Content...

- Background to SA Citrus industry
- UNECE Citrus standard elaboration:
  - Varieties
  - Minimum requirements
  - Maturity requirements
  - Classification
  - Sizing
  - Tolerances
  - Presentation
  - Marking requirements
Industry background...

First recorded exports 1907

- 1998 – 754,000 pallets
- 2003 – 1 million pallets
- 2008 – 1.3 million pallets
Industry background cont...

- 1480 production units
- ± 57000 ha in total
- ± 185 pack houses
- **Total production - 1,8 million metric tons**
  - Exports – 64%
  - Processed – 19%
  - Local consumption – 17%
Statistics

- SA Production world ranking – 14th
Statistics...

- SA Export world ranking – 2nd
Citrus Big Five...

- Orange: 24%
- Grapefruit: 43%
- Tangerine: 7%
- Lemon: 9%
- Blood Orange: 17%

PPECB
your passport to international trade
**SA Citrus fruit availability**

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oranges</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grapefruit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft citrus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
concerning the marketing and commercial quality control of citrus fruit.
Definition of produce...

This standard applies to citrus fruit, to be supplied fresh to the consumer.
Citrus Varieties...

**lemons** - *Citrus limon*

**Persian limes** - *Citrus latifolia* (Yu. Tanaka) Tanaka which is a large fruited acid lime known also as Bearss, Tahiti and hybrids thereof.
Citrus Varieties...

Mexican limes - *Citrus aurantiifolia* (Christ.) Swingle, also known as key limes and sour limes and hybrids thereof.

Indian sweet limes, Palestine sweet limes – *Citrus limettioides* Tanaka
Citrus Varieties...

mandarins (Citrus reticulata Blanco), including satsumas (Citrus unshiu Marcow.), clementines (Citrus clementina hort. ex Tanaka), common mandarins (Citrus deliciosa Ten.) and tangerines (Citrus tangerina hort. ex Tanaka) grown from these species and its hybrids
Citrus Varieties...

oranges of varieties (cultivars) grown from the species *Citrus sinensis* (L.) Osbeck
Citrus Varieties...

grapefruit of the varieties (cultivars) grown from the species *Citrus paradisi* Macfad. and its hybrids

pummelos or Shaddock of varieties (cultivars) grown from the species *Citrus maxima* (Burm.) Merr. and their hybrids.
citrus fruit for industrial processing is excluded...
Provisions concerning quality...

purpose of the standard is to define quality requirements at the export control stage after preparation and packaging...
Provisions concerning quality...

• however, if applied at stages following export products may show:

• a slight lack of freshness

• in Class 1 and 2 – slight deterioration due to their development (post harvest) and their tendency to perish
Minimum requirements...

• intact

• free of bruising and/or extensive healed over cuts

• sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded
Minimum requirements...

- clean, practically free of any visible foreign matter
- practically free from pests
Minimum requirements...

free from damage caused by pests affecting the flesh
Minimum requirements...

- free of signs of internal shrivelling

- free of damage caused by low temperature or frost
Minimum requirements...

- free of abnormal external moisture
- free of any foreign smell and/or taste
- the development & condition of the fruit must be such:
  - to withstand transportation and handling
  - arrive in satisfactory condition
Maturity requirements...

Fruit must have an appropriate degree of ripeness taking into account the variety, picking time & growing area

Maturity for the purpose of this std is defined by:

- Minimum juice content
- Minimum sugar content
- Minimum sugar/acid ratio

Colouring
## Maturity requirements...

<table>
<thead>
<tr>
<th>Citrus type</th>
<th>Min. Juice (%)</th>
<th>Min. Sugar</th>
<th>sugar:acid</th>
<th>Colouring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemons</td>
<td>20</td>
<td></td>
<td></td>
<td>Typical of variety, green coloured fruit allowed</td>
</tr>
<tr>
<td>Satsumas</td>
<td>33</td>
<td>6.5:1</td>
<td></td>
<td>Typical of variety on at 1/3 of the fruit</td>
</tr>
<tr>
<td>Clementines</td>
<td>40</td>
<td>7.0:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Mandarins &amp; their hybrids</td>
<td>33</td>
<td>7.5:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood oranges</td>
<td>30</td>
<td>6.5:1</td>
<td></td>
<td>Typical of variety. Fruit with light green colour on &lt; 1/5 of the fruit are allowed. Oranges produced in areas with high temp's and high relative humidity during the development period may have a green colour on &gt; 1/5 of the fruit</td>
</tr>
<tr>
<td>Navels</td>
<td>33</td>
<td>6.5:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other orange varieties</td>
<td>35</td>
<td>6.5:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mosambi, Sathgudi &amp; Pacitan &gt; 1/5 green colour</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Orange varieties &gt; 1/5 green colour</td>
<td>45</td>
<td></td>
<td></td>
<td>Must be typical of variety. Greenish colour allowed, Oroblanco - green</td>
</tr>
<tr>
<td>Grapefruit and hybrids</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oroblanco Grapefruit</td>
<td></td>
<td>9</td>
<td></td>
<td>Oroblanco - green</td>
</tr>
<tr>
<td>Pummelos (Shaddocks) and hybrids</td>
<td></td>
<td>8</td>
<td></td>
<td>Typical on 2/3 of the fruit</td>
</tr>
</tbody>
</table>
Maturity requirements...

