



# PASSION FRUIT

*Passiflora edulis*

Passifloraceae family

Origin: tropical America



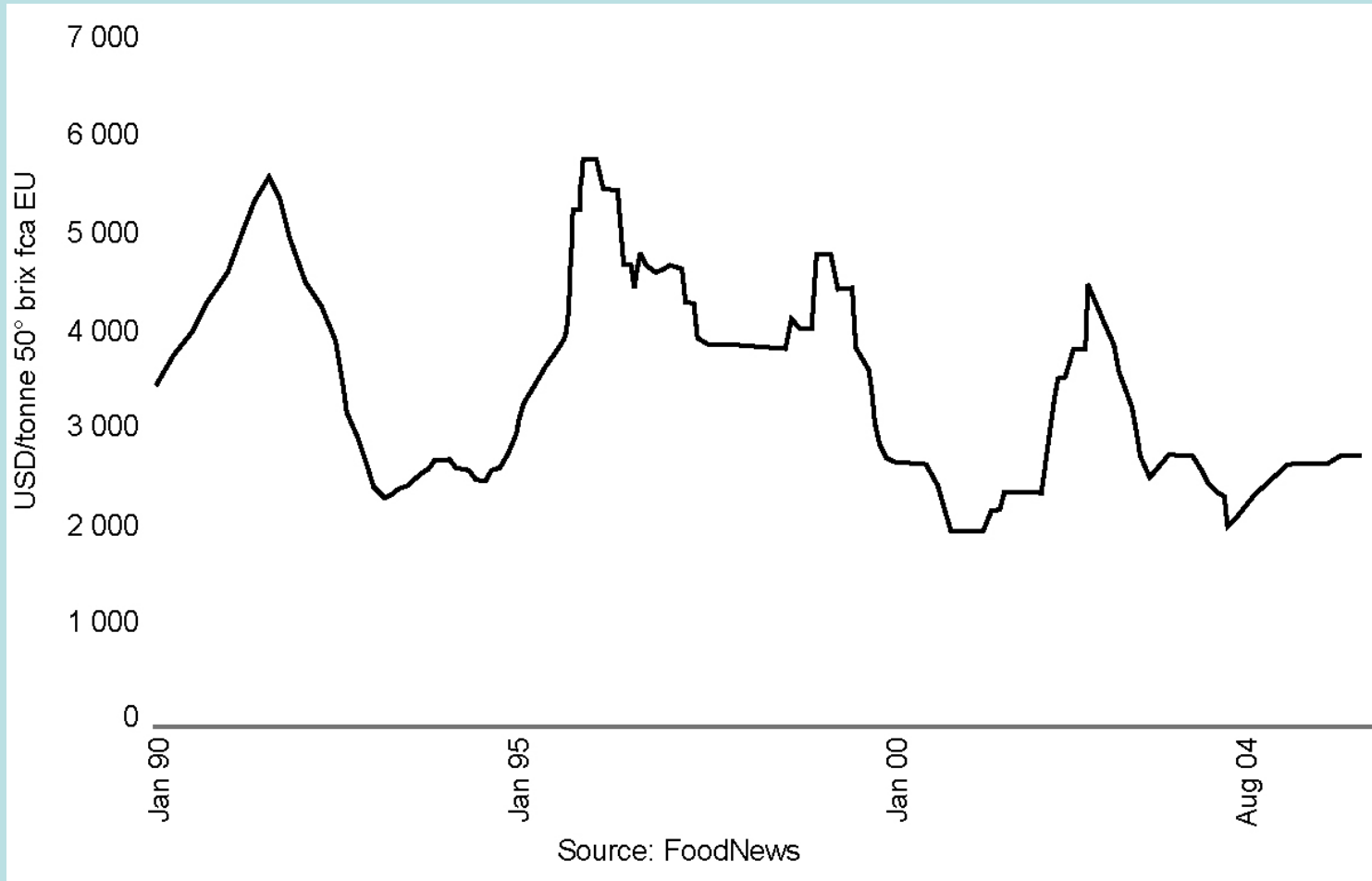
Christian DIDIER



# Introduction to *Passion Fruit*



# Juice market



## Ecuador — Passion fruit concentrate exports — Tonnes

|                | 2002          | 2003          | 2004          |
|----------------|---------------|---------------|---------------|
| Netherlands    | 7 369         | 16 754        | 14 318        |
| United States  | 1 619         | 2 335         | 4 070         |
| United Kingdom | 283           | 534           | 876           |
| Germany        | 150           | 325           | 869           |
| Australia      | 68            | 164           | 447           |
| Canada         | 145           | 188           | 396           |
| Belgium        | 619           | 733           | 384           |
| Israel         | 175           | 100           | 150           |
| South Africa   | 36            | 108           | 121           |
| France         | 50            | 138           | 92            |
| Others         | 1 581         | 1 139         | 648           |
| <b>Total</b>   | <b>12 095</b> | <b>22 518</b> | <b>22 371</b> |

# Botanical Description

The family *Passifloraceae* includes 550 species in 12 genera

The passion fruit plant is a subtropical

The leaves are evergreen, 3-lobed and finely toothed. They are 3-8 inches long, and a deep glossy green. Some varieties have leaves tinged with red or purple  
The flowers are single and fragrant, 2-3 inches wide and borne at a node on the new growth.



