Sweet or Bitter?

Sustainability Hotspots in Europe's favourite juice flavour
Content

I) How is the sector organised?
II) The physical dimension of orange juice
III) Environmental hotspots: Example pesticides
IV) Social Hotspots
How is the sector organised?

• Retail
• Bottler
• Juice producer
• Plantations & Farms
In 2010, five large retail chains controlled more than 70 percent of the retailing market in 11 European countries.

A key retail strategy is development of store brands, a chain’s own private label. Store brand products are sold at a lower price than most branded competitors.

A store-brand orange juice will cost about 85 cent...
Volume of orange juice purchased, in tonnes of FCOJ equivalent to 66° Brix

- 2009/10
- Other 600 Bottlers: 669,500 (29%)
- 21st to 30th Bottler: 176,000 (7.5%)
- 11th to 20th Bottler: 269,700 (11.5%)
- 10 Largest Bottlers: 1,221,800 (52%)

Total Volume: 2,500,000
Juice and concentrate producers

Three companies – 50% world market share

citrosuco

CUTRÀLE

Louis Dreyfus Commodities
Producers

Production: in 2009 over 12,000 producers on 800,000 hectares

The three juice companies own about 50% of the production

Concentration process:
2001:
46% of the trees belong to 2.85% of the growers

2009:
46% of the trees belong to 0.95% of the growers
### Waterfootprint and CO$_2$-emissions over the whole life cycle

<table>
<thead>
<tr>
<th>Production</th>
<th>Processing</th>
<th>Transport to Europe</th>
<th>Bottler</th>
<th>Retail</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.6 million tons of oranges produced on 276 thousand Hectares of plantations</td>
<td>802 thousand tons of FCOJ plus 650 thousand tons NFC</td>
<td>5.5 Billion litres of orange juice</td>
<td>About 452 thousand tons of packing material (15% carton, 17% plastic; 66% glass) from 3.5 billion cartons, 1.5 billion plastic bottles and 461 million glass bottles</td>
<td>56 glasses of OJ consumed in EU per person per Year</td>
<td></td>
</tr>
</tbody>
</table>

**Water Footprint:** 5.2 Billion liter

**CO$_2$-Footprint:** 5.6 Million tons of CO$_2$ eq.
Integrated production refers to a sustainable farming system that produces high quality food and other products... by using natural resources and regulating mechanisms to replace polluting inputs...
### The IPM List for orange production:

<table>
<thead>
<tr>
<th>Substances listed</th>
<th>Information on toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abamectin</td>
<td>Highly toxic for birds, fish, aquatic organisms, toxic for reproduction (EU Cat.2)</td>
</tr>
<tr>
<td>Beta-cyfluthrin</td>
<td>Neurotoxic; WHO highly hazardous pesticide (1B)</td>
</tr>
<tr>
<td>Chlorpyrifos</td>
<td>Highly toxic for birds, fish, bees, aquatic organisms, neurotoxic, toxic for reproduction</td>
</tr>
<tr>
<td>Cypermethrin</td>
<td>Highly toxic for aquatic organisms</td>
</tr>
<tr>
<td>Dimethoate</td>
<td>Toxic for reproduction</td>
</tr>
<tr>
<td>Spinetoram</td>
<td>Toxic for reproduction</td>
</tr>
<tr>
<td>Spirodiclofen</td>
<td>Suspected of being carcinogenic; toxic for reproduction; neurotoxic</td>
</tr>
<tr>
<td>Etofenprox</td>
<td>Toxic for reproduction</td>
</tr>
<tr>
<td>Fenpyroximate</td>
<td>Toxic for reproduction</td>
</tr>
<tr>
<td>Flufenoxuron</td>
<td>Not permitted in the EU; toxic for lactation: May cause harm to breast-fed children</td>
</tr>
<tr>
<td>Phosmet</td>
<td>Toxic for reproduction; neurotoxic; highly toxic for bees and birds</td>
</tr>
<tr>
<td>Hexythiazox</td>
<td>Suspected of being carcinogenic</td>
</tr>
<tr>
<td>Imidacloprid</td>
<td>Toxic for reproduction</td>
</tr>
<tr>
<td>Malathion</td>
<td>Neurotoxic</td>
</tr>
<tr>
<td>Imazalil*</td>
<td>Toxic for reproduction</td>
</tr>
<tr>
<td>Tebuconazole</td>
<td>Toxic for reproduction</td>
</tr>
<tr>
<td>Thiamethoxam</td>
<td>Highly toxic for bees</td>
</tr>
<tr>
<td>Trifloxystrobin</td>
<td>Toxic for reproduction</td>
</tr>
<tr>
<td>Diquat dibromide</td>
<td>Inhalation may be dangerous to life, extremely persistent in the soil, toxic for birds, fish, bees, earthworms</td>
</tr>
<tr>
<td>Paraquat dichloride</td>
<td>Not permitted in the EU; Inhalation may be dangerous to life, suspected of being carcinogenic; toxic for reproduction</td>
</tr>
<tr>
<td>Diuron</td>
<td>EU carcinogenic level 2; suspected of being toxic for reproduction</td>
</tr>
<tr>
<td>Glyphosate</td>
<td>Carcinogenic according to WHO</td>
</tr>
<tr>
<td>Glufosinate-ammonium</td>
<td>EU toxic for reproduction level 2; neurotoxic</td>
</tr>
<tr>
<td>Gibberellic acid</td>
<td>Suspected of being mutagenic (BPDB)</td>
</tr>
<tr>
<td>Fipronil</td>
<td>Highly toxic for bees, birds, aquatic organisms, neurotoxic, suspected of being carcinogenic and toxic for reproduction (Use in EU is restricted)</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>Probably carcinogenic. Highly toxic for aquatic organisms; not permitted in Austria, Germany and Switzerland</td>
</tr>
</tbody>
</table>

The list was elaborated with the approval of the Agriculture Ministry, Health Ministry and... Pesticide manufacturers.
The official attitude...

**Good News**

- Agrochemicals not poisonous
  - News from March 5th, 2013 | 2h 05
  - free translation from part of the article (with permission)

Author: Xico Graziano

- Xico Graziano is an agronomist and ex. Environmental Secretary for São Paulo State
- E-mail: xicograziano@terra.com.br
But aren´t pesticides safe if used properly...

Using pesticides “properly” requires:
- Specific training and education
- Understanding of the problems and dangers
- The right equipment and infrastructure in place
- Control mechanisms and auditing

This means: investment of time – investment of money
The reality will often looks like this:

So what does it really mean on the ground when “a pesticide is safe when used properly”? 

Additionally some Pesticides...

- Accumulate in the environment – reducing the amount will only delay problems
- Endocrine Disruptors: also very small amounts can be very reactive in the body
- Pesticides are an environmental & health & social problem
Proper pest management may mean that production costs go up....

But ...

do consumers really want to drink OJ that was produced with some of the world most toxic herbicides, partly banned in their countries for good reasons?

should not all costs of production - including those now externalised – be reflected in the price of a product?
Core problems within the supply chain of orange juice are:

- precarious employment,
- discrimination,
- lack of health and safety protection,
- low wages
- extraordinary working hours.
“There is no respect for human rights. Workers who bring in the harvest for these companies are not chained up as slaves once were. Different means are used to keep them captive.”
Outsourcing

Systematic outsourcing is the root of modern system of slavery in the Brazilian orange crop
- Lower pay
- Poorer conditions
- Fear that they will lose their jobs.
“There is no freedom of speech, no freedom to raise complaints, to demand workers’ rights. Workers are punished if they lodge a complaint. They are warned, suspended or put on a “black list”, if they call anything into question.”
“We don’t even know, how much we will receive per crate for each day”
• Low prices paid by the juice cartel often do not even cover production costs
• Numbers of landless plantation workers are constantly growing.
Thank you!