



# Apples

## Malus Domestica

### UN-ECE Workshop


### South Africa 20-22 April 2010.

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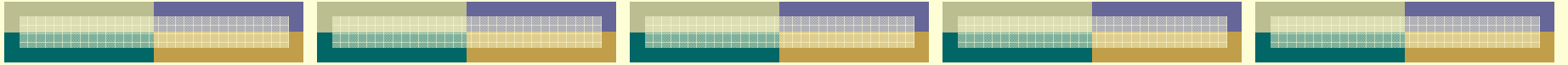
# Countries of production

- EU
  - China
  - Westcoast US
  - RSA
  - New Zealand
  - Argentina
  - Chile
- 

# Blossom period









# orchard





# Fruit drop (natural way)

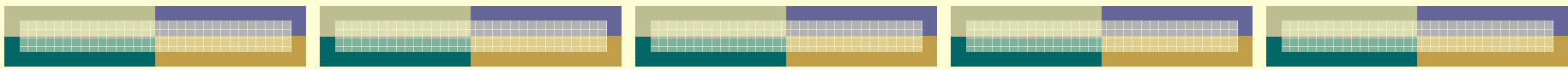




# fruit drop (natural way)









the best colouring after low  
night temperature





# Hail protection





# Pluk o trak





# Transportation in big boxes





# transportation inside packstation



# First selection and measuring by camera's





Each fruit goes to a selected row



# Transportation by water







# Minimum requirements


- Intact
- sound
- Practical free from pests
- Free from damage caused by pests affecting the flesh
- Free of any foreign smell or taste

A slight lack of freshness and turgidity






# Major defects

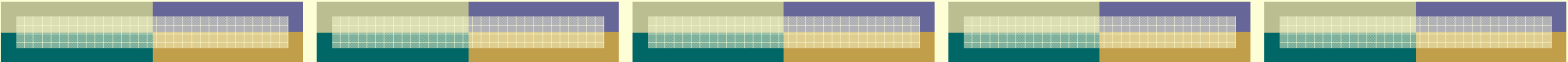
- Calciumspot
  - Fruitflesh brown
  - Heavy pressuremarks
  - Damaged caused by pests affecting the flesh
  - Hollow fruit
  - Several kind of rotting
  - Open damage (stalkdamage)
- 






# Minor defects

- Misshapen
  - Skindefects other than scalding like:
    - slight haidamage
    - slight scab
    - branchdamage
  - Slight bruises
- 




## **BASIC FOR CLASSIFICATION APPLES IN CLASS I AND II**

- requirements for colour?
  - variety with a rough or smooth skin?
- 





# Colour requirements for apples

- cat. A: 50 % for Class I and 25% for Class II
  - cat. B: 33% for Class I and 10 % for Class II
  - cat. C: 10 % for Class I characteristic colouration for the variety
  - Cat. D: no colouration
- 



# Smooth and rough skin varieties


- smooth skin varieties:

Class I : 20% slight roughness; max. 5 %  
heavy roughness of the surface

Class II: 50%; slight roughness max. 33 %  
heavy roughness of the surface

- rough skin varieties:


Class I and Class II 100% roughness is  
allowed, excepted identified as skin defects







## REQUIREMENTS FOR EXTRA CLASS

- the flesh must be perfectly sound
  - apples in this class must be of superior quality. Shape, size and colouring must characteristic of the variety
- 




# REQUIREMENTS FOR CLASS I

Apples must be of good quality, shape and colouration.

The flesh must be perfectly sound

**Allowed is :**

- slight defects in shape and colouring
  - oblong skin defects 2 cm in length
  - other skin defects of maximum 1 cm<sup>2</sup>
  - spots of scab of maximum 1/4 cm<sup>2</sup>
  - slight bruises not exceeding 1cm<sup>2</sup>
- 






## REQUIREMENTS FOR CLASS II

Apples must satisfy the minimum requirements


The flesh must be free from major defects

### ALLOWED IS:

- defects of shape, colour and development in case characteristics are not undermined
  - oblong skin defects of maximum 4 cm
  - spots of scab of maximum 1 cm<sup>2</sup> in total
  - other skin defects of maximum 2,5 cm<sup>2</sup>
  - Slight bruises not exceeding 1,5 cm<sup>2</sup>
- 



