demand for pineapple FTNF flavour, too.

Experts insist that a stronger fruit aroma can only be achieved by varietal diversification conducted via breeding programmes.

Today, hybrids like the "MD-2", a premium variety grown in Costa Rica or crosses between "Smooth Cayenne" and the Colombian "Perolera" and "Manzana" varieties are being traded on a rather small scale vs. "Smooth Cayenne". However, their market share will grow slowly

but surely. These hybrids have a distinctly more intense golden yellow than that of "Smooth Cayenne" as a result of a total carotenoids content up to 2.5 times higher than in the latter, making them an interesting source of carotenoids.

0.2. IMPORTANCE

According to FAO's Tropical Fruit Commodity Notes, provisional data for 2002 indicated a global tropical fruit production of 66,9 million metric tons (MT), out of which the pineapple production accounted for an estimated 21 % or approx. 14 million MT just behind mango. In 2003, this figure has been revised upwards to 15 million MT, increasing the proportion of pineapple to 22,4 %.

The area dedicated to pineapple production in Thailand is estimated to be at 80.000 ha, approx. 10 % of the world's total pineapple area harvested. (see table 1.2 Areas harvested in ha)

1. BASIC DATA

In 2003 global pineapple production reached a total of 14,6 million MT. Thailand had a share of 11,6 % resp. 1,7

1.1. Pineapples Production in Mt

Production Areas	Production–(Mt) Year					
	1999	2000	2001	2002	2003	GRRE
Brazil	1,477,030	1,292,800	1,430,020	1,433,230	1,400,190	-0,04
China	1,231,066	1,214,052	1,257,740	1,243,587	1,316,280	1,59
Colombia	388,238	338,349	313,573	352,925	353,000	-1,47
Costa Rica	857,969	903,125	950,400	992,000	725,224	-2,39
Côte d'Ivoire	257,000	225,675	235,000	225,000	225,000	-2,65
India	1,006,000	1,020,000	1,220,000	1,260,000	1,100,000	3,98
Indonesia	316,76	393,299	494,968	555,588	467,395	11,89
Kenya	567,362	606,516	612,248	600,000	600,000	1,02
Malaysia	245,000	249,135	250,000	255,000	255,000	1,04
Mexico	504,339	522,422	625,957	659,817	720,900	9,94
Philippines	1,530,033	1,559,560	1,619,860	1,635,930	1,650,000	2,01
South Africa	150,332	168,649	161,211	167,724	167,724	2,16
Thailand	2,371,791	2,248,000	2,078,000	1,739,000	1,700,000	-8,81
Vietnam	255,600	291,400	284,500	373,800	338,000	8,41
World	14,435,507	14,376,224	14,921,953	15,010,344	14,616,079	0,68

Source: Food and Agricultural Organization (FAO), www.fao.org
For more information on exponential growth please refer to www.wikipedia.org

million MT, Philippines 11,3 % resp. 1,65 million MT, Brazil 9,6 % resp. 1,4 million MT, China 9 % resp. 1,3 million MT and India 7,5 % resp. 1,1 million MT. Looking at the producing countries' exponential growth rate (GRRE), we notice that only Indonesia, Mexico and Vietnam have increased their fruit output significantly (> 8 %) over the past 5 years, whereas the others report either

- moderate growth levels of 2 – 4 % (Philippines, South Africa, India),
- stagnation with growth levels < 2 % (Brazil, China, Kenya, Malaysia),
- slight decrease (Colombia, Costa Rica, Côte d'Ivoire) at levels between –1 and –3 %
- hefty decline (Thailand) with a GRRE of nearly –9 %

However, this is just one part of the story. The above figures show the pineapple production in total, i.e. output including fresh fruit for domestic and export market as well as fruit designed for industrial use (canned fruit and NFC juice / concentrate)

Costa Rica, Côte d'Ivoire and the Philippines are the largest exporters of fresh fruit with approx. 350.000 MT,

220.000 MT and 153.000 MT respectively. India and China are, of course, the biggest domestic markets.

Except for the Philippines, the major exporters of fresh pineapples are not the major pineapple juice / concentrate producing countries. Apart from the Philippines, the market is dominated by Thailand and Indonesia. However, in light of the situation over the past couple of years – shortfall in production due to climatic conditions, high nitrate levels, etc. – the European importers are increasingly spreading their risk among 5 or 6 different sources. Countries such as Kenya, Costa Rica, South Africa and Vietnam are now playing an integral part in their purchasing decisions. China is also predicted to be a big player in future.

