

Physo-chemical properties and current postharvest practices on main fruits varieties in the South of Vietnam



Nguyen Van Phong and Nguyen Thi Ngoc Truc
Southern Horticultural Research Institute



AREA OF FRUIT PRODUCTION OF VIETNAM, 2010

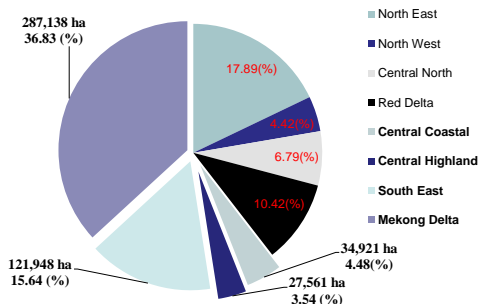


Fig 1. Cultivated area of fruits in Viet Nam in 2010

V I E T N A M P R O F I L E



- Vietnam (Vietnamese: Việt Nam), officially the Socialist Republic of Vietnam.
- Vietnam is located in the Indo-Chinese Peninsula, Southeast Asia.
- The area is **329,314 km²** and **1,650 km** lengthwise, border is contiguous to China, Lao PDR and Cambodia.
- Population: about **87 millions**.
- Vietnam is a **subtropical country** with two seasons (rain and dry) in Southern provinces and four seasons in the North.
- The cultivated surface makes up **7,007,874 hectares**.

Table 1. Fruit production area in various provinces belonging Mekong Delta Region, 2010

Mekong Delta provinces	Area (ha)	Percentage (%)
Long An	7,582	2.64
Đồng Tháp	23,738	8.27
An Giang	8,490	2.96
Tiền Giang	67,553	23.53
Vĩnh Long	38,928	13.56
Bến Tre	32,050	11.16
Kiên Giang	13,269	4.62
Cần Thơ	14,266	4.97
Hậu Giang	22,962	8.00
Trà Vinh	18,072	6.29
Sóc Trăng	26,217	9.13
Bạc Liêu	5,764	2.01
Cà Mau	8,248	2.87
Total	287,138	100.00

2. PRESENT SITUATION OF PRODUCE AND MARKET OF FRUIT TREES

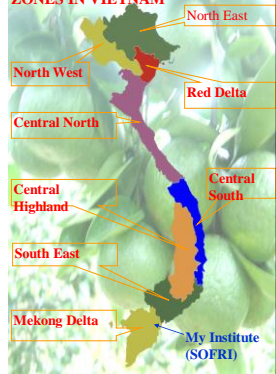
2.1 Area, productivity, yield

•In 2010, fruit trees area were 779,622 ha

Northern provinces: 308,063 ha (Red river Delta: 81,217 ha, Northeast: 139,479 ha, Northwest: 34,439 ha, North center: 52,928 ha),

Southern provinces: 471,558 ha (central coastal provinces: 34,912 ha, Central highland: 27,561 ha, South east: 121,948 ha and Mekong Delta: 287,138 ha)(Fig. 1).

8 AGRICULTURAL PRODUCTION ZONES IN VIETNAM



2.2 Distribution of fruits and production area in The South of Viet Nam

- Range of fruits in the South of Vietnam is plentiful and diverse, especially concentrated in the Mekong Delta Region, many unique fruit crops from local selection and import (Lò rên milk fruit, Hoa Loc mango, Com Vang Hat Lep durian (yellow flesh and thin seeds durian, Ri 6 durian, Cai Mon, MonThong durian, Da xanh pomelo, Năm Roi pomelo, Thailand mango ...) are very popular in domestic market and more returns for growers from market.
- Distribution of fruit production area in 2010 showed in the following table.