# Sizing

- Mimimum size for all classes:  
60mm or 90 gram
  - Smaller than 60 mm, but at least 50mm or 70 gram can be accepted in case the Brix level is at least 10.5
- 






# Uniformity

- Difference in diameter between fruit in the same package :
  - > 5 mm or 20% of the average individual fruit weight in case of:
    - Extra class
    - Class I and II packed on layers






# Uniformity

- Difference in diameter between fruit in the same package :
  - 10 mm or 25% of the average individual fruits in case of:
    - class I packed loose in the package or in consumer packaging
- 






# Tolerances

- Extra class: 5% not satisfying the class but meeting those of class I is allowed
  - Class I : 10 % not satisfying the class, but meeting those of class II is allowed
  - Class II: 10% not satisfying neither the requirements the class nor the minimum requirements. Rotting or other defects rendering it unfit for consumption is excluded
- 



# Provisions concerning marking

- Name and address packer or dispatcher
  - Name of produce in case the produce is not visible from the outside
  - Name of the variety
  - Origin of produce
  - Class
  - Size or number of fruit in case packed on layers
- 



chlorosis  
class I allowed



Colouring 10 % of the surface



# Russeting class I





# Russeting Class I



# Hail damage Class I



# Haildamage class I





# Haildamage class I



# Scab Class I



# Pressuremark class II





# Pressuremark class II



# early hail class II



# skin damage class II





# Cold damage class II



# Cold damage class II



# russeting class II

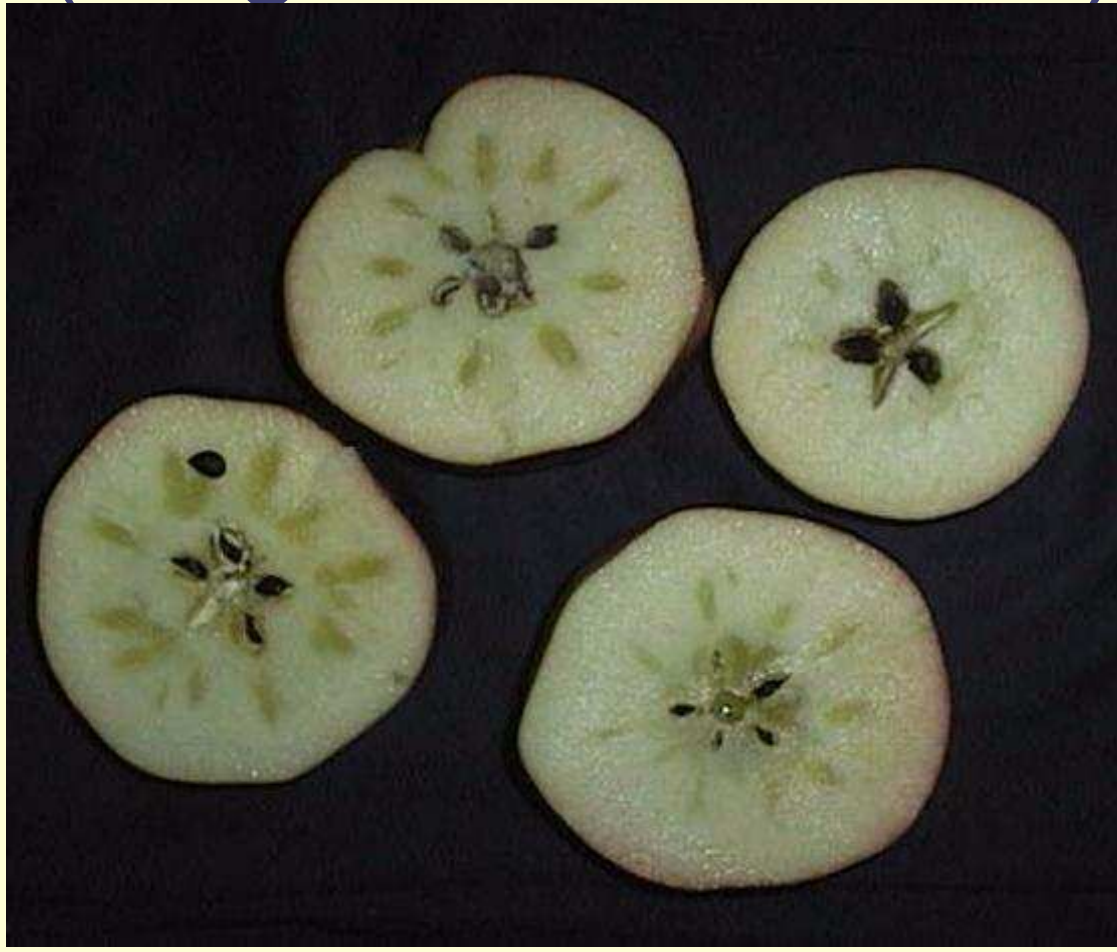


russeting (Golden Delicious)  
class II





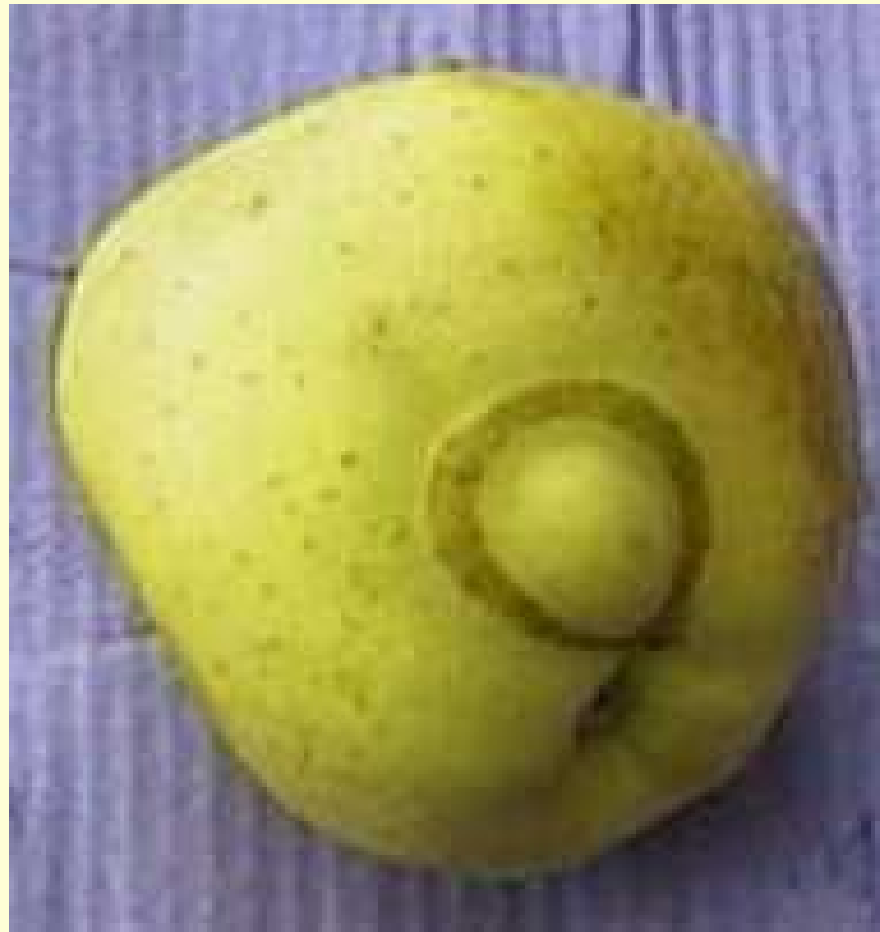
Watercore: class I and II  
(highest I, lowest II)