For canned pineapple, Thailand's exports of 400,000 MT make up 40 % of the world market share, whereas the 200,000 MT from the Philippines account for 20 %.

In 2003 global pineapple areas harvested totalled 794.596 ha. Thailand had a share of 10 % resp. 80.000 ha, India 8,8 % resp. 70.000 ha, Indonesia 7,9 % resp. 63.000 ha, China 7,8 % resp. 62.100 ha, Brazil 6,7 % resp. 53.506 ha and the Philippines 5,8 % resp. 46.000 ha.

1.2. Areas Harvested

Area Harv (Ha)	Year					
	1999	2000	2001	2002	2003	GRRE
Brazil	56,917	55,749	62,597	61,127	53,506	-0,31
China	47,340	52,953	69,270	65,300	62,100	8,81
Colombia	9,398	8,464	7,680	8,552	8,700	-1,43
Costa Rica	12,250	12,500	13,035	15,500	16,445	8,37
Côte d'Ivoire	5,200	5,200	5,400	5,400	5,400	1,14
India	74,200	70,000	80,000	80,000	70,000	0,17
Indonesia	40,000	49,000	62,000	63,000	63,000	12,30
Kenya	11,612	13,082	13,974	13,500	13,500	3,38
Malaysia	8,106	7,271	7,900	9,980	9,980	7,60
Mexico	11,555	12,05	14,159	15,243	17,906	11,75
Philippines	37,432	42,968	44,042	46,000	46,000	4,92
South Africa	6,200	6,500	6,500	6,500	6,500	0,95
Thailand	99,200	97,760	91,840	79,520	80,000	-6,17
Vietnam	36,200	36,500	37,500	41,200	42,400	4,47
World	731,228	754,461	804,807	806,695	794,596	2,36

Source: Food and Agricultural Organization (FAO), www.fao.org
For more information on exponential growth please refer to www.wikipedia.org

1.3. INTERPRETATION OF DATA

At first glance, these figures are not surprising. However, by comparing Indonesia – 63.000 ha and 467.000 MT of fresh fruit – with China – 62.100 ha and 1.316.000 MT – we notice a big difference in yield per ha (MT/ha).

Furthermore, the exponential growth rate (GRRE) should be seen as pars pro toto and not as an isolated figure. Take, for example, Indonesia and Mexico, which have the highest GRRE in both terms of areas harvested and production. But, the growth in fruit output is lower than the growth of areas harvested. Therefore, their yields per ha have been declining over the past 5 years.

Brazil, Colombia, Indonesia and South Africa have a balanced proportion of GRRE's and their yields had been quite stable throughout the period 1999-2003.

Costa Rica, Malaysia and China have faced a sharp decline in yields. The amount of cultivated hectares has increased more or less constantly but output did not grow at the same rate. Only Vietnam and India have experienced a growth in yield per ha since 1999, as their pineapple production's GRRE clearly exceeds the harvested area's GRRE.

These figures show the complexity of the pineapple market.

