

## INF.10 Proposal to amend UNECE Standard for Peaches and Nectarines

### Contribution from Spain

#### **PROPOSAL TO REVISE THE 6.5 Kg/ 0.5 cm<sup>2</sup> FIRMNESS VALUE IN THE UNECE RECOMMENDATION, CONCERNING MATURITY REQUIREMENTS FOR PEACHES AND NECTARINES.**

##### **1.- BACKGROUND AND PRESENT SITUATION.**

The Working Party on Agricultural Quality Standards (WP.7) adopted in its 60th Session (8-10 Nov 2004), a UNECE Recommendation concerning maturity requirements for Peaches and Nectarines, for a two year trial period until November 2006.

This Recommendation read as follows:

##### ***“B. Minimum maturity requirements***

*The fruit must be sufficiently developed and display satisfactory ripeness.*

*In order to satisfy this requirement, the refractometric index of the pulp measured at the middle point of the fruit flesh at the equatorial section must be greater than or equal to 8° Brix and the firmness must be lower than 6.5 kg measured with a plunger of 8 mm diameter (0.5cm<sup>2</sup>) at two points of the equatorial section of the fruit, with the skin intact.”*

##### **2.- SOME COMMENTS**

Peaches and nectarines are normally picked when ripening has been initiated (high mature stage). Proper maturity at harvest is essential to marketing good quality, and a number of tests have been developed:

- ◆ Shape and size: when fruit shoulders and sutures are well developed and filled out, stone fruit are considered mature.
- ◆ Colour: as fruit matures and ripens, there are background colour changes from green to red or yellow.
- ◆ Soluble solids content (SSC), which sugar (sucrose) is the major constituent, tells you when the fruit is sweet enough to eat. Sugar levels don't increase significantly once the fruit is removed from the tree
- ◆ Fruit acidity, SSC/acidity ratio, and phenolic content are also important factors in consumer acceptance. There is no established a value for this parameters.
- ◆ Flesh firmness. Stone fruits firmness varies a lot; it is affected by variety, crop loads, nutrition, pruning and seasonal conditions. For one single fruit evolves from *hard*, when it is harvested, through *firm*, to soft. When hard, the fruit is not edible, but is ideal for long shipments; fruits that you want to transport should be picked hard but mature. Firm means that the peach yields very slightly to moderate pressure but it is not edible yet. This fruits are considered ready-to-buy, but they have to soften in order to be ready-to-eat. All this process is strongly affected by temperature management: a fast rate of softening is achieved at 20 to 25 °C and a low rate is accomplished by using lower temperatures.

Then, the fruit softening rate can be very slow or very fast, depending on the distributor's interest. Many buyers have set minimum maturity requirements, and for stone fruits they include firmness as an indicator of maturity and as one predictor of the potential shelf life as

well. As a matter of fact the market fixes an upper limit greater than the 6.5 kg/0.5 cm<sup>2</sup> established in the Recommendation and links Brix and firmness values. By this way they expect good tasting and resistant to bruising fruits. In response to this demand, some of the newer peach and nectarine varieties have been developed with firmer texture (and high red colour).

As an example, a distribution company requires the following parameters:

- If Brix  $\geq 9^\circ$ , then the average firmness must be between 3 and 5.8 kg/0.5 cm<sup>2</sup>
- If Brix  $\geq 10.5^\circ$ , then the average firmness must be between 3 and 7.5 kg/0.5 cm<sup>2</sup>

### **3.- SAMPLING PROGRAMME.**

In order to test these values, the Spanish Quality Control Official Service for fruits and vegetables, SOIVRE, has carried out a sampling programme from April 2005 to Mars 2006, using the testing methods published in the OECD Guidance on Objective Tests to Determine Quality of Fruits and Vegetables and Dry and Dried Produce. The following results have been obtained:

- 879 samples have been analysed, all of them for Brix degree and 744 for firmness.
- The analysed samples have the following characteristics:

#### **Stage of control :**

- Import level: 35 (21 from Chile, 3 from Argentina, and 11 from Morocco)
- Export level (including expeditions to other E.U. Member States): 844

#### **Depending on the fruit and colour of the flesh:**

|                                      |     |
|--------------------------------------|-----|
| - Yellow flesh peaches... ..         | 367 |
| - White flesh peaches... ..          | 16  |
| - No colour of flesh specified... .. | 5   |
| -----                                |     |
| TOTAL.....                           | 388 |
| <br>                                 |     |
| - Yellow flesh nectarines... ..      | 394 |
| - White flesh nectarines... ..       | 92  |
| - No colour of flesh specified... .. | 5   |
| -----                                |     |
| TOTAL... ..                          | 491 |

#### **Analyses date:**

| <b>Month</b> | <b>Number of samples</b> |
|--------------|--------------------------|
| April 05     | 4                        |
| May 05       | 259                      |

|                                |            |
|--------------------------------|------------|
| June 05                        | 248        |
| July 05                        | 154        |
| August 05                      | 95         |
| September 05                   | 84         |
| October 05                     | 11         |
| Mars 06 (Only at import level) | 24         |
| <b>TOTAL</b>                   | <b>879</b> |

### **Brix values.**

12 samples out of 879 were out of grade.

### **Firmness**

96 samples out of 774 were out of grade.

### **Subjective maturity testing according to the taste of the fruit**

38 samples were considered unripe.

### **Subjective maturity testing according to colour and morphological aspect.**

39 samples were considered unripe.

## **4.- CONCLUSION AND PROPOSED SOLUTIONS**

Related to the Brix value, the minimum fixed value of 8° can be considered adequate (only 1.4% of samples out of grade), nevertheless the maximum firmness value (lower than 6.5 kg/0,5 cm<sup>2</sup>) could be seen as very low according to the high percentage of samples out of grade (12,4%), which have a SSC greater enough than the minimum established. The Brix mean and the Brix standard error for these firmness measures equal to or greater than 6.5 kg/0.5 cm<sup>2</sup> may suggest that ripeness (sweetness) is not a problem in these cases:

| Samples with firmness $\geq 6,5 \text{ kg}/0,5 \text{ cm}^2$ |       |
|--|-------|
| Brix Mean  | 12,85 |
| Brix Standard error.   | 2,16  |

If we add to this that:

- The fruit firmness is affected by several facts (variety, crop loads, nutrition, pruning and seasonal conditions).
- Peaches and nectarines are climateric fruits whose sugar levels don't increase significantly once the fruit is removed from the tree but whose firmness value progresses to more soft at a speed that depends on the temperature management. Firmness is then used to control the market life of the fruit (within a limits, of course)
- The greater firmness of the new varieties marketed and the markets demands.

we may conclude that the firmness value should be revised.

## **Proposed solutions:**

We propose three alternative solutions:

- a) To eliminate the firmness parameter

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- b) To make firmness parameter not compulsory and to establish a relation between firmness and the refractometric index measure:

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- c) To establish a relation between firmness and the refractometric index. This relation could be as follows:

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