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Working Party on Standardization of  
Perishable Produce and Quality Development

Specialized Section on Standardization of  
Dry and Dried Produce (Fruit)

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Item 4 (b) of the Provisional Agenda

CONSIDERATION OF UN/ECE RECOMMENDATIONS:  
INSHELL WALNUTS

Proposal transmitted by the United States

**Introduction:** The UN/ECE recommendation for Inshell Walnuts is in the trial period until November 1999. The delegation of the United States agreed at the last session to prepare a proposal concerning an enhancement of definitions, the variety issue, size, marking of the crop year and the moisture content.

**UN/ECE RECOMMENDATION DF-01**  
concerning the marketing and commercial quality control of

**INSHELL WALNUTS**

moving in international trade between countries members of  
UN/ECE and consigned to these countries

**I. DEFINITION OF PRODUCE**

This standard applies to inshell walnuts free from outer husks, from varieties (cultivars) grown from *Juglans regia* L, to be supplied to the consumer or to be cracked for extraction of the kernels, walnuts for making oil being excluded.

The expression “fresh walnut” means walnuts from which the husk has been removed and which have not been treated in any way that tends to change their natural moisture content.

The expression “dry walnuts” means walnuts which can be preserved in the ordinary way and with a moisture content not exceeding ~~10%~~ 12% for the whole nut and ~~6%~~ 8% for the kernel.<sup>1 2 3</sup>

**II. PROVISIONS CONCERNING QUALITY**

The purpose of the standard is to define the quality requirements of inshell walnuts at the export control stage, after preparation and packaging.

**A. Minimum requirements<sup>4</sup>**

(i) In all classes, subject to the special provisions for each class and the tolerances allowed, the inshell walnuts must be:

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<sup>1</sup> *The moisture content is determined by the method given in annex II to this document.*

<sup>2</sup> *In the case of transport by closed container, special attention should be paid to air circulation in the container and to the moisture content of the produce.*

<sup>3</sup> *The delegation of the United States is of the view that the moisture content should be 12% and 8% respectively.*

<sup>4</sup> *The definition of defects is given in annex I to this document.*

(a) Characteristics of the shell

- intact:
  - slight superficial damage is not considered as a defect;
  - partially open walnuts are considered to be intact provided that the kernel is physically protected;
- sound:
  - free from defects likely to affect the natural keeping quality of the fruits;
  - free from attack by pests;
  - clean; practically free of any visible foreign matter;
  - dry; free from abnormal external moisture;
  - free from husks.

The shells of dry walnuts must show no trace of hulling.

(b) Characteristics of the kernels

- sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded;
- firm;
- clean, practically free from any visible foreign matter;
- free from living insects or mites whatever their stage of development;
- free from visible damage by insects, mites or other parasites;
- free from rancidity and/or oily appearance;
- free from mould;
- free of abnormal external moisture;
- free of foreign smell and/or taste;
- normally developed, shrivelled kernels are to be excluded.

(c) The inshell walnuts must be gathered when sufficiently ~~ripe~~ mature.

In the case of “fresh walnuts”, it must be possible to peel off the skin of the kernel easily and the internal central partition must show signs of turning brown.

In the case of “dry walnuts”, the internal central partition must be dry ~~and brittle~~.

The shells may be washed and bleached provided that the treatment applied does not affect the quality of the kernels and is permitted by the regulations of the importing country.

The condition of the inshell walnuts should be such as to enable them:

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- to withstand normal transport and handling, and
- to arrive in a satisfactory condition at the place of destination.

(ii) Moisture content

Dry walnuts shall have a moisture content not greater than 12% for the whole nut and 8% for the kernel<sup>1 3</sup>.

## **B. Classification**

Inshell walnuts are classified in three classes defined below:

(i) **“Extra” class**

Inshell walnuts in this class must be superior quality. They must have the characteristics of the variety or of the mixture of certain varieties officially defined by the producing country and specified in the marking.

They must be practically free from defects with the exception of very slight superficial defects provided that these do not affect the general appearance of the produce, the quality, the keeping quality or its presentation in the package.

This class may not include inshell walnuts whose variety cannot be guaranteed, nor a mixture which is not defined.

~~Furthermore, only walnuts of the most recent harvest can be included in this class.~~

(ii) **Class I**

Inshell walnuts in this class must be of good quality. They must embody the characteristics of the variety, of a commercial type or of a mixture of certain varieties officially defined by the producing country and specified in the marking.

Slight defects may be allowed provided that these do not affect the general appearance of the produce, the quality, the keeping quality or its presentation in the package.