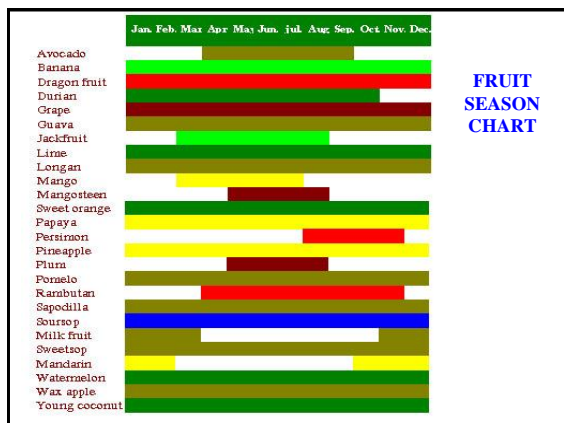
FRUITS IN SOUTH OF VIETNAM



Production area and yield percentage by crop

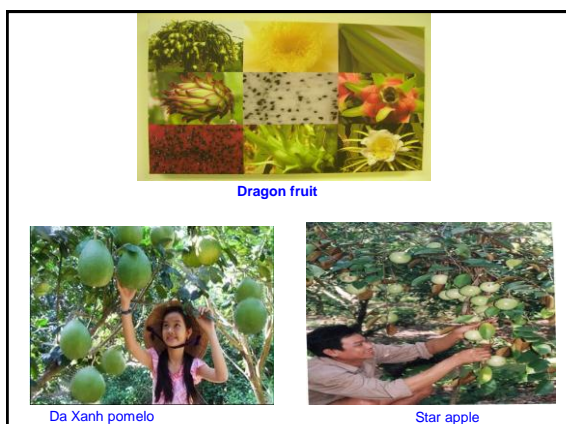
Fruits	Cultivated Area (ha)	Yield (tone)	Yield percentage (%)
Orange	40,991	426,694	10.32
Mandarin	8,063	127,838	3.09
Pomelo	31,750	285,904	6.91
Pineapple	26,962	369,974	8.94
Banana	71,708	829,841	20.06
Mango	75,523	533,010	12.89
Longan	47,678	443,123	10.71
Rambutan	23,041	278,012	6.72
Dragon fruit	14,968	328,203	7.93
Durian	17,565	107,489	2.60
Lime	11,130	136,104	3.29
Guava	666	12,117	0.29
Persimmon	2,261	21,948	0.53
Sweetsoup	8,156	68,521	1.66
Mangosteen	4,561	14,109	0.34
Jackfruit	8,750	97,092	2.35
others	5,309	56,538	1.37

Source: Bureau of Vietnamese Horticulture, 2010



2.3 Consumption

- domestic markets and used as fresh and partly distributed by collectors.
- The supply chain is formed but it is not appropriate structure in large scale and thus caused unstable and unbalance in distribution, and sometimes low fruit price
- A glance on supermarkets indicated that there is a diversity and range of local fruits in term of quantity and quality, and the same to imported ones from Thailand (green mangoes, durian, mangosteen...) Australia, Chile and US (grape, apples...) are more favored by customer due to good appearance as well as long shelf life.
- In term fruit trade, long before, only some factories located at Kien Giang, Tien Giang, Long An provinces and HCM city, had contracts with farmers for pineapple consumption. Nowadays, most of the companies of Vinamit, Dona Techno, and Metro, Coopmart...supermarkets sourced from contracted fruit growers. However, this is just tempory contract and insecurity for long term and sustain for market.



Status of fruit and vegetable export

- Major export fruits are pineapple, dragon fruit, banana, rambutan, mango, longan, lychee, mangosteen, durian. During 2004-2008, export volume (official) in average of 260 000 tones/year and exportation value is USD \$75 mil. /year.
- Fruit quality & safe are increasingly demanded for both domestic and international markets, especially at exported markets. Hence, Vietnamese fruits will definitely be faced challenges for exportation in future.

