Apples

Malus Domestica

Fred Jacobs
Countries of production

- Europe
- China
- Westcoast US
- RSA
- New Zealand
- Argentina
- Chile
Production of apples in the Netherlands. 2010

- 340,000 ton
  - = 4% of the EU (27) production
  - = 0.8% of the world production

Elstar 170,000 ton
Jonagold/Jonagored 135,000 ton
Golden Delicious / Cox. O.P. / Boskoop 30,000 ton
Others 65,000 ton
### Production of apples in the EU (27) in 2010: $9697 \times 1000$ ton

<table>
<thead>
<tr>
<th>Variety</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden Del.</td>
<td>2401</td>
</tr>
<tr>
<td>Gala</td>
<td>986</td>
</tr>
<tr>
<td>Jonagold / Jonagored</td>
<td>700</td>
</tr>
<tr>
<td>Red Delicious</td>
<td>662</td>
</tr>
<tr>
<td>Idared</td>
<td>569</td>
</tr>
<tr>
<td>Elstar</td>
<td>361</td>
</tr>
<tr>
<td>Granny Smith</td>
<td>339</td>
</tr>
<tr>
<td>Braeburn</td>
<td>289</td>
</tr>
<tr>
<td>Shampion</td>
<td>257</td>
</tr>
<tr>
<td>Fuji</td>
<td>250</td>
</tr>
</tbody>
</table>
Production in the EU per country

- Italy: 2197 x 1000 ton
- Poland: 1850
- France: 1597
- Germany: 835
- Hungary: 488
- Spain: 486
- Greece: 454
- Netherlands: 340
- Belgium: 288
Blossom time
Blossom time
Orchard
Good coloration after cold nights
Hail protection
Pluk-o-trak
Transportation in big boxes
Transportation inside the packstation
Pre sorting
Sorting and grading with camera’s
Graded and sorted
Storage for a short time
Transportation to the packing line
Packing and last check
Mixed packages
Quality Standard

Apples
Major defects

- Calcium spot
- Fruit flesh browning
- Heavy pressuremarks
- Hollow fruit
- Decay
- Open damage (stalk damage)
Minor defects

- Misshapen
- Skin defects other than scalding like:
  - hail damage
  - slight scab
  - branch damage
  - frost damage
- Discoloration
- Slight bruises
Minimum requirements

- Intact
- Clean
- Sound
- Free from pests and damage caused by pests affecting the flesh
- Free from serious water core, with the exception of Fuji and mutants
- Free of abnormal external moisture and free of any foreign smell and or taste
Maturity requirements

- The apples must be sufficiently developed and display satisfactory ripeness.

- The development and state of maturity must be such as to enable them to continue their ripening process and to reach the degree of ripeness required in relation to the varietal characteristic.
The first question an inspector should ask himself:

- Marking on the packages?
- Colour requirements?
- Rough or smooth skin variety?
Colour requirement for apples

- **cat. A:** 75% of total surface for Class Extra
  50% for Class I
- **cat. B:** 50% of the total surface for Class Extra
  33% for Class I
- **cat. C:** 33% of the total surface for Class Extra
  10% characteristic striping for Class I.
  For Class II no requirement, excepted variety Jonagold (10% characteristic striping)
- **cat. D:** No colour requirement
Smooth and rough skin varieties

- smooth skin varieties:

  Class Extra : > slight isolated traces of russetting

  > brown patches that may not go outside the stem cavity
Smooth and rough skin varieties

**smooth skin varieties:**

Class I: > thin net-like russeting not exceeding 20% of the total fruit surface;

> dense russeting not exceeding 5% of the total fruit surface
Smooth and rough skin varieties

- **smooth skin varieties:**
  
  Class II : > thin net-like russetting not exceeding 1/2 of the total fruit surface;
  
  > dense russetting not exceeding 1/3 of the total fruit surface
Smooth and rough skin varieties