# Healed cracks class II



# apple sawfly class II



# Bitter pit out of grade

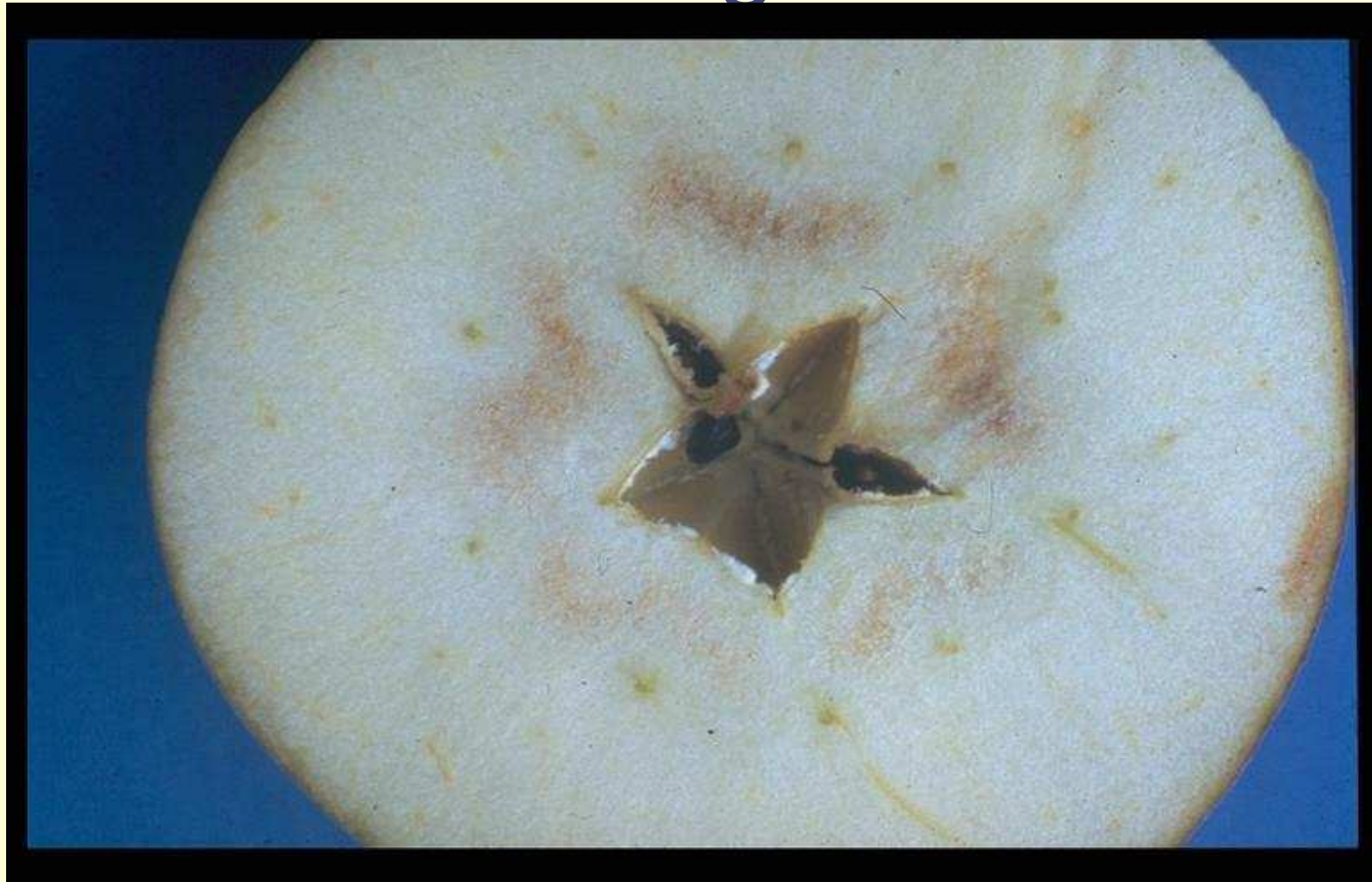




bitter pit  
out of grade



core brown  
out of grade



# Fruit flesh browning out of grade



not clean out of grade





# Cold damage out of grade



hail  
out of grade



# scalding out of grade



sunburn  
out of grade





primary scab  
out of grade



# secondary scab out of grade



# Leaf roller affecting the flesh out of grade

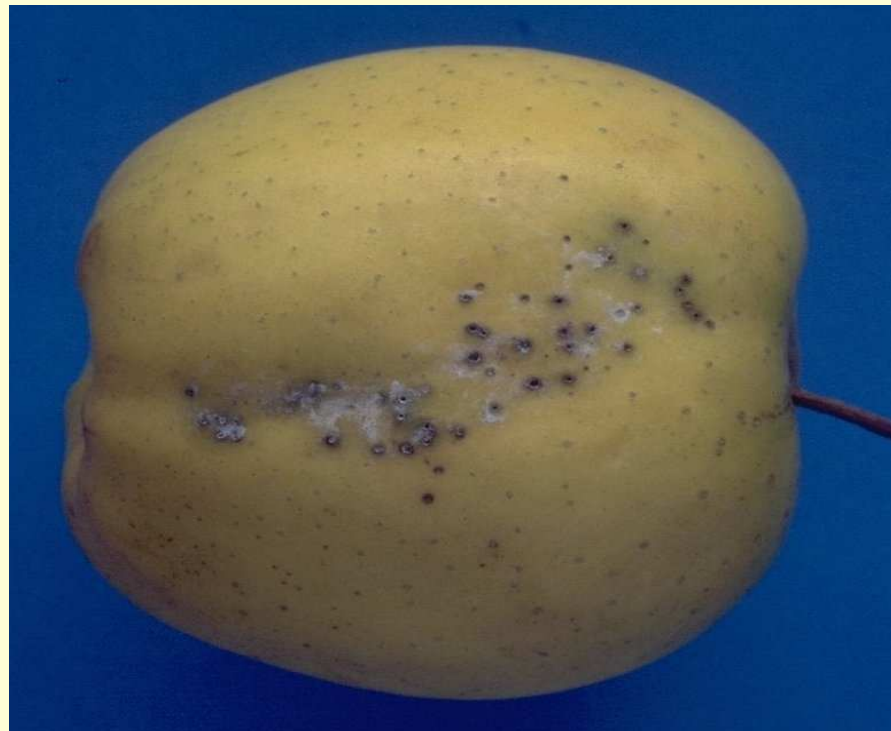