In most countries passion fruit production is based on cultivars of the golden passion fruit (*p.edulis f. flavicarpa*).

The major exceptions are South Africa, Kenya and New Zealand where production is dependent on lines of the purple passion fruit (*P.edulis*) and in Australia where hybrids between the two forms are exploited.

The purple passion fruit (*passiflora edulis*), is adapted to the coolest subtropics or to high altitudes in the tropics, while the golden passion fruit (*p.edulis f. flavicarpa*) is more suited to tropical lowland conditions.

# Species and Varieties

- *Passiflora edulis*

Purple or violet passion fruit



- *Passiflora edulis* (Var) *Flavicarpa*

Yellow passion fruit



- *Passiflora ligularis*

Violet red passion fruit



- *Passiflora caerulea*

Blue Crown



## Commonly Grown Passion Fruit Types

| Passion Fruit Type               | Common Name          | Temperature Requirements |
|----------------------------------|----------------------|--------------------------|
| <i>Passiflora incarnata</i>      | May Apple            | 10°C - 20°C              |
| <i>Passiflora ligularis</i>      | Sweet Granadilla     | 18°C - 28°C              |
| <i>Passiflora lutea</i>          | NA                   | 10°C - 24°C              |
| <i>Passiflora molissima</i>      | NA                   | 12°C - 20°C              |
| <i>Passiflora quadrangularis</i> | Giant Granadilla     | 18°C - 28°C              |
| <i>Passiflora antioquiensis</i>  | NA                   | 10°C - 20°C              |
| <i>Passiflora edulis</i>         | Common Passion Fruit | 15°C - 28°C              |



# Nutritional facts

| <b>Nutrient</b>                | <b>Units</b> | <b>Value per<br/>100 grams of<br/>edible portion</b> |
|--------------------------------|--------------|------------------------------------------------------|
| Water                          | g            | 72.93                                                |
| Vitamin C, total ascorbic acid | mg           | 30.0                                                 |
| Energy                         | kj           | 406                                                  |
| Protein                        | g            | 2.20                                                 |
| Total lipid (fat)              | g            | 0.70                                                 |
| Carbohydrate, by difference    | g            | 23.38                                                |
| Fiber, total dietary           | g            | 10.4                                                 |
| Ash                            | g            | 0.80                                                 |

# AGRONOMY

- **Propagation**

- ➔ Plants can be propagated by seed

- ➔ Grafting is also used to propagate purple passion fruit on hardier rootstock (yellow passion fruit).



# PLANTING

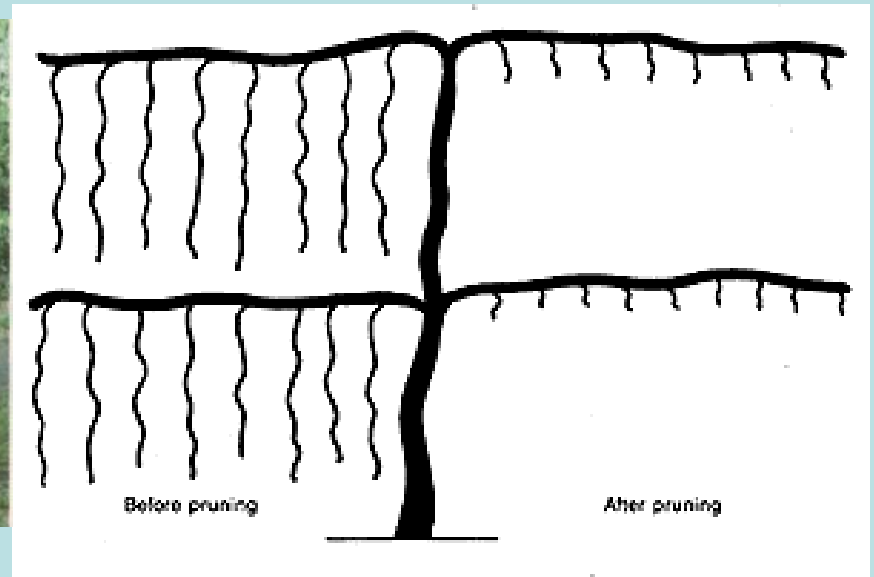
**in Venezuela the highest yields of yellow passion fruit are obtained when the vines are set 3m apart each way**