This class may not include inshell walnuts whose variety cannot be guaranteed, nor a mixture which is not defined.

(iii) **Class II**

This class comprises inshell walnuts which do not qualify for inclusion in the higher classes, but satisfy the minimum requirements specified above.

Defects may be allowed provided that the inshell walnuts retain their essential characteristics as regards general appearance, quality, keeping quality and presentation.

### III. PROVISIONS CONCERNING SIZING

Sizing is determined by the maximum diameter of the equatorial section. It is defined either by an interval determined by the minimum diameter and the maximum diameter or by an indication of the minimum diameter followed by “and above” or “and +”. Inshell walnuts must meet at least the following sizing requirements:

“Extra” Class: below 28 mm and above  
27 mm and above in the case of oblong varieties presented under the name of the variety<sup>5</sup>

Class I: 26 mm and above

Class II: 24 mm and above; walnuts of 20 to 24 mm may exceptionally be included in this class if of marketable quality.

### IV. PROVISIONS CONCERNING TOLERANCES

Tolerances in respect of quality and size shall be allowed in each package for produce not satisfying the requirements of the class indicated.

#### A. Quality tolerances

In the calculation of tolerances, whatever the class, two half-empty walnuts or four quarter-empty walnuts are counted as one empty walnut.

Defects allowed <sup>4</sup>	Tolerances allowed (percentage by number of defective fruit)		
	Extra	Class I	Class II

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<sup>5</sup> The varieties of oblong walnuts have a shell whose height is at least 1.25 times the maximum diameter of the equatorial section.

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Defects allowed <sup>4</sup>	Tolerances allowed (percentage by number of defective fruit)		
	(a) Total tolerances for defects of the shell	5 8	10
(b) Total tolerances for defects of the edible part <sup>a</sup>	6 10	10	15
of which rancid, rotten or damaged by insects <sup>b</sup>	3 5	5 6	7.5
of which mouldy walnuts	2 3	3 6	3 6

<sup>a</sup> For fresh walnuts, the tolerances for defects of the kernel are as follows: "Extra", 8%; class I, 12%; class II, 15%.

<sup>b</sup> Living insects or animal pests are not permitted in any class.

## **B. ~~Mineral impurities~~**

~~Ashes insoluble in acid must not exceed 1 g/kg.~~

## **C. Size tolerances**

For all classes, a maximum of 10% of inshell walnuts not conforming to the sizes indicated in the marking is tolerated within the limits of + or -2 mm. In class II no tolerance is allowed for walnuts of a diameter below 20 mm.

## **V. PROVISIONS CONCERNING PRESENTATION**

### **A. Uniformity**

The contents of each package must be uniform and contain only inshell walnuts of the same origin, crop year and quality. In a single package stated to contain a given variety, a defined mixture of varieties or commercial type, a maximum of 10% of inshell walnuts may belong to other varieties or commercial types.

The visible part of the package must be representative of the entire contents.

### **B. Packaging**

Inshell walnuts must be packed in such a way as to protect the produce properly.

The materials used inside the package must be new, clean and of a quality such as to avoid causing any external or internal damage to the produce. The use of materials, particularly of paper and stamps bearing trade specifications, is allowed provided that the printing or labelling has been done with a non-toxic ink or glue.

Packages must be free of all foreign matter.

### **C. Presentation**

The weight of the packages constituting a batch must be identical.<sup>6</sup>

## **VI. PROVISIONS CONCERNING MARKING**

Each package must bear the following particulars in letters grouped on the same side, legibly and indelibly marked and visible from the outside:

### **A. Identification**

Packer           ) Name and address or  
and/or           ) officially issued or  
Dispatcher       ) accepted code mark<sup>7</sup>

### **B. Nature of produce**

- "Fresh walnuts"; "Walnuts" or "Dry walnuts" (in the case of dry walnuts).
- Name or variety or of the mixture defined for the "Extra" class; name of the variety, defined mixture or commercial type for class I.

### **C. Origin of produce**

Country of origin and, optionally, district where grown or the national, regional or local place name.

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<sup>6</sup>        *The regulations of certain importing countries require compliance with a specific range of net weights for closed packages.*

<sup>7</sup>        *The national legislation of a number of European countries requires the explicit declaration of the name and address.*

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**D. Commercial specifications**

- Class,
- Size, which may be given either:
  - by the minimum and maximum diameters, or
  - by the minimum diameter followed by the words “and above” or “and +”;
- crop year (mandatory for the “Extra” class but otherwise optional);
- Net weight;
- Date by which the produce is best consumed (optional).