- **Rough skin varieties:**

  In all classes russetting is allowed
Requirements for Class Extra

*Allowed is/are:*

- very slight skin defects
- very slight russetting
- flesh must be perfectly sound
Requirements for Class I

Allowed is/are:

- slight defects in shape
- slight defects in colouring
- slight bruising not exceeding 1 cm²
- 2 cm in length for defects of elongated shape
- other skin defects of maximum 1 cm²
- spots of scab of maximum 1/4 cm² in total
- without stalks provide the flesh is not damaged
Interpretations Class I

- Water core may not be larger than an apple seed.
  - Fuji may have water core.
Requirements Class II

- defects of shape, colour and development in case characteristics aren’t undermined
- slight bruising not exceeding 1,5 cm²
- oblong skin damages not exceeding 4 cm length
- other skin defects not exceeding 2,5 cm²
- scab not exceeding 1 cm²
- missing stalks are acceptable if the flesh is not damaged
Interpretations Class II

- healed cracks should be assessed as skin defects
- Superficial traces of fruit flesh browning, core brown, bitterpit, water core not exceeding 10% of the fruits
- Traces of scald within the 10% of tolerances and not exceeding 2,5 cm²; otherwise it is a “2% defect”
Sizing

- Minimum size is 60 mm or 90 gram

A minimum size of 50 mm or 70 gram is allowed provided the brix value is at least 10.5°
Uniformity

- Fruit of Class Extra, I and II packed on layers must be graded on 5 mm range
- Or by weight:

<table>
<thead>
<tr>
<th>Range (g)</th>
<th>Difference in weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 - 90</td>
<td>15 g</td>
</tr>
<tr>
<td>91 - 135</td>
<td>20 g</td>
</tr>
<tr>
<td>136 - 200</td>
<td>30 g</td>
</tr>
<tr>
<td>201 - 300</td>
<td>40 g</td>
</tr>
<tr>
<td>&gt; 300</td>
<td>50 g</td>
</tr>
</tbody>
</table>
Uniformity

- Loose packed apples or apples packed in sales packages of Class I must be graded till maximum 10 mm range

- Or by weight:

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<td>35</td>
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<td>70</td>
</tr>
<tr>
<td>&gt; 300</td>
<td>100</td>
</tr>
</tbody>
</table>
Labelling

- Name address of the packer or dispatcher
- Class
- Product name if the content is not visible from the outside
- Name of the variety
- Country of origin
- Size or number of fruits
chlorosis Class I allowed
Colouring 10 % of the surface
Thin net-like russetting Class I in case of smooth skin varieties
Thin net-like and dense russetting Class I in case of smooth skin varieties
Hail damage Class I
Hail damage Class I
Hail damage Class I
Haildamage Class I
Scab Class I
Bruising Class II
Pressuremark Class II
hail damage  Class II
Scab Class II
Dense russetting Class II, in case of smooth skin varieties
Watercore: range Class I / Class II

*Fuji & mutants may have watercore*
frost damage Class II
Frostdamage Class II
fleshy stalks Class II
apple sawfly Class II
Healed cracks Class II
Hail damage - out of grade
frost damage - out of grade
bitterpit - out of grade
bitterpit - out of grade
phoma spot - out of grade
lenticel spot - out of grade
lenticel spot - out of grade
core brown - out of grade
scalding - out of grade
sunburn - out of grade
primary scab - out of grade
secondary scab - out of grade
Fruit flesh browning - out of grade
Fruit fly worm eaten
Damaged caused by insects
out of grade
Leaf roller - out of grade
Shrivelled - out of grade
- Alkmene
- Cox’s OP
- Cox’s OP
- Elstar
- Elstar red
- Nicogreen
- Red Jonaprince
- gloster
- Jonagold
- Boskoop
- Delcorf
Nicoter
Civni
- Autento
- Milwa
- Wellant
- Idared
Golden Delicious
- Royal Gala
- Royal Gala
Granny Smith
- Pinova
- Braeburn
Fuji
Fuji – red mutant
Cripps Pink (Pink Lady)
Thank you for your attention

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