# defects caused by aphids out of grade





# Damaged caused by insects out of grade



worm eaten  
out of grade



# lenticel spot out of grade



phoma spot  
out of grade





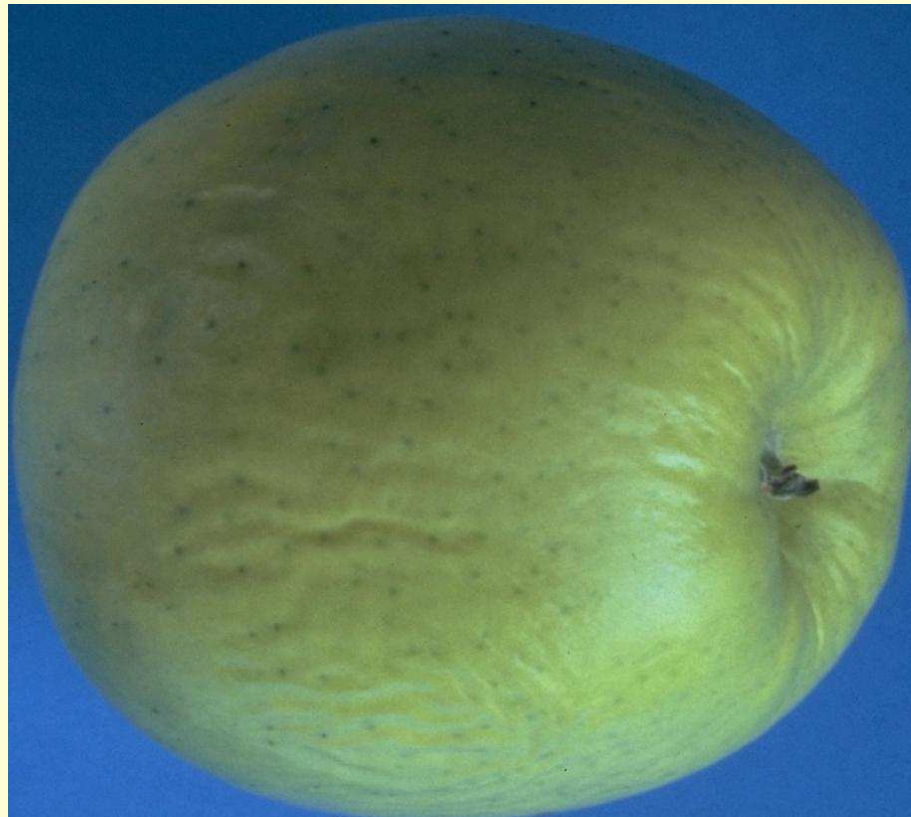
bitter rot  
out of grade

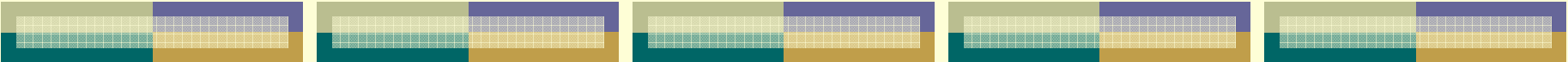


nose rot  
out of grade



Not fresh  
out of grade





Thank you for your attention

Questions?

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