**E. Official control mark (optional)**

This standard was first published as UN/ECE Standard for Unshelled Walnuts in 1970

Revised 1983

Partially Revised 1991 (Standard Layout)

Revised and adopted as UN/ECE Recommendation for Inshell Walnuts for a two-year trial period 1997

## ANNEX I DETERMINATION OF THE MOISTURE CONTENT

### METHOD I - LABORATORY REFERENCE METHOD

#### 1. Principle

Determination of the moisture content of dried fruits by loss of mass after drying at a temperature of 103°C ( $\pm 2^\circ\text{C}$ ) in a temperature-controlled oven at ambient pressure for 6 hours.

#### 2. Apparatus

- 2.1 Ceramic mortar with appropriate pestle or food chopper.
- 2.2 Analytical balance assensitive to 1 mg.
- 2.3 Cylindrical, flat-bottomed glass or metal containers, 12cm in diameter and 5cm in depth, provided with well-fitting lids.
- 2.4 Electrically heated temperature-controlled oven with good natural ventilation, regulated so that the temperature is maintained at 103°C ( $\pm 2^\circ\text{C}$ ).
- 2.5 Dessicator containing an effective dessicant (e.g. calcium chloride) and provided with a metal plate which allows the containers to cool rapidly.

#### 3. Preparation of the sample

Shell the sample if required and crush the kernels in the mortar, or chop them finely, to obtain fragments of 2-4mm across.

#### 4. Test portion and determination

- 4.1 Dry the containers and their lids in the oven for at least 2 hours and transfer to the dessicator. Allow the containers and lids to cool to room temperature.
- 4.2 Carry out the determination on 4 test portions of approximately 50g each.

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- 4.3 Weigh the empty container and lid to the nearest 0.001g ( $M_0$ ).
- 4.4 Weigh approximately 50g of the test material into the container to the nearest 0.001g. Spread the material all over the base of the container, seal the container quickly with the lid and weigh the whole ( $M_1$ ). Perform these operations as quickly as possible.
- 4.5 Place the open containers, with their lids beside them, in the oven. Close the oven and allow to dry for 6 hours. Open the oven, quickly cover the containers with their individual lids, and place them in the dessicator to cool. After cooling to ambient temperature, weigh the covered dish to the nearest 0.01g ( $M_2$ ).
- 4.6 The moisture content of the sample, as percentage by mass is given by the expression:

$$\text{Moisture content} = \frac{M_1 - M_2}{M_1 - M_0} \times 100$$

- 4.7 Report the average value obtained from the four determinations.

## **METHOD II - RAPID METHOD**

### **1. Principle**

Determination of the moisture content using a measuring instrument based on the principle of electrical conductivity. The measuring instrument must be calibrated against the laboratory method.

### **2. Apparatus**

- 2.1 Ceramic mortar with appropriate pestle or food chopper.
- 2.2 Measuring instrument based on the principle of electrical conductivity.

**3. Determination**

- 3.1 Fill the glass with the substance to be examined (previously ground in the mortar) and tighten the press until a constant pressure is obtained.
- 3.2 Read the values of the scale.
- 3.3 After each determination, clean the glass thoroughly with a spatula, stiff bristled brush paper napkin, or compressed air pump.

## ANNEX II

### DEFINITION OF DEFECTS FOR INSHELL WALNUTS

#### A. Defects of the shell:

Any defect affecting the appearance including:

- ~~blemishes~~
- staining, adhering dirt, adhering husk
- visible foreign matter (see under C)
- broken shells
- insect damage (see under C)
- ~~mould (see under C)~~
- ~~Husking damages: pronounced marks on the shell caused by the operation of mechanically removing the husk.~~

#### B. Defects of the edible part (kernel):

Any defects affecting the appearance of the kernel including ~~blemishes or areas of discolouration~~ or staining.

Shrivelled kernels: Kernel which is seriously shrunken, wrinkled and tough

#### C. Other defects:

Mould: Mould ~~filaments~~ visible to the naked eye.

Decay: Significant decomposition ~~caused by the action of micro-organisms.~~

Insect damage: Visible damage caused by insects ~~or animal parasites~~ or the presence of dead insects or insect debris.

Foreign matter: Any matter or material not usually associated with the product.

Mineral impurities: ~~Acid insoluble ash.~~

Rancidity: Oxidation of lipids ~~or free fatty acid production~~ producing disagreeable flavour and/or odours.

Foreign smell or taste: Any odour or flavour that is not characteristic of the product.

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