**In South Africa, purple passion fruit vines are set 2.5 metres apart in cool areas and 3.5 - 4.5 m apart in warm areas**

**In other areas plants are planted 2 m apart in rows 1.2 m apart.**



# Pruning methods



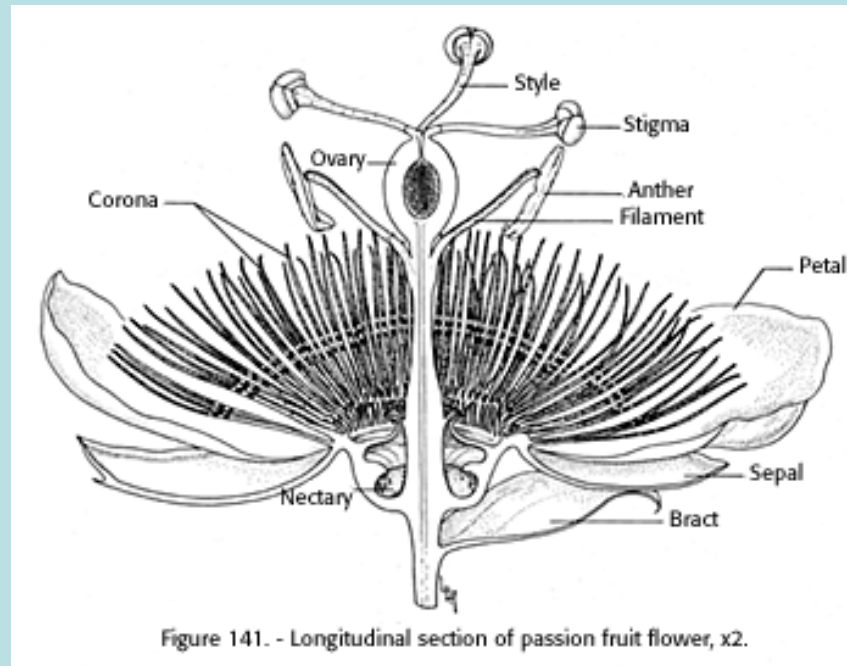
**This sketch illustrates passionfruit vine before pruning (at left), and after pruning (at right).**

**Laterals should be cut back to 10-15 cm from the leader**

# POLLINATION

Pollination is essential for fruit production on passion vines. Flowers of the purple passion vine normally set fruit when self-pollinated

Most cultivars of yellow passionfruit are self-incompatible therefore cross-pollination is necessary. Some natural pollinators of passionfruit in St. Lucia are the Carpenter Bee (*Xylocopa sonorina*) and the honeybee (*Apis mellifera*). It has been proven that hand pollination increases fruit yield in passionfruit.



# Pests and Diseases

- Aphids *Aphis gossypii* and *Myzus persicae*
- Thrips (*Thysanoptera* sp)
- Leaf miner
- Fruit flies
- Mealy bugs (*Planococcus citri*)



Nematodes *Meloidogynae javanica*



Fusarium wilt (causing Crown Canker)



Fruit spots *Septoria passiflorae* , *Alternaria passiflorae*



**Woodiness virus** is a poty virus that is an important disease of this crop



Phytophthora blight  
*Phytophthora cinnamoni*  
and *P.nicotianae* var.  
*parasitica*



# Horticultural Maturity Indices

- Fruit are harvested when they are  $\pm 75\%$  turning yellow or purple
- Purple passion fruit at the light-purple stage are more suitable for long distance transport.  
Normally,
- the respiratory climacteric occurs on the vine. Fruit harvested earlier have an unripe flavor. In some cases, fruit are allowed to abscise and fall, and are then picked up from the ground.

# Grades, Sizes and Packaging

- Fruit should have a diameter of 5 to 8 cm for purple and 6 to 8 cm for yellow.
- Skin color should be full yellow or purple, unless a hybrid. Fruit are packed in
- 6 and 4.5 kg fiberboard cartons, sometimes in one- or two-layer trays or cell packs.



# Optimum Storage Conditions

- Yellow passion fruit should be stored at 7 to **10 °C** with 90 to 95% RH. They will have a potential storage-life of 2 weeks. Purple passion fruit are chilling tolerant and can be stored at **3 to 5 °C** for 3 to 5 weeks.

Thank you for your attention