Colour:

the degree of colouring shall be such that, following normal development the citrus fruit shall reach the colour typical of the variety at their destination point
Colour: one of the most important quality/marketing criteria...
Colour: Lemons...

Allowed in Extra Class, Class 1, Class 2
Colour: Grapefruit...

Allowed in Extra Class, Class 1, Class 2
Minimum requirements...

- must have been carefully picked – unacceptable

- de-greening is allowed - unacceptable
Classification

Three classes:
- Extra Class
- Class 1
- Class 2

Out of Grade
Extra Class
superior quality characteristic of the variety/commercial type
free from defects with the exception of very slight superficial defects

Limit allowed – Extra Class
Class 1

good quality
characteristic of the
variety/commercial type
slight defects are
allowed
must not affect the
general appearance,
quality, keeping quality
and presentation

Sanguinelli
Or Mandarin – stylar rings

Class 1
characteristic of the variety/commercial type
Class 1
defects allowed:
a slight defect in shape
slight defects in colouring
slight skin defects
Class 1

defects allowed:

slight skin defects
Class 1 defects allowed:

- ridging
- oleocellosis

Limit allowed – Class 1
Class 1

slight healed defects due to a mechanical cause including hail damage, rubbing, damage from handling
Class 1 defects allowed:

- oleocellosis
- stem-end breakdown
Class 2

fruit that do not qualify as Extra Class or Class 1 but satisfy the minimum requirements
Class 2
defects allowed:
defects in shape
defects in colouring
skin defects
Class 2

defects allowed: healed defects due to a mechanical cause - hail damage, rubbing, damage from handling superficial healed skin alterations rough skin slight pericarp detachment
Class 2 defects allowed:

oleocellosis

torn navel
stem end breakdown

Class 1

1

2

Class 2

3

Out of grade

4

5

6
protruding navels

Extra Class

1

2

3

4

5

6

Class 1

Class 2

Out of grade
superficial dark silver scurfs

Extra Class

Class 2

Class 1

Out of grade
scale insects...

Presence of scale insects 2

1  2  3
Out of Grade
Out of Grade
Size
determined by the maximum diameter of the equatorial section of the fruit

minimum sizes:

<table>
<thead>
<tr>
<th>Fruit Type</th>
<th>Minimum Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemons</td>
<td>45 mm</td>
</tr>
<tr>
<td>Limes</td>
<td>42 mm</td>
</tr>
<tr>
<td>Satsumas, other mandarin varieties and their hybrids</td>
<td>45 mm</td>
</tr>
<tr>
<td>Clementines</td>
<td>35 mm</td>
</tr>
<tr>
<td>Oranges</td>
<td>53 mm</td>
</tr>
<tr>
<td>Grapefruit and its hybrids</td>
<td>70 mm</td>
</tr>
<tr>
<td>Pummelos and their hybrids</td>
<td>100 mm</td>
</tr>
</tbody>
</table>
Uniformity in size

two options to ensure uniformity in size

option (a):

maximum difference in diameter between fruit in the same package shall be limited to:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>10mm</td>
<td>if diameter of smallest fruit &lt; 60mm</td>
</tr>
<tr>
<td>15mm</td>
<td>if diameter of smallest fruit ≥ 60mm but &lt; 80mm</td>
</tr>
<tr>
<td>20mm</td>
<td>if diameter of smallest fruit ≥ 80mm but &lt; 110mm</td>
</tr>
<tr>
<td>no limit</td>
<td>if diameter of fruit ≥ 110mm</td>
</tr>
</tbody>
</table>
Option (b) use size codes & ranges

Oranges (example):

<table>
<thead>
<tr>
<th>Size Code</th>
<th>Diameter in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>92 – 110</td>
</tr>
<tr>
<td>1</td>
<td>87 – 100</td>
</tr>
<tr>
<td>2</td>
<td>84 – 96</td>
</tr>
<tr>
<td>3</td>
<td>81 – 92</td>
</tr>
<tr>
<td>4</td>
<td>77 – 88</td>
</tr>
<tr>
<td>5</td>
<td>73 – 84</td>
</tr>
<tr>
<td>6</td>
<td>70 – 80</td>
</tr>
<tr>
<td>7</td>
<td>67 – 76</td>
</tr>
<tr>
<td>8</td>
<td>64 – 73</td>
</tr>
<tr>
<td>9</td>
<td>62 – 70</td>
</tr>
<tr>
<td>10</td>
<td>60 – 68</td>
</tr>
<tr>
<td>11</td>
<td>58 – 66</td>
</tr>
<tr>
<td>12</td>
<td>56 – 63</td>
</tr>
<tr>
<td>13</td>
<td>53 – 60</td>
</tr>
</tbody>
</table>

uniformity in size is achieved by using size scales

or…. 
Uniformity in size – Option (b) continued...