General characteristics of postharvest fruits in The South of Viet Nam

- Short shelf life and very perishable
 - Suffer from postharvest diseases
 - Rainy season, high humid
 - Suffer from physical damages
 - Small scale production (0,5-1 ha), poor infrastructure and lack of technology investment.
- In general postharvest losses are relative high

- The export markets have been extended from 13 (2004-2006) to 16 (in 2007) and 17 in 2008, and the main export markets are China, Taiwan, Hongkong, Thailand, Singapore, Holland, Russia, Japan, US and Australia.
- China has been the largest consumption market for Vietnamese fruits. Moreover, there is also a challenge market for Vietnamese fruit in future. Because China has contracted with Thailand for a special import duty and thus it made more competition for Vietnamese fruit in China market.

PINEAPPLE

- ♦ Total production area: 26,962 ha; total yield: 369,974 tones
- ♦ Grown in Tien Giang, Hau Giang, Kien Giang and Quang Nam



"Queen" pineapple

Characteristics	Queen cultivar	Cayenna cultivar
Harvesting index	90-100 Days , AF	105-115 Days, AF
Av. Weigh (kg)	1-1,5	1,5-1,9
TSS (%)	15-18	14,5-16
Flesh percentage %	57-58	65-68
Flesh color	yellow	yellow
Juice (%)		84-85



"Cayenna" pineapple

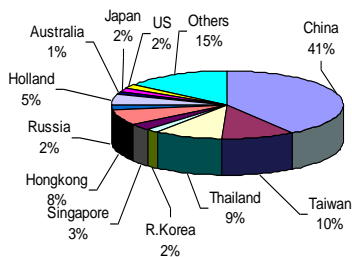
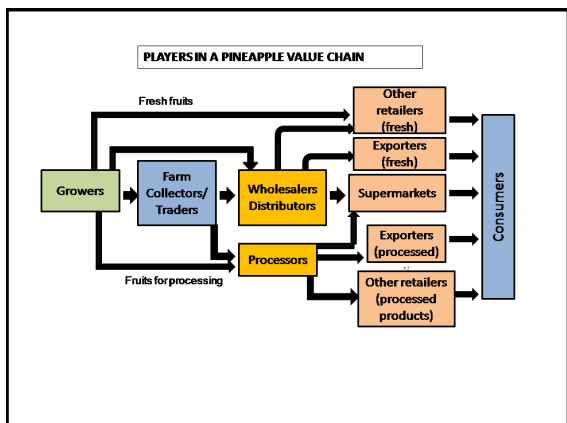


Fig. Fruit export market share in 2008

PINEAPPLE PRODUCTION IN Tien Giang Province – SOME FARMERS CERTIFIED G







Pomelo

- ❖ Total production area: 31,750 ha; total yield: 285,903 tones
- ❖ Grown in Ben Tre, Vinh Long, Tieng Giang, Soc Trang, Hau giang, Tra Vinh and Dong Nai


Characteristics	Da xanh	Nam Roi
Harvesting index	28-29 weeks , AF	6,5-7,0 months, AF
Av. Weigh (kg)	1,6-2	1,2-1,4
TSS (%)	9,7-10,4	9-11
Flesh percentage %	≥ 60	≥ 60
Flesh color	Light yellow	Pink
Juice (%)		



Cultivar "Nam Roi"



Cultivar "Da xanh"




"Duong la cam"


Dragon fruits

- ❖ Total production area: 14,968 ha; total yield: 328,203 tones
- ❖ Grown in Binh Thuan, Dong Nai, Long An, Tien Giang

Characteristics	White flesh	Red flesh
Harvesting index	30 – 34 days, AF	29 – 32 days, AF
Av. Weigh (kg)	0.36 – 0.38	0.38 – 0.4
TSS (%)	14.9	16 - 17
Flesh percentage %	73-75	65 - 70
Flesh color	white	Red
Juice (%)		



Red Flesh "