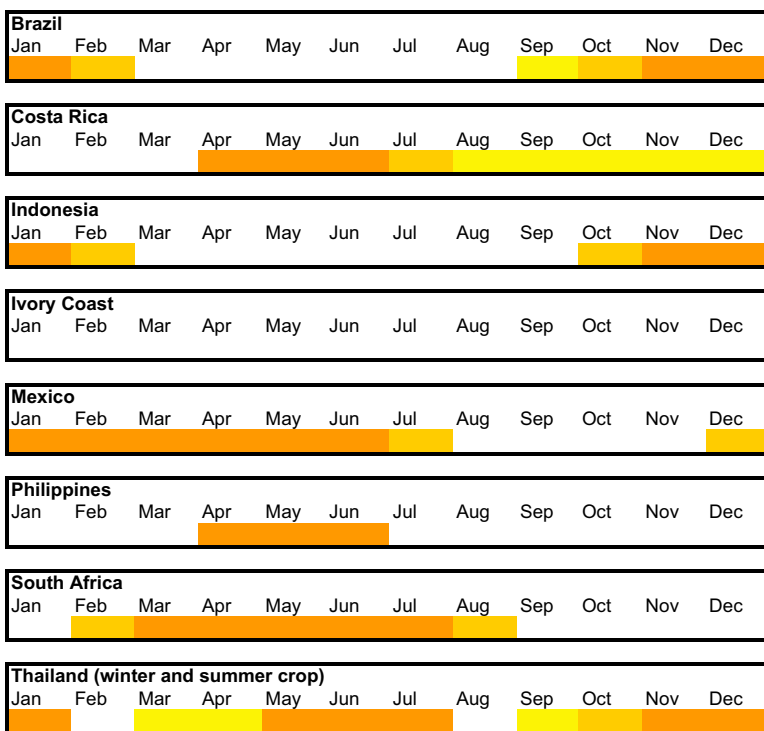
- Highest fruit output and largest areas harvested (1999-2003): Thailand, Philippines, Brazil, China and India
- Highest exponential growth rates (GRRE) in both fruit output and areas harvested (1999-2003): Indonesia, Vietnam and Mexico. Lowest GRRE (1999-2003): Thailand
- Highest growth in yield per ha (1999-2003): Vietnam and India. Lowest growth in yield per ha (1999-2003): Costa Rica
- Largest fresh fruit exporters: Costa Rica, Côte d'Ivoire, Philippines
- Largest canners: Thailand and Philippines
- Largest processors of NFC juice and concentrates: Thailand, Indonesia

1.4. OUTLOOK

It is expected that problems related to acidity and nitrate as well as to colour, taste and flavour profile are going to continue in Thailand. The typical monoculture problem: More fertilizers have to be used in order to generate higher yields and this in turn will affect the soil and the quality of fruit – a vicious circle !

European buyers will have to import NFC pineapple juice and concentrate from other origins to bring the nitrate

CROP CHART:



content down to the level permitted by AIJN (max. 15 mg/kg in NFC juice) and enhance the sensorial properties of their finished product (NFC juice resp. juice or nectar made from concentrate).

The market share of premium varieties like "Perola" and hybrids as "MD-2" will continue to grow, whereas the dark varieties ("Queen's") will be on the decline.

Thus, in the long run, Thailand is expected to lose part of its predominance in the fruit juice processing and canning sector. China, Indonesia, Philippines and Vietnam could emerge as big players in the market provided that these countries do not enter the vicious circle, described above.

CROPS AND CROP CYCLES

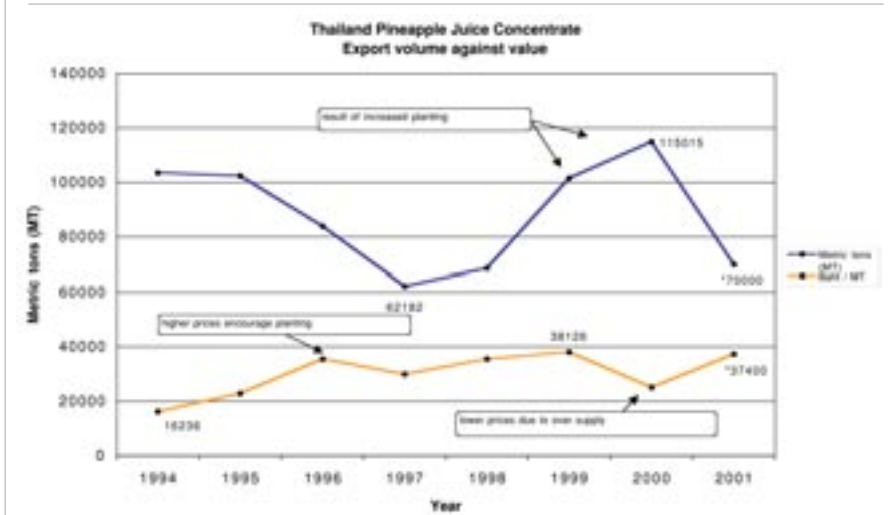
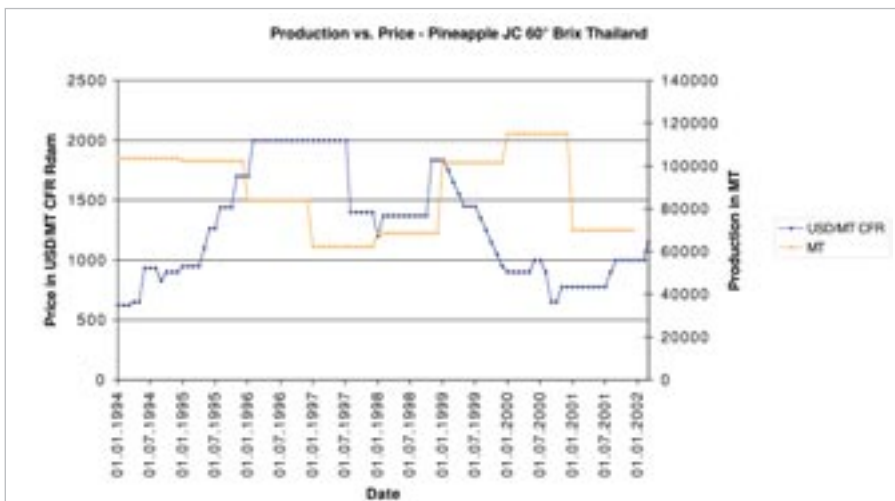
2.1. CROPS

The crop chart (top left) is based on data given by various well-known and established companies. Of course, unusual weather conditions may change the pattern. Therefore, the reader is kindly asked to use this information as a merely tentative and not as a definite tool.

2.2. CROP CYCLES IN THAILAND

These graphs illustrate the 3 year crop cycle 1996/1997-1999/2000 with its main features:

- Production in 1994 was >100.000 MT and both the fresh fruit and export prices experienced their lowest levels for years – fruit at less than 1,75 Baht/kg and export prices at USD 600-650.-/MT CFR Rotterdam, transit
- In mid 1996, gradually higher fruit prices (> 3.- Baht/kg) encouraged the farmers to plant pineapple -> pro-cyclical behaviour. Export prices rose till they were reaching their peak at USD 2.000-2.200.-/MT CFR Rotterdam, transit.



Source: Foodnews (2002 and 2003), www.agra-net.com



- 1997 is a difficult year with low production volume (62.000 MT) and after summer crop 1997, export prices dropped below USD 1.500.-/MT CFR. As fresh fruit prices were still high, farmers continued to plant.
- The period of growth (vegetation period) required for a pineapple plant before it is ready to harvest is 18-24 months. In 1998 production output got back to normal, reaching approx. 80.000 MT. Export prices oscillated between USD 1.200.-/MT and USD 1.400.-/MT CFR.
- The full impact of increasing planting in 1996-1997 can be seen 3 years later in 1999-2000, as the production volume exported surpassed 100.000 MT in 2000. Export prices fell below the USD 1.000.-/MT barrier, reaching the level they had in 1994. Fresh fruit prices slid down to 2,50 Baht/kg, demoralizing farmers.
- In 2001 export prices recovered and so did the fresh fruit prices, motivating the farmers to plant fruit. The cycle started again...

Of course, this cycle does not repeat itself automatically. Very often, weather conditions, like last year's flood and

this year's heat wave in Thailand change the pattern and interrupt the cyclical movement.

3. ACKNOWLEDGEMENTS

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