For fruit in bulk bins and max. 5kg bags, the difference between the smallest and the largest fruit in the same package must not exceed the range obtained by grouping three consecutive size codes in the size scale.

<table>
<thead>
<tr>
<th>Size Code</th>
<th>Diameter in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>92 – 110</td>
</tr>
<tr>
<td>1</td>
<td>87 – 100</td>
</tr>
<tr>
<td>2</td>
<td>84 – 96</td>
</tr>
<tr>
<td>3</td>
<td>81 – 92</td>
</tr>
<tr>
<td>4</td>
<td>77 – 88</td>
</tr>
<tr>
<td>5</td>
<td>73 – 84</td>
</tr>
<tr>
<td>6</td>
<td>70 – 80</td>
</tr>
<tr>
<td>7</td>
<td>67 – 76</td>
</tr>
<tr>
<td>8</td>
<td>64 – 73</td>
</tr>
<tr>
<td>9</td>
<td>62 – 70</td>
</tr>
<tr>
<td>10</td>
<td>60 – 68</td>
</tr>
<tr>
<td>11</td>
<td>58 – 66</td>
</tr>
<tr>
<td>12</td>
<td>56 – 63</td>
</tr>
<tr>
<td>13</td>
<td>53 – 60</td>
</tr>
</tbody>
</table>
Non-uniform size
At all marketing stages, tolerances in respect of quality and size shall be allowed in each lot for produce not satisfying the requirements of the class indicated.
Quality tolerances...

Extra Class:
5% of fruit not meeting Extra Class requirements but meeting Class 1 is allowed including max. 0.5% of Class 2

Class 1:
10% of fruit not meeting Class 1 requirements but meeting Class 2 is allowed incl. 1% of fruit outside Class 2 or the min. requirements or of fruit affected by decay

Class 2:
10% of fruit not meeting Class 2 requirements nor the minimum requirement is allowed incl. 2 % of fruit affected by decay
Size tolerances...

For all Classes, 10% tolerance to the size immediately below and/or above is allowed, but must comply to the following absolute minima, i.e. the tolerance does not apply below this threshold.

<table>
<thead>
<tr>
<th>Fruit Type</th>
<th>Minimum Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemons</td>
<td>43 mm</td>
</tr>
<tr>
<td>Limes</td>
<td>40 mm</td>
</tr>
<tr>
<td>Satsumas, other mandarin varieties and their hybrids</td>
<td>43 mm</td>
</tr>
<tr>
<td>Clementines</td>
<td>34 mm</td>
</tr>
<tr>
<td>Oranges</td>
<td>50 mm</td>
</tr>
<tr>
<td>Grapefruit and its hybrids</td>
<td>67 mm</td>
</tr>
<tr>
<td>Pummelos and their hybrids</td>
<td>98 mm</td>
</tr>
</tbody>
</table>
Presentation uniformity requirements...

the contents of each package must be uniform and contain only citrus fruit of the same origin, variety or commercial type, quality and size, and appreciably of the same degree of ripeness and development.

for "Extra" Class, uniformity in colouring is required.

mixed citrus are allowed in sales units but must be uniform in quality, and for each type uniform in variety and origin.
Non-uniform colour
must protect the fruit properly

materials used inside must be clean

individual stickers are allowed but suitable glue must be used for wrapping - thin, dry, new and odourless paper

must be free of foreign matter, short twigs are allowed
Presentation...

fruit may be presented:

arranged in layers in packages

not arranged in layers in packages or in bulk bins; only Classes I and 2

direct sales packages weighing less than 5kg
Marking requirements on each package...

Name and physical **address** of packer and/or dispatcher/shipper

or

a **code mark** officially recognized by the national authority

**common name** of the species if not visible from outside

**variety** in the case of oranges
Marking requirements on each package...

For the Mandarins group:
Satsumas: “Satsumas” may be followed by the variety
Clementines: “Clementines” variety may be included
- for seedless Clems – “Seedless”
- for Clems with 1 to 10 seeds – “Clementines”
- for Clems with > 10 seeds – “with seeds”
Other Mandarins and their hybrids: name of the variety

For grapefruit, pummelos & their hybrids – “pink or red where appropriate
Marking requirements on each package...

country of origin, growing region is optional in case of mixed citrus in sales unit – each country class

size expressed as
- minimum and maximum size in mm; or
- size code(s)

count is optional

post harvest treatment (optional, based on legislation of importing country)
Postharvest treatment
Thank you

PPECB

creating world-wide confidence in South African perishable export products