Pink flesh




MANGO


❖ Total production area: **75,523** ha; total yield: **533,010** tones

❖ Grown in Mekong Delta & South East Provinces

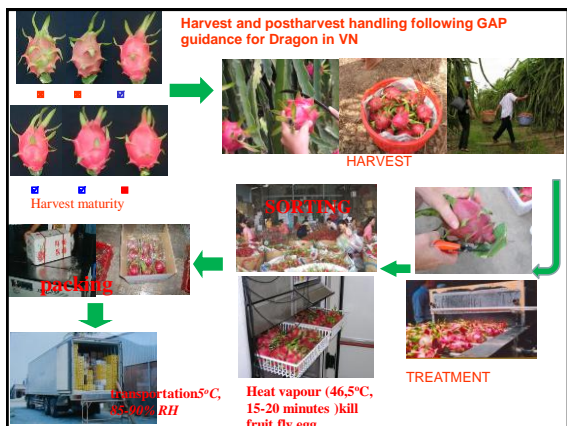
Characteristics	Hoa Lộc	Cát Chu
Harvesting index	105-120days, AFS	95-105 days, AFS
Av. Weigh	400-600 g	300-350g
TSS (%)	20-22	18-20
Flesh percentage %	78-80	76-78
Flesh color	Yellow	Yellow
Juice (%)		



Cat Chu



Cat Hoa Loc




Rambutan


❖ Total production area: **23,041** ha; total yield: **278,012** tones

❖ Grown in Ben Tre, Tien Giang, Vinh Long, Tra Vinh and Dong Nai provinces

Characteristics	Java	Rong Rieng
Harvesting index	100-110 days, AF	112-122 days, AF
Av. Weigh	32-34 g	32-34
TSS (%)	19-22	20- 21,9
Flesh percentage %	50-51,5	51-53
Flesh color	white	White
Juice (%)		



Java



Rong Rieng

Postharvest practices

- Harvest by hand
- Package in field or after transporting to packing house
- Most of cases is no washing
- Some case, rambutan fruit is dipped in cold water and dried and wrapped with plastic film on foam tray and put in in carton boxes.



Durian

- ❖ Total production area: 17,565 ha; total yield: 107,490 tones
- ❖ Grown Tieng Giang, Ben Tre, South East provinces



Ri-6

Characteristics	Com Vang Hat Lep	Ri-6
Harvesting index	100-110 days AFS	105-120 days AFS
Av. Weigh	2,6-3,2 kg	2-2,5 kg
TSS (%)	20-23	25-27
Flesh percentage %	29,5-30	32-33
Flesh color	Yellow	Yellow
Juice (%)		



Com Vang hạt lép

Longan

- ❖ Total production area: 47,678 ha; total yield: 443,123 ton
- ❖ Grown in Mekong Delta and South East provinces



Tieu Da Bo

Characteristics	Xuong CVang	Tieu Da Bo
Harvesting index	4-4,5 months, AFS	4-5 months, AFS
Av. Weigh	16-25 g	8-12
TSS (%)	22-24	22-24
Flesh percentage %	60-70	50-55
Flesh color	yellowness	Yellowness
Juice (%)		



Xuong Com Vang

Seedless orange

- Seedless, weight of fruit: 180-220g; Thick skin 3,5-4,2 mm; 10-11 segments, juice 30-42%; Brix: 8-10%, pH 3,9-4,2, total acid 0,6-0,7g/100ml ;
- Yeild 20-30kg/tree/year, (tree >5 years old);
- Harvesting time: 33-34 weeks after blooming,
- Fruit can stored at 8°C in 12-13 weeks.
- Location: South VN



King mandarin, sweet orange: seedless

Longan: Postharvest practices

- Harvest by hand
- Packed in Plastic basket and treated with SO₂ for improving the color of peel.



CONCLUSION

- Fruits in the South of Vietnam is plentiful and diverse. However, the postharvest life is short and and very perishable
- Postharvest practices on fruit are poor and lack of technology investment.

Thank you for